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THE ART OF OPTIMIZATION

Case: Valmet's Wastewater Applications

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ABSTRACT

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Besides wanting to reach the targeted audience rapidly, it is important to communicate efficiently, and be present when consumers engage in a search. Search engine optimization (SEO) combined with search engine advertising (SEA) are fundamental practices in today's marketing world. Ranking high on a search engine results page (SERP), increases the probability of attracting more traffic from potential customers.

Valmet, a multinational company, which supplies technology, automation systems, and services, has as one of its business goals to increase the profitability of its wastewater applications in the North American market. One of the main objectives is to draw inbound traffic to these webpages, with the purpose of increasing its online sales' leads. This development task revolves around implementing an SEO plan and an SEA campaign, in order to increase the ranking position of Valmet's wastewater applications' webpages on an SERP. The performance of these action plans are later measured using web analytics, where valuable knowledge can be extracted in order to continuously improve future strategic online marketing activities.

The final outcome reveals the importance of a well-structured keywords' list, which can be applied throughout SEO's and SEA's tasks. Relevant and shareable content is needed, both to retain potential customers, as well as to signal search engines of the relevance and authority of a webpage. Ultimately, this development task proposes the usage of certain key performance indicators aligned with Valmet's business goals, to be measured with web analytics, and which are significant when tracking marketing activities online. By adjusting future actions, the performance efficiency of SEO's and SEA's efforts can be improved.

FORWARD

“I guess it comes down to a simple choice, really. Get busy living or get busy dying.” Andy Dufresne, The Shawshank Redemption (1994).

Thank you to everyone who’s supported me on this journey!

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ABBREVIATIONS

AMP	Analyzers, Measurements, and Performance Solutions
CPC	Cost-per-click
CTR	Click-through-rate
GA	Google Analytics
GTM	Google Tag Manager
KPI	Key performance indicator
NA	North America
PPC	Pay-per-click
ROI	Return on investment
SEA	Search engine advertising
SEM	Search engine marketing
SEO	Search engine optimization
SERP	Search engine results page
URL	Uniform resource locator
Valmet DS	Valmet Dry Solids Measurement
Valmet TS	Valmet Total Solids Measurement
Valmet LS	Valmet Low Solids Measurement
Valmet SDO	Valmet Sludge Dewatering Optimizer

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1 INTRODUCTION

Companies and marketing professionals always seek the best possibility to communicate with their audience and draw their attention. The digital world is continuously developing at a fast pace, that organizations are now forced to quickly adapt to the environment in order to efficiently compete in the market. Online marketing is one of the most important components when building a targeted strategy to reach potential consumers. When so many brands compete for a favorable space online so that web users notice them, companies need to enhance their message and create an attractiveness to their offering, with the intent to captivate their target market.

The development task of this thesis work revolves around the creation and implementation of a search engine marketing (SEM) plan, being search engine optimization (SEO) the biggest focus, while search engine advertising (SEA) is used to complement these efforts. This task tries to answer to the question on how exactly SEM works, and how this has an impact in an organization's online marketing activities. In order to attain answers to the previous question, one of the initial goals of this thesis is to understand how search engines rank the webpages in their results' page. In the end, measuring these activities is essential, with the purpose of returning to the initial plan and adapt certain parameters. By adapting and enhancing future strategies, the performance efficiency of these marketing activities can be improved.

Ultimately, the main goal of this development task is to unveil the practices on how to design an online marketing strategy for the web users, in order to be noticed by the search engines.

Valmet is the case company used to develop this task. One of Valmet's business goals for the near future, is to increase the profitability of their offering for the wastewater industry in the North American market. These wastewater applications are automation solutions which can be placed in a wastewater treatment plant, in order to increase the efficiency of this process.

The author of this thesis will develop an SEO plan mixed with an SEA campaign, with the intention of favoring the ranking of Valmet's wastewater applications' pages in a search engine results page. Since content marketing and SEO walk hand-in-hand, this development task proposes a content plan guideline for future online activities. Lastly, it is required to track these actions, in order to assess their performance. Specific key performance indicators (KPIs) are in place to measure the final outcomes.

The development task will be implemented throughout a limited period of time, where the objective is to determine the best methods when applying an SEO and SEA strategy. Nevertheless, it usually takes a longer period of time in order to notice the performance efficiency of these optimization practices. Eventually, this action plan serves as a starting point for Valmet's online marketing activities, where it should continuously be adapted, always depending on the KPIs' results.

Lastly, this strategic plan aims at increasing the inbound traffic to these webpages, where calls to action are placed in order to retain potential customers. In order to increase this traffic, Valmet's wastewater applications' webpages need to be positioned high in the first results page of a search engine. The ultimate goal is to generate sales leads, and consequently grow the profitability of these applications.

2 OPTIMIZING FOR SEARCH ENGINES

This chapter introduces the theory used to support the practical actions in this development task. Figure 1 presents a diagram with the structure of this thesis' theoretical background.

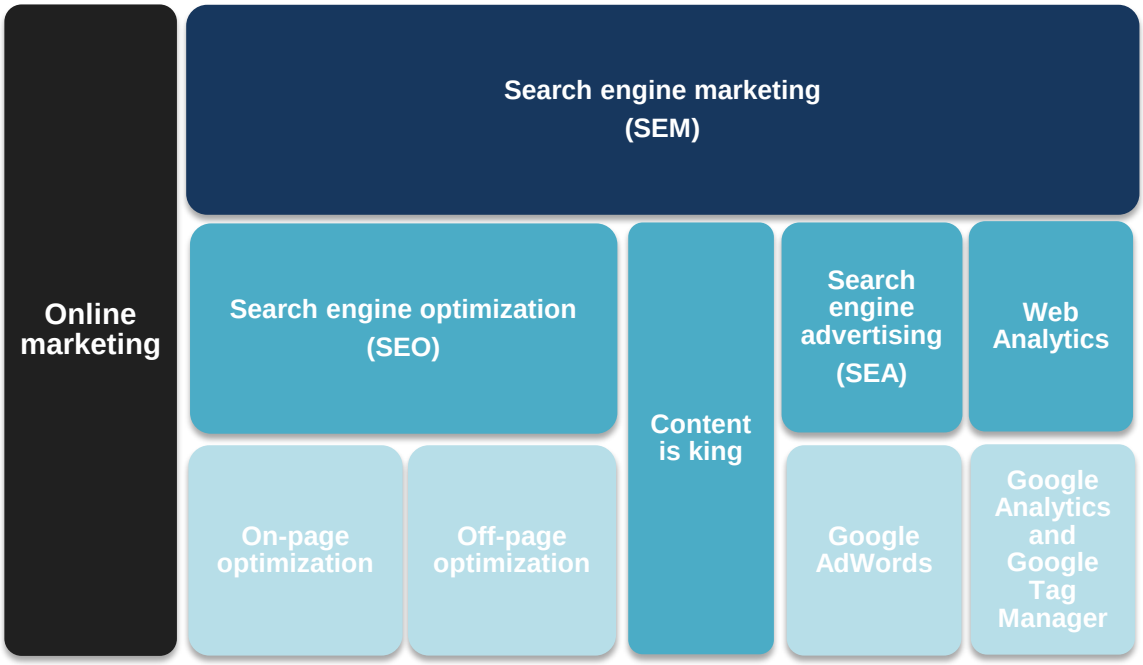

Figure 1. Diagram of the theoretical background's structure.

Following the structure of figure 1, the first topic to be approached is online marketing, where the author tries to expand on search engine marketing (SEM), and how do search engines work. Inside SEM there are two main areas; search engine optimization (SEO) and search engine advertising (SEA). Content marketing walks hand-in-hand with SEM activities, thus it is further displayed as well in this chapter. Ultimately, web analytics are used to track the effectiveness of these online optimization actions, where specific tools to measure are presented in the last section.

2.1 Online marketing

The development in technology, and consequently the World Wide Web, leads to a new form of communication, due to the fact of this allowing a higher level of interactivity. The evolution, in the eyes of marketers, started when the internet shifted from being web 1.0 to web 2.0, which brought a new way of interaction online. (Sheehan 2010, 10).

Professionals in the marketing area were now able to communicate and receive feedback directly from consumers. Social networking is one of the main reasons for this phenomenon, which initially was used by different users who were interacting with each other. However, marketers did not take long to benefit from this new way of communication. Organizations can now create stronger relationships with their consumers, and reach them in ways that traditional media was not able to do before. Nevertheless, with this new way of interaction which greatly aids markers, difficulties may arose and efficient strategies should be put into practice in order to contour some complications. (Sheehan 2010, 10).

Noise, as Brian Sheehan (2010) refers to it, is when a message from a company does not reach consumers in the most effective manner, or in the form which marketers initially intended. For example, this can be caused by the big amount of publicity and advertising which crowds society every day, and consequently leads consumers to develop mechanisms in order to not feel suffocated by this clutter, and choose to ignore or simply not pay attention to much of the advertising formats circulating around. (Sheehan 2010, 11).

Less positive publicity can as well affect the messages which a company is trying to pass about its products or services, having customers paying more attention to the negative ads than to the ones created by the organization. Furthermore, marketing professionals have to be careful with misinterpretation problems which can occur when communicating with their target audience. Although firms spend time, money and effort in understating their audience, building profiles, and creating meticulously targeted messages, the communication process online is even more sensitive to this kind of noise than traditional media is. The reason for this, is the fact that companies communicate continuously with their customers,

against traditional media which communicates less, and this increases the probabilities of miscommunication and misinterpretation problems. (Sheehan 2010, 11).

Web users utilize search engine platforms to search for what they want or need, and not very often associate this with marketing. Yet, for marketers, this has increasingly become one of the most important ways of marketing. In this day and age, it is not only enough to have a good product. A company's services or products have to be easily found online, and more than that, these should be ranked in a high position in a results page, so it can increase its probabilities of becoming more visible. (Sheehan 2010, 36).

2.1.1 Search engine marketing (SEM)

SEM, in a general way, is a set of techniques which marketers apply in order to rank their webpages higher in a search engine platform. When a person is typing in search engines it gives a signal to both the search engine provider and the marketers that this web user is looking for information. This action may be directly or indirectly related to a purchasing process. The intention of organizations in the market is to be available with the necessary services and products to satisfy the consumers' needs and wants. Therefore, these will want to be visible when a user is searching for information related to what a company is offering. In the end, marketers want to have targeted traffic to their webpages, and this can happen either organically or through paid advertisement. (Lee 2016).

There are two forms of SEM; Search engine optimization (SEO), and search engine advertising (SEA). Search engine optimization is free, and it refers to the actions which marketers take in order to optimize their pages online, so that it can direct more traffic to their websites. Search engine advertising involves placing ads in the search engine platforms, where these occupy a high ranking on the search page. The company will pay every time a user clicks on the advertisement. SEA is many times referred as well as pay-per-click (PPC). (Clear Stage 2015).

The organic results are not paid for. The raking of these webpages is merely according to the search engine's algorithms, which determine the positioning of a page. When paid advertisements are seen at the top or/and bottom of a page, it means that companies have paid for these to be placed there. (Höchstötter & Lewandowski 2009).

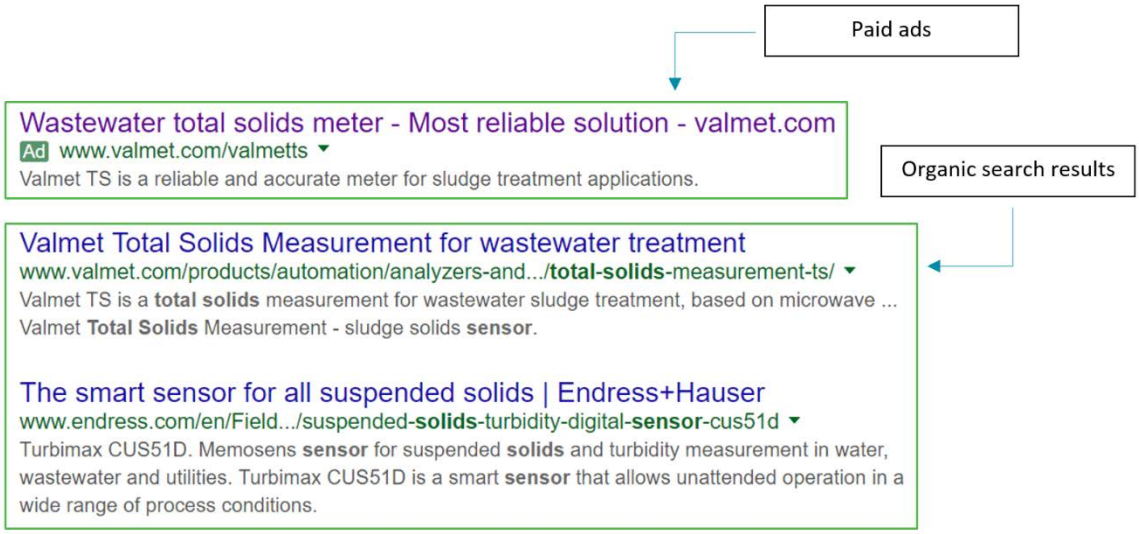

Figure 2. Screenshot which illustrates organic search results versus paid ads, upon typing *total solids sensor* in Google.

Online paid ads and organic search results are highlighted in figure 2, where it can also be seen that the same webpage can be showcased both as an organic result and as a paid advertisement.

2.1.2 Understanding search engines

Although search engines are such a big part of people's daily routine, according to Jerry Ledford (2008), often it is surprising to know that these have just been around for approximately 23 years. In its most basic form of understanding, a search engine is used when a web user wants to find information about a specific subject or set of subjects, and uses this application to type certain words or

sentences in order to find what he or she is looking for. Search engines are a software which uses applications to compile information across the webpages available online. The words or sentences typed in the search box serve as indicators to what can be found in the multiple webpages throughout the web. These indicators can be either found in the webpage itself, or in the URL (Uniform Resource Locator), as well as in the links into and out of a webpage, and the code which forms the page. All of this information and pages are stored in a database in a categorized manner. (Ledford 2008, 3-7).

The query is what is visible to the audience. This is basically the search box where web users type specific keywords in order to locate what they want or need. What people who use search engines cannot see are the spiders, crawlers, and robots. These basically run through all URLs around the web, collecting and then categorizing the information found in them. This information is later on stored in a big database. The way in which this data is classified and ranked is the responsibility of the owner of the specific search engine. Algorithms can be said to be the engine on how a search engine will work. These algorithms try to resolve the problem behind a search action. The problem in this case is presented in the format of keywords and sentences which are typed by a person. The algorithm goes through the database with the categorized URLs, and presents the results in a form of webpages, where the wanted keywords are inserted in the URL or in the body of the page. Due to the fact that different search engines will use their own sets of algorithms, it is very common to have different results ranked in each of these, even though the keywords or phrases typed in may be the same. (Ledford 2008, 7-9).

The idea behind an efficient search engine platform, is that this will try to “solve the user’s problem”, instead of only coming back with webpages which better match with the typed search. Those complex algorithms are at work combining different factors, in order to present the best pages suiting the person’s needs. Search engine owners do not make public their selection methods and their algorithms. However, there are a few indicators which are in use, in a way or another as found by researchers and professionals in this area, when it comes to ranking webpages in the results page. At its most basic form, the search engine will iden-

tify if the keywords typed in the query are present in the webpage, where not only in the URL, but in its body as well. Yet, if this would to be the only method, the search would not be sufficiently organized neither meaningful enough for the web user. (Broer 2011).

As Broer (2011) refers to it, a webpage usually has different zone indexes, as for example the title of the page, its description, and the content. It is up to the search engine provider to determine which zones are more meaningful than the others in a certain webpage. Since different pages will have different structures, the search engine will be the one dividing these into blocks, where each one of them will have a score, depending on its importance. One factor which can affect the score is the text/code ratio. A block with more text than code, it will probably be the content of the page, and a block which has more code than text, it can be the menu section of the webpage. This text/code ratio can possibly be one form of search engines to divide a page into zones. (Broer 2011).

Frequency is another factor which can play an important factor in the ranking process. A webpage which mentions more times the specific keyword typed by a person in the query, will most probably rank higher against a webpage which mentions the same keyword but in a less frequent way. Furthermore, the existence of meaningful links in a webpage will increase its probabilities to have a higher ranking position in the results page. These links can lead into the page, or out of it. (Ledford 2008, 10).

Internal links refer to the links inside one domain, which lead to other pages inside that website. In other words, an internal link inside a website will lead the web user to other pages inside that same website. According to Fishkin (2016), these internal links should be efficient enough, and they will help a user to “continue its journey” inside that same domain. In the end, the visitor of the webpage will be able to navigate easily and find the information he or she is looking for. This is very important for website owners, since these are the actions which translate into the real drivers of traffic to webpages. (Fishkin 2016). External linking refer to the links which lead to other websites other than the original domain where these are inserted in. When other webpages contain a link directing users

to another website of a different domain or owner, this can be said to be external linking. The same happens the other way around. (Moz 2016).

Search engines can be classified in three different ways; primary, secondary, and targeted. Primary search engines are the most popular search engines used by people, such as Yahoo! and Google. These search engines will differ from each other due to the fact that these use different algorithms to rank the webpages. Some of them will be considered better than others by web users, depending on the efficiency of the results when searching on the web. For marketers, these primary search engines are the ones which drive the most traffic, since most web users rely on them for their searches. (Ledford 2008, 11-12).

Secondary search engines similarly to primary search engines, generate general content, however it targets a smaller pool of users. These tend to be used more in a regional scale, and people use them for more focused or narrow searches. Some examples of secondary search engines are Ask.com and Miva. These will generate smaller traffic than the primary search engines, nevertheless should not be discarded when defining an SEO strategy. (Ledford 2008, 13). In this case, marketing professionals need to be very aware of their target audience and learn their habits. Besides understanding the demographics, it is important to know what main search engines are used in certain countries. While most web users resort to Google, for example in Japan, Yahoo! is the most common one. The same goes for Russia, where they mainly use Yandex, and Baidu when it comes to China. (Julian 2015). Again, secondary search engines use different algorithms from each other, which will affect directly on which type of results and ranking will be displayed. (Ledford 2008, 13).

Targeted search engines are very narrow in the information which they display. These are usually concerned about a specific topic, such as travel industry, medicine, music, among others. For example, Yahoo! Travel is a targeted search engine, and will have its own norms when it comes to ranking the information. Businesses should be very aware, once again, about their target market. Certain targeted search engines will be relevant to certain companies, while to others not. (Ledford 2008, 13).

2.2 Search engine optimization (SEO)

The basic idea behind SEO is to optimize a webpage by upgrading its content and improving its coding, so that this same page achieves a better visibility in organic searches on the web. When an organization optimizes its own webpage, it is very likely to obtain better ranking in organic searches, which consequently can lead to a higher number of visitors. (Rehman & Khan 2013, 101). In a general viewpoint, when applying SEO techniques to a website, the goal is to reach a better ranking position in search engine platforms, and to increase the traffic to a website. Much of the search engine optimization actions go through optimizing the content of a page. Besides wanting to improve the visibility online and create search engine-friendly pages, a company should have in mind that the optimization process also serves the purpose to improve the web user's experience when visiting and surfing a website. (Fishkin 2015).

Although most of web users have their own social media channels which they use, among other things, to access webpages that they are interested on, the major traffic generator continues to be search engines. Search engine platforms such as Google, Yahoo!, and Bing, are the main source of traffic originated on the web. Therefore, implementing an efficient and successful SEO plan can many times "make or break" a business. Furthermore, besides being the primary source of traffic, search engines provide a very unique advantage to marketers, where this generated traffic is highly targeted. This new way of marketing is able to reach the relevant customers at the right time. When a person types keywords which are connected to a company's business, it is very important that this same firm's website is present at least in the first search engine results page (SERP). Traditional marketing has always had great impact, however, this new "way of doing things" is much more effective since the actions are much more targeted to the relevant audience. (Fishkin, 2015).

Ultimately, besides all the SEO techniques which can be applied, the content of a page needs to be of quality, since search engines "work" for the web users. Search engine providers, such as Google, define their algorithms in a way that it better answers to the information been hunted online. Therefore, the relevancy of

the content is crucial. Furthermore, this content offered will perform better if it answers in an efficient way to the needs and wants of the audience. This action implies that organizations are able to effectively identify their customer segments, as well as knowing how well these can fulfill their needs. (Ratcliff 2016).

Relevant SEO statistics

The marketing world has witnessed an increase in its SEO activities, since, according to Outbrain, search engines surpass social media when it comes to generating traffic by 300%. (Iron Paper 2015). Google is currently the most utilized search engine globally by web users, being the most used platform in USA as of July 2016, with 63.4% of the market share. (Net Market Share 2016; Statista 2016).

Having a high ranking position is extremely important when looking at the statistics. 75% of web users will not go past the first search results page. (Siu 2012). According to Business 2 Community, 60% of the clicks are made on the first three organic results in the search engine's page. (Capala 2015). Furthermore, Business 2 Community also states that the first organic hit on Google's search results page gets approximately one third of the overall clicks, while the following four hits get 63% of the clicks. This means, that the rest of the results appearing on the page will only get approximately 4% of clicks. (Dugan 2016).

A study revealed that 90% of B2B professionals use online search when seeking information regarding business purchasing activities. It is estimated that these B2B researchers go through twelve searches before making the first contact with a company for enquires. When they start a search, 71% of them use generic keywords, in a sense that they are not looking specifically for a brand or company. At first, they are looking for general information and availability of a certain product or service. Thus, marketers should have in mind, that although they are not directly in contact with the customer in the beginning in order to persuade the purchase, this convincing process has to start earlier, by adding continuous optimized content to a webpage, and improve its visibility in the SERP. (Snyder & Hilal 2015).

YouTube is another powerful platform, and it has overcome Yahoo!, Bing, and others, becoming the second used search engine. (HubSpot 2016). In the end, although social media is not the main source of traffic to a website, these serve as channels to enhance the optimization process. (Capala 2015).

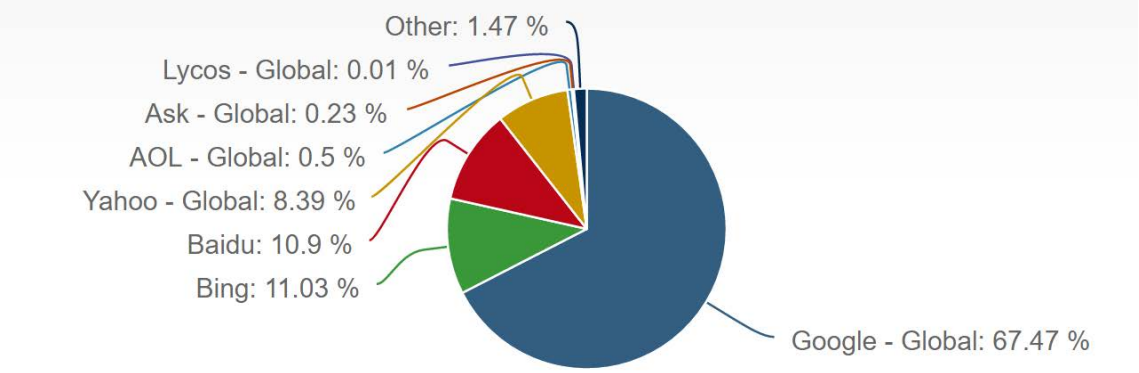

Figure 3. Search engine providers' market share from January 2015 until August 2016. (Net Market Share 2016).

As showcased in figure 3, Google is the search engine preferred by most internet users, owning approximately 67% of the global market share compared to other search engine platforms. (Net Market Share 2016).

2.2.1 On-page optimization

On-page optimization when it comes to SEO, refers to the actions which marketers or others do on their own website or webpages, in order to boost its ranking in organic searchers. These are actions, where an organization resources to specific techniques, such as the usage of targeted keywords, and optimized titles in a page, in order to improve its probabilities to be better positioned in an SERP. (Rehman & Khan 2013, 106-107).

As Ledford (2008) says, firms need to carefully build their websites, so this can be effectively indexed by a search engine. As mentioned earlier, search engines work with different algorithms, which means that the importance that each gives to certain features will vary from one search engine provider to another. Ultimate-

ly, the performance of a page is directly connected with how well the techniques applied in order to optimize the webpage meets the criteria of a search engine platform. Therefore, the webpage should be optimized in a way that it makes it search engine-friendly, depending on the platform which marketers decide it is more suitable for their needs. (Ledford 2008, 35).

Another objective of on-page optimization is to enhance the user experience of the audience, create content which is relevant to the consumer, and that is not tedious, and create an incentive so that web users stay longer time on the webpage. Titles and content should include relevant keywords and be benefit-driven, so that it captivates the attention of potential customers. (Agarwal 2016).

Keyword selection

Keywords are the set of words which a web user will type in the search page in order to attain the information he or she is looking for. Thus, it is of utmost importance that marketers define the correct and meaningful keywords, which ultimately can lead potential consumers to find their products or services that are exposed in their website. By using the relevant keywords, companies can increase their chances in raking higher in an SERP. When not using the relevant ones, an organization can run the risk of ending up behind the first 10 or 20 search results in a search engine query. As seen before in the statistics of SEO, most of the web users will not go past the first page of results, while the majority of clicks are done in the first three hits in the SERP. (Ledford 2008, 59-60).

Before defining the meaningful set of keywords, marketing professionals need to brainstorm about what words their potential target audience would use when searching online. Questions need to be asked, such as, which keywords match the business or industry of a certain company, and what set of keywords different consumer segments would use, and how these vary from each other. In this case, not only the targeted keywords should be thought of, but as well the different synonyms, so that the content can reach and comprise a higher pool of potential consumers. (McDonald 2016).

Keywords are the “cornerstone of SEO”, according to Ledford (2008). These keywords can be divided into two groups; brand related keywords and generic keywords. Brand related keywords are the specific brand names of an organization. These can be easily overlooked, since companies think that they are automatically related to the website. However, marketers should still have these in mind and give them the right importance. The second group is generic keywords, which are words that are not directly related to the brand itself. Firms can start by defining the general words, which are more generic in its concept, and later on narrow down to a set of targeted and more specific keywords. (Ledford 2008, 65-66).

Another way to look at keyword selection is by differentiating paid ones from the keywords which rank in the organic search. When a company decides to purchase certain keywords, this can be called a pay-per-click (PPC) action. This topic will be further discussed in the search engine advertising (SEA) chapter. When a keyword appears in the organic search engine results page, this mean that a webpage was enhanced sufficiently to rank in that position. Companies can decide between either of these strategies, or even combine the two. (Ledford 2008, 66).

Furthermore, there are another two categories where keywords can be defined, and these are short-tail keywords versus long-tail keywords. Three words or less define short-tail keywords. These are more generic in its meaning, since there are not many words to deduce the true meaning of what a user is looking for. Some example of these can be, “Portuguese restaurant”, or “presidential campaign”. Long-tail words give a more specific meaning of what a person is looking for. This category involves having more than three words in the query, and it is much more targeted than short-tail keywords. Some examples can be, “Fado houses in Lisbon’s downtown”, or “long satin black dress”. (Yuan 2015).

Short-tail keywords are much more common when doing a search, thus it is possible to conclude that long-tail keywords do not bring as much traffic to a website as short-tail ones. Nevertheless, since, long-tail keywords are much more specific in their nature, these can bring many advantages to marketers when it comes to “targeted keywording”. Yet, both of these categories have their advantages

and disadvantages. Although short-tail keywords lead more traffic to a webpage, one risk is to attract the non-potential audience. In the other hand, since long-tail words are more specific, these can bring in the targeted and relevant consumers to a webpage. Nevertheless, defining long-tail keywords is more time-consuming, as well as optimizing the content of a page in order to include these. Short-tail keywords are much easier to insert in the content of a page. Moreover, an organization needs to understand their customers in a deep level in order to better define long-tail keywords. In the end, there is higher competition online for short-tail keywords versus long-tail ones. (Teja 2015).

When it comes to keyword density the opinions differ vastly since nobody is really sure of how many times a set of keywords should be repeated in a page. Nevertheless, marketing professionals can calculate the ratio of the keyword density in a certain webpage. For example, if the content has 2000 words, and the keyword repeats itself 30 times, the ratio would be 1.5%. There are researchers who believe that the density ratio should be between five and seven, while others believe it should be lower, and others higher. Thus, there is no consensus when it comes to this topic. Nonetheless, keyword stuffing, which is the act of repeating the same keyword or keyword phrases in an exaggerated amount of times, is not beneficial for the webpage in a longer term. While it may help in the ranking position at the beginning, soon enough search engines' crawlers will detect this high amount of keyword repetition, and it will mark it as stuffing. In the end, the algorithms are programmed to detect these techniques, and search engines will drop the ranking position of such pages, or in worst cases even remove them from the SERP. The content of a page needs to be relevant and meaningful, therefore, it is advised to place the selected keywords where it makes sense and as many times as it is essential. (Ledford 2008, 67-71).

Besides brainstorming and listing the relevant keywords for a company's website, keyword research tools are an additional help which can be used to more efficiently build a list. Keyword research tools, such as Google Keyword Planner and others, allow its users to research sets of keywords and it gives a wider view of the scenario online. These tools showcase, for example, the volume of searches related to a specific keyword or phrase, other variations which web us-

ers type to search for the same topic, and how strong is the competition related to those same keywords. By using such keyword research tools, an organization can have a better understanding of what is happening online, which enables them to better plan and prepare their final keywords' selection, as well as their SEO strategy. Some of these tools are free, while others require a monthly payment. Obviously, some of these are more effective than others, and offer more relevant information, depending on what its users are looking for. (Kolowich 2016).

URL composition

URL (Uniform Resource Locator), is the "address" of a webpage. This should be optimized in order to become search engine-friendly. Having an optimized URL address can allow a company to increase its competitive edge against competitors, when it comes to ranking in an SERP. One factor which can help to increase the visibility of a page is having a short URL. (Lincoln & Dean 2016). According to Robin Burton (2016a), there is not much difference for search engines' ranking by having either longer or shorter URL. However, when looking from a web user's perspective, it is much more practical and comfortable to have a shorter URL address. This factor will increase the user-experience, and it allows people to memorize these easily. Furthermore, it can make life much easier when copy/pasting one URL, as well as sharing the links in social media. Having bigger addresses will make it more difficult to share them in Twitter or other channels. It is advised to not have more than 50 characters in a URL. Usually, the pages ranked in the first page in Google have approximately 37 characters. (Burton 2016a).

Relevant keywords should make part of an URL. After brainstorming about the important keywords that relate to the business or subject which an organization wants to optimize, these should form in some way the URL address to a certain webpage. These words should be descriptive enough, so that a person can have an idea of the content on a page before even clicking on it. Moreover, when wanting to have a phrase for the URL, these words should be separated by hyphens. For example, if wanting to include in the URL the words applications for

wastewater treatment, the URL could be, /products/applications-for-wastewater-treatment/. (Enge, Spencer, Stricchiola & Fishkin 2012, 211-214).

It is much more efficient, both for search engines and web users, to have readable URLs. As mentioned earlier, this will allow a person to know what type of content is behind a certain link. This characteristic captures more attention from web users, and can increase the click-through-rate (CTR) of a webpage. (Burton 2016a).

Another factor which can help increase the ranking of a webpage in a SERP, is matching the URL to the title of the page. The URL address does not have to have all the words existing in the title of a page, yet it should have to some extent. The reason is the fact that, when a user clicks on a link, he or she is expecting to get the content which they are looking after. When this does not correspond at all to the information that the person is seeking, it can lead to high bounce rate. Bounce rates refer to users which abandon a website very shortly after clicking on it. The intent of SEO, besides wanting to have high traffic directed to a webpage, is to retain the potential consumers and providing them an efficient user experience. (Burton 2016a).

Stop words, such as *or*, *and*, *the*, *a*, are not a problem when it comes to URL composition. If needed, these can be part of the URL address. The same happens if they are left out. This will not bring any harm. Still, marketers have to decide between having them or not, and especially in cases where these stop words just increase the length of an URL. (Burton 2016a).

In the end, over-optimizing an URL, and the content of a page as well, can lead to “penalties” by search engines. People searching on the internet will not like to see the same keywords repeated everywhere, and search engines have started to “discriminate” these webpages by not ranking them so high. Marketing professionals should focus in creating search engine-friendly structures, and combine it with effective and good quality content, in order to increase its positioning in an SERP. (Burton 2016a).

Website's structure

A website's structure refers to the small details, or technical issues, which are associated with how a page is organized. The structure of a webpage is very much connected with how search engines perceive the content of the page, and how easily it will index it. Ultimately, this will affect how the ranking is organized in an SERP. The structure of a website will not only increase its visibility online, but it can increase as well the user activity inside a page. After clicking through a webpage, if the content and structure perform effectively, the user will probably continue to navigate through the page. (De Valk 2016).

First, it is important to talk about "meta data". This refers to the description of the content in a webpage, within the coding of a website. The "spiders" released by search engines are used to collect information about websites, which will later on define how these are displayed in an SERP. Therefore, the "meta data" has to provide sufficient and relevant information, both to the search engines and web users, on the type of content that a page covers. Having effective "meta data" is one more factor which can affect positively the positioning online, as well as, improving the chances of attracting the targeted audience to a specific webpage. (Burton 2016b).

There is a section in the coding of a website, which is called meta page title tag. A meta page title can be seen as the "headline of a newspaper's story or a book's front cover". In approximately 15 words or less, the meta page title will illustrate what that specific webpage is all about. There are three characteristics which meta page titles should have. First, these should summarize efficiently what the webpage is about. Secondly, relevant keywords should be included, if possible, in order to increase the probabilities of ranking high in an SERP. Finally, it is recommended not to exceed the 70 characters in a meta page title. Still, the sequence of these title tags need to be logical. Although marketers are keen to include their keywords and probably repeat them, this will not perform well with users, and there is a risk of search engines rating these pages as spam, and not rank them in the results page. (Bailyn, E. & Bailyn, B. 2011, 27-30).

Table 1. Characteristics of meta page titles and their advantages. (Shachinger 2012).

Characteristics	Advantage gained
Title tags should not extend more than 50 to 60 characters (including all the spaces).	Short and simple titles.
The first words should be the most relevant ones, leaving the others for the end of the title.	Users can quickly identify the content of a page.
The brand name should be added.	Increase of brand awareness.
Each webpage should have its own meta page title.	Easier to distinguish between different webpages part of the same website.
"Keyword stuffing" is both condemned by search engines, as well as it will not perform effectively with web users.	Avoid web users' confusion, and prevent penalties from search engines' providers.

Table 1 presents certain recommendations to be followed, according to Shachinger (2012), when a company is building the meta page title tags to its webpages.

Another section which is relevant for SEO when coding a page is the meta description, which explains more about the content that a page has to offer.

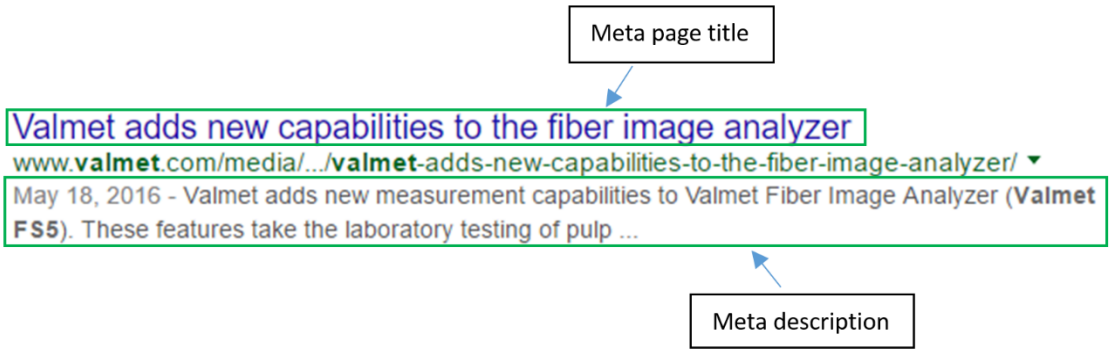

Figure 4. Screenshot from Google's search results page, to illustrate an example of a meta page title and a meta description.

A meta page description, as showcased in figure 4, allows a person searching online to have a better idea of what the website is about, and it can consequently improve the odds of attracting the targeted consumers. It is recommended that the relevant keywords would be mentioned in the first five words in the meta description of a webpage. This section displays the first 160 characters of a page. (Burton 2016b).

Moreover, a signal which can be picked up by a search engine's crawlers, is the alt tag image inserted in a picture. These tags can include keywords, and they will be displayed only in case the image does not load. Besides optimizing the images placed on a webpage, this can help web users to know what that picture is all about, if the webpage fails to load completely. (Heijmans 2016).

Another important part of a website's structure is its internal linking organization, which is when different links inside a webpage lead to other pages in that same website. These are mainly natural links which are inserted in the content of a page. For example, a company's webpage can offer content about solutions to a certain industry, where it showcases different products for it. Having links to these products' individual pages inserted in the text itself is a perfect example of internal linking. A person navigating through the website searching for the wanted or needed information, should feel comfortable and a certain easiness in this activity. Consequently, the user will spend more time on the website, and decrease the probabilities of having high bounce rates. (Ledford 2008, 206-207).

Furthermore, internal linking can help optimizing a website, in order for it to rank higher in an SERP. The reason behind this is the fact that linking between pages inside a domain, means that this linking is happening between pages with similar type of content. These signals are picked up by the search engine platforms, and it will increase the probability of a webpage to reach a better positioning online. (De Valk 2016).

2.2.2 Off-page optimization

Off-page optimization involves certain sets of action that differ from on-page optimization, which an organization can carry in order to improve its ranking in an SERP. These actions are done outside a company's own website, and refer more to promotional methods, in order to direct traffic to the main webpage. Search engine providers have the web users as their first priority, in a sense that these want to provide the best search results for them. When ranking websites, search engines look not only to the on-site factors, but to other characteristics as well. This way, they can better answer to the needs of the searcher, meaning that search engines try to guess what the person is looking for. It is important to know how a certain webpage is seen by the rest of the community online. An effective webpage has higher odds to be shared through social media platforms, as well as being linked by other domains. (Chris 2016).

The goals of off-page optimization are directly related to increase the positioning of a webpage in an SERP. Having a higher ranking, will mean that the page will get a higher traffic level. Consequently, a company will be able to increase its exposure to web users, which can lead to other positive outcomes, such as more brand awareness, sales leads, among others. (Chris 2016).

Link building

According to Ledford (2008), a website without links is like "a deserted island (…) in the middle of the ocean, but no one really knows it's there". It is essential to have links between webpages which relate to the content that these share. Having links in other domains will probably increase the traffic to a webpage, which is the ultimate goal of SEO. When a page has many links leading to it from other domains, this will automatically increase its "weight" in a search engine, and it will award the webpage with a higher ranking in the results page. (Ledford 2008, 194).

These techniques refer to external linking, as opposing to internal linking, which was approached before in earlier chapters. These links are placed outside the

main website which is being optimized. One way of inserting links elsewhere is to purely request other websites to do it. Obviously, before link building, an organization needs to study and research the market, in order to find which channels and pages are the most appropriate to use. Another way is to write articles and offer them to third parties in hopes that these are interested in promoting them. In the article, information and links about the original poster should be included. This way, traffic can be directed to where it needs to be. Bloggers very often are requested to share content from other organizations, since these tend to have influence when they are followed by many people. Press releases are another form of doing link building, since they can be spread to many relevant channels across the web. All these techniques explained refer to inbound linking, which is basically links that lead into the website. (Ledford 2008, 198-199).

In the same way, an organization can as well place links to other domains in its own website, in order to make its page richer, so that search engine platforms pick up the signals and rank them higher in an SERP. These actions refer to outbound linking. There should be a balanced way of link building, with both inbound and outbound links. Hence, this will please both web users and search engine platforms. When these links are being placed, they should perform effectively, and attract people to click on them. Therefore, these should be relevant to the topic, and attractive in their format. This means that, click here, may not be as attractive as having a meaningful sentence or set of keywords. Having a better link can increase the probabilities of click-through, as well as helping crawlers of the search engines to pick up the signals. (Ledford 2008, 200-201).

In the end, a website should not drown in links. There has to be a good balance mix between all the elements in a page. Quality will always win over quantity, at least in this case. (Ledford 2008, 201).

Social media

When it comes to off-page optimization, social media activities complement SEO efforts. The content which is created and shared throughout certain social media channels will enhance the visibility of a brand, while increasing its chance to rank

high in an SERP. When ranking webpages, Google takes into account the relevance and authority of a specific page. Since Google has its customers or users as a priority in their minds, these will position a page higher if this one is relevant enough to the query entered by the web user. The content is rated depending on how well it answers to the needs and wants of the person searching for information online. This aspect corresponds to the relevance of a webpage. The authority factor is based on the reputation and trustworthiness of a page. If many web users click on the links which a company shares, for example, in social media, to get to a webpage, this creates inbound linking activity, and consequently increases the authority of a page in Google's eyes. (Demers 2016).

A piece of content which has been shared numerous times, can subsequently attract more traffic, increase a page's visibility, and tends to have more inbound links. All these factors are advantages which complement SEO's actions. Ultimately, this may aid in ranking higher in an SERP. Thus, newly created content should be shared across social media platform, while encouraging other people to share it as well. (Demers 2016).

In order to engage in social media activities, the first step is to optimize a webpage, and insert social media sharing buttons on that page. This will allow web users to share the content if they want to, and search crawlers to pick up the social signals. Furthermore, an organization needs to know well their audience and their behavioral patterns. When familiar with their target market's habits, a company can easily select which social media channels are more effective to distribute their content and message. Besides paying attention to the quality of the content shared, this one should be engaging, and incentive web users to talk about it, give their opinions, and share this. In other words, generating a dialogue with the audience will create a bigger level of intimacy with them, which reinforces the relationship between an organization and its customers. Ultimately, the activities in social media channels should be continuous, in a sense that a company needs to thrive to be active. When not continuously active online, there is a danger of the audience losing interest and forget about the brand and the content it shares. (Caruso, O'Brien, Corrigan, Griffin, Cristo, & Proctor 2013, 9-16).

Even though keywords, and meta titles and descriptions are still important practices which should not be forgotten, SEO is now more “human-friendly”, having Google being more eager to provide the most relevant and meaningful content to its audience. Therefore, an effective content marketing strategy, which is widely shared throughout social media channels, increases significantly the chances of a page ranking higher in an SERP. (Cisnero 2014).

Blogging

Another practice which can be used to complement SEO efforts is blogging. As seen earlier, content is the “way to go” in order to build up a brand’s reputation, increase traffic, and create meaningful relationships with the audience. Having a blog allows companies to continuously share their messages with their audience. When setting up a blog, organizations need to reassure that fresh content is continuously uploaded. Search engines tend to pick up more the websites which are regularly updated, opposing the ones which have not shared any content for long periods of time. Moreover, continuous relevant content keeps a web user engaged and may increase the chances of him or her returning to obtain more information. In order to be sure that the content is always fresh, firms should create an editorial calendar, where all the content is organized, including the channels on where to share it, the dates of when it will be uploaded, and how to measure its performance. Backlinking is another form of signaling Google on the relevancy of the shared material online. This means that a blog platform shares a link of another one, and in return this other blogger will share the link back. When an entity links back to a domain from its own, it means that it trusts and finds the content relevant enough. In the end, this practice helps building up authority and reputation, both for the audience as well as for Google. (Yu 2015).

As it is important in on-page optimization, keywords are also very relevant when creating content for a blog. The same targeted keywords which are used in a company’s website should be utilized as well when blogging. Thus, titles and headings, as well as the actual body of the blog post should contain some of the relevant keywords which marketers want to be picked up by Google’s algorithms. Furthermore, the blog should give the possibility to be subscribed to, and its

posts to be shared across social media channels. Ultimately, all these actions "walk along" SEO's activities, complementing each other when trying to achieve a higher ranking position in an SERP, while delivering valuable content to customers. (Mango 2015).

2.2.3 Content is king

Traditional marketing sure is very different from today's marketing. Most companies used paid-media as a form of marketing in order to push their message to consumers. Nowadays, with the suffocation of brands in the market, consumers demand innovative ways of communication so that they would pay attention to the message. Content marketing as a name is relatively recent, however people have been creating content since many years ago. The basic definition of content marketing is the generation of valuable and meaningful content, which captivates the audience's attention. This content tends to be very much targeted to the segments which an organization is serving, and it serves the purpose to give additional information, or to entertain, or to engage the audience, or all the above. The effective practice of content marketing can build up trust between a brand and its consumers, as well as increase the perception of its reputation, and ultimately generate sales leads. (Rahim & Clemens 2012, 896-897).

Throughout the times, marketing professionals realized that pulling in their consumers is more effective than pushing their message to the market. This form to market a firm's products or services is called inbound marketing, where the goal is to attract the audience to seek information instead of companies "chasing" its customers with advertisements. Nevertheless, traditional marketing is still valid in today's society. However, inbound marketing is more efficient when it comes to earn the trust of consumers. Content marketing, which can also be named as "storytelling marketing" is a way of doing inbound marketing. When a piece of content is shared, this is greatly targeted, where it seeks to gain the segments' awareness. (Bezhovski 2015).

A study conducted uncovered the organizational goals which a company has when engaging in content marketing activities. Its goal was to reveal the importance of content creation, the reasons for doing it, and how to measure its efficiency. The research concluded that the main objectives were to generate more leads, to engage with the audience, and to increase brand awareness. Customer retention, traffic to the website, and obtain customer feedback were other goals intended to achieve with content marketing. This study also revealed how these professionals choose to measure the performance of their content marketing efforts. Website traffic, such as page views and number of downloads, and sales leads generation were among the fundamental metrics used by these participants. The number of times a piece of content is shared, and the ranking in an SERP, are other criteria looked when measuring the success of online marketing actions. (Rahim & Clemens 2012, 899-902).

If marketers do not know and understand their targeted audience, content will fail to succeed. As with all in the marketing sphere, consumers are the center, and organizations have to thrive to understand their behavior, preferences, and tastes. In the end, the content which is created will not attract the whole market, and neither needs it to. The content generated has to be able to attract and engage the “right people”, being these the exact segments that a company is looking after. Furthermore, companies need to focus some of their strategies into creating forms of content marketing which helps their consumers make a decision. Having this, the content uploaded online can aid in the buyer’s decision-making activity, making it easier to choose from whom to purchase. Ultimately, the content needs to be shared. By allowing the sharing activity, firms are able to reach a wider audience without any additional costs. This action will also showcase which content performs better, since the most appreciated pieces will have a higher number of shares. (Rahim & Clemens 2012, 902-903).

2.3 Search engine advertising (SEA)

SEA, or as commonly known as pay-per-click (PPC), happens when a company bids on certain keywords which wants to associate to its online advertisement.

Search engines will then place these advertisements on their search results page upon a person types these same keywords. The organization which places these advertisements only pays when someone clicks on the ads, thus being called PPC. The keywords selection is the same as when doing SEO. In the end, these keywords need to match the searches done, thus, a company needs to be very familiar with its target audience and their behavior online. The goal is to lead web users into clicking on the ads. (Umbro 2014).

When compared to SEO, PPC campaigns has certain benefits over pure page optimization. Doing SEA does not imply that the webpage has to change its design, or play with all the elements to optimize it. The only action which markers have to do is to bid on the targeted keywords. Furthermore, PPC is an easy step to take, as well as it is quick. While relying only on SEO can take a while to increase the ranking of a page organically, SEA automatically ranks the webpages high, since these are advertisements. It is possible to conclude that PPC campaigns may generate traffic much faster against search engine optimization activities. (Ledford 2008, 73).

When thinking about engaging in an SEA campaign, marketing professionals should determine the budget which will be used for this. A PPC program can be either expensive or cheap, depending on specific factors, which are external to the company. The level of competition in the market will affect the costs when bidding on the keywords. If there are many competitors inside a category, it is normal to think that all these are interested to make a bid on the same targeted keywords. Having these many players will increase the prices of these words. The price level will depend as well on the aggressiveness of the competition. Even though there can be only a few competitors bidding on the same keywords, these can be very aggressive when competing with other companies. (Ledford 2008, 74).

Still, the fact of placing high when making a bid on certain keywords, does not entirely mean to a company that this will generate high levels of traffic to their websites. The advantage of SEA is that it can be easily modified, and firms can experiment until realizing what the best format is for them. The results can be tracked concerning the efficiency of these campaigns, and marketers can check

which keywords in a certain search engine lead to more traffic. (Ledford 2008, 74).

As mentioned before, PPC campaigns derive more traffic faster than SEO actions, and are usually related to the promotional efforts of certain products or services. Although these generate fast results, SEA efforts need to be continuously updated, and it involves the allocation of more money for it by the organizations. (Norman 2013).

Yet, when thinking about the efficiency between SEO and SEA, it is evident that SEO has long lasting benefits, while SEA can be just a short-term action in order to generate high traffic fast. When implementing an SEO strategy, the content of a webpage needs to be optimized. SEA activities do not necessarily include changes on a page's content itself. However, it is more effective to retain visitors and persuade them into navigating through a website if the content is relevant and optimized. Although a web user clicks on an ad to enter a page, he or she can bounce quickly if the content does not answer to its needs. In this case, having solely a PPC campaign is not effective, since it does not retain the audience targeted. (Norman 2013).

At the same time, PPC programs can be very efficient due to the fact that these can be controlled and changed so easily. Marketers can always in a way control where visitors land when clicking on an ad. This landing page can be always modified, depending on a company's objectives. SEO actions are more difficult to control, not knowing if a webpage will be available "at the right time in the right place" when the targeted consumers are making their searches online. (Hovers 2014).

PPC programs are however still controversial, in a sense that it generates debate surrounding the efficiency of this advertisement format. It is suggested that web users most of the times ignore these ads and prefer to click on pages which derive from organic results instead. People searching online have "banner blindness", and care less for advertisements placed online. Still, if a person is searching for a specific product or service, these ads can be effective in attracting traffic. In the end, websites which have a high positioning in an SERP attract more

attention time than results ranked lower. This means that advertisements can still be effective and generate opportunities to organizations to lead traffic into their webpages. (Phillips, Yang & Djamasbi 2013).

Ultimately, it is recommended to have an SEA campaign mixed with an SEO strategy. Both of these complement each other, in the sense that having an ad placed high as well as a good positioning in the organic search, it can validate the trust which a consumer may have in a brand. Besides, the combination of both of these techniques increases a webpage's visibility immensely. (1&1 2016). Furthermore, Google AdWords, a service provider of advertisement online which will be further explained below, allows its users to visualize the reports concerning the performance of both SEA and SEO efforts side by side. This provides marketers with a unique advantage in order to better perfect the mix of both of these strategies online. (Saelen 2015).

Google AdWords

Google AdWords is one between many other platforms which provides SEA services. After bidding on a keyword or a set of keywords, these ads will be place in Google when someone types these same words. The advertisements are positioned at the top of the SERP. A company which wants to engage in a SEA campaign by using Google AdWords, just needs to create an account, choose the targeted keywords, develop an advertisement text, and place a bid per click. The way google makes money is by charging a fee each time a web user clicks an ad. (Duermyer 2016).

Another factor which is important both for Google and for the advertisers as well, is to calculate the click-through-rate (CTR). This is done by dividing the number of clicks by the number of impressions. Impressions in Google refer to the amount of times that the ad has been shown to web users upon searching those previously acquired keywords. The CTR will allow marketers to know how effectively a PPC campaign is working. (Patel, 2015). A higher CTR indicates that many people have been visiting that website by clicking on the advertisement. Moreover, an ad with a good CTR level, signals Google that it is a relevant ad-

vertisement. Besides the fact of wanting to generate revenue, Google wishes to provide the best user experience to its visitors. This includes showcasing the most meaningful content, either through organic results or advertisements. (Kim 2014).

In its most generic form, Google will place the ad of the highest bidder. However, there is another consideration that these take called the quality score, which refers to the rating Google offers a certain website. This depends on the relevance of the content in the webpages, the overall user experience, and the quality of the advertisement to be placed. In the end, if Google attributes a good quality score to a website, this can end up paying less than the actual amount stipulated previously when someone clicks on the ad. This means that, if an organization has set a cost-per-click of 1€, a higher quality score can reduce this price. (Patel 2015).

Another essential part of having a Google AdWords campaign is to track its efficiency. Marketers can follow the conversion rates and CTR in order to know if the ad has been having any return on investment (ROI). The campaign can be paused or shutdown at any moment, as well as limits can be set, on how many times the ad should be shown, or the maximum of amount of money to be spent in one day. (Patel 2015).

According to Patel (2015), these are the steps that should be taken, in order to create a Google AdWords campaign;

1. Creating an account on Google and Google AdWords.

2. Setting up a budget – Marketers should calculate how much they are willing to spend on the SEA campaign and how much do they expect to have a return on their investment, meaning how many people convert into customers.

3. Keyword selection – This action is very much the same as when developing an SEO strategy.

4. Evaluating the competition – In this stage, the company will be able to see how many other advertisers have purchased the same keyword, and the CTR which there is to a certain keyword or set of keywords. It is possible as well to look through the other advertiser's history and see their own ads.

5. Choosing the landing page – This page will be the one which web users will see when clicking on the ad. The landing page needs to be relevant and optimized in order to retain targeted consumers.

6. Setting up the reach of the AdWords campaign – In this step marketing professionals can select which regions they want to target. This can be one or more countries.

7. Writing the actual advertisement – This step includes writing the title of the ad, the displayed URL, the main text, and a call to action. These should be short, relevant, and include the targeted keywords.

8. Setting up conversion actions – The commonly used conversion rate depends on how many visitors end up buying the product or service offered in a webpage, however this will depend on the nature of each website.

9. The last step is to activate the ad campaign and monitor its performance.

2.4 Web analytics

Measuring one's action is the only way forward. By measuring past activities it is possible to understand how a strategy needs to improve, and what type of future actions should be undertaken. Furthermore, people's behavior online is constantly changing at the same pace as changes in the external environment happen. Knowing how web users behave when navigating the internet reflects into valuable knowledge for marketing professionals. Web analytics provide both of these. With web analytics it is possible to measure the strategies implemented online, while learning at the same time what is the audience doing. (UX Booth 2016).

For marketers there can be two ways for collecting intelligence; qualitative and quantitative. Qualitative information refers to the observation of other's actions. This means that a company can observe in real life, or it can set up a scenario and test its products or services in order to understand its consumers' behavior and the factors affecting it. When using web analytics it means that the organization is handling quantitative data. This knowledge data is in the format of numbers, and it reflects how a webpage is being used by the web users. There are many ways of measuring with analytics, yet these can be summed up into four categories; descriptive analytics, diagnostic analytics, prescriptive analytics, and predictive analytics. Basically, it can be said that data is being used to describe, to diagnose, to prescribe, and to predict. (UX Booth 2016).

Descriptive analytics points out for example the number of page visits, or the number of web users which subscribed to a newsletter. Diagnostic analytics refers to the reasons behind the behavior of consumers online. It can aid a company to understand for example, why there are not enough purchasing activities happening in their webpages. CTRs are a good indicator which can be used. Prescriptive analytics intends to prescribe the next steps. When marketers analyze the design of the page and what to do next, these can use web analytics to determine future actions. Ultimately, we analytics can be predictive. Predictive analytics informs on the likely outcomes of certain actions. For example, it can show the effectiveness of a specific design change against the previous one. (UX Booth 2016).

Web analytics can be used to measure activities both on-site and off-site. Verifying the number of visitors to a webpage, or which exit pages have the highest number, it refers to on-site measurement. Measuring through analytics off-page allows marketers, for example, to determine how their advertisements are performing. (Cooper 2012, 6-7).

This analytical information proved to be such a useful tool that it expanded until reaching as well to social media channels. Another way of gathering valuable knowledge about web users' behavior online is by measuring their actions on social media platforms. (Cooper 2012, 6-7).

Web analytics perform at their best when marketing professionals know how to use them and interpret them. This data can be seen as a window to every individual channel belonging to an organization and the actions pursued in them. These can be a company's blog, its email marketing, SEO activities, and social media. The relevant information comes across when marketers are able to link all the outcomes across these multiple channels and activities. (Hudson 2016).

Before starting to analyze the data, it is key to know what a company should be looking for. Therefore, the first step for marketers should be to set a goal of what they want the users to do on their website. These can be to purchase an item, to fill up a contact form, or to watch a video. Later on, the content of the webpage needs to be optimized to allow a better user experience. Having this, marketing professionals can measure their actions either daily, or weekly, or even monthly. (Farooq 2016).

By using web analytics, an organization can firstly determine what web users are looking for online. This allows a better insight when determining for example what keywords should be applied. Besides, it is possible to measure what type of content is more visited, and which content has been performing poorly. Furthermore, web analytics gives an insight to the cause of users abandoning a webpage. Having this type of information allows marketing professionals to determine future activities in order to avoid these situations. (Farooq 2016).

Another interesting information which can be seen through web analytics is related to location-based data. Having this data will help organizations understand the behavioral differences across different regions in the world. Web analytics will also provide information about what type of devices are being used to access the content online. The optimization strategy should cover these most used devices to navigate a webpage. Finally, marketers can as well measure through analytics the efficiency of their advertisement campaigns which they place online. (Farooq 2016).

Google Analytics

As mentioned earlier in the web analytics' chapter, it is important to measure whether the content offered on a webpage is performing effectively or not. Google Analytics (GA) is a free service provided by Google which gives an overview on how visitors are behaving when navigating on a specific page. These insights are in the form of analytics, where marketers have to interpret and apply modifications accordingly. GA will showcase which content is better performing among web users, which webpages drive more traffic, and what should be done so that organizations can reach their end business goals. (Koks 2016).

When looking even deeper into GA, some details can be seen such as; number of visitors to a website or a webpage; demographics' information, such as web users' location; which other websites direct more traffic; devices that are used to access a website or a webpage (computer, mobile phone, among others); the number of visitors which converted into leads or customers; content which web users appreciate the most; most visited pages against least visited ones. (Hines 2015).

After creating an account and installing the tracking code in order to link it to a specific website, marketing professionals can use GA to oversee data about its website traffic. Initially, the reports are standard, however, the user of this service can create its own personalized analytics' report. (Hines 2015).

The basic parameters which can be seen when better inspecting a GA report are the following; pageviews, unique pageviews, average time spent on page, entrances, bounce rate, % exit, and page value. (Manzanares 2015). These and other metrics are explained better in appendix 1.

Google Tag Manager

Google Analytics is an effective tool to measure online marketing activities, yet it still misses a few points. In the earlier days, companies relied on webmasters to implement codes onto their websites so that these could better track the online behavior which their users had. This involved code masters applying tags onto

webpages, so that the tracking process would be enhanced. Google Tag Manager (GTM) was launched in order to help marketing professionals increase the efficiency of their measurement efforts, without having to rely so much on webmasters. (Waisberg 2016).

GTM is not in any form a substitute for GA. It is quite the opposite. These two tools work together and complement each other. GTM allows marketers to see every single click that has happened in one or all of their webpages. The data which derives from this is imported to GA, and it provides marketing professionals with a much wider and detailed analytics report. The most important points in GTM are tags and triggers. Tags send a signal on what GTM's user wants it to do. Tracking PDF clicks are an example of this. The triggers indicate the timing, or when do these tags have to fire. The way of having both Google Analytics and GTM connected, is when creating a new tag, the person using GTM will enter its GA's property ID when configuring this tag. These tracking actions had to be developed by the IT department of a company, where the process was quite slow. With GTM, marketers who do not have knowledge in coding can apply the same tags and in a fast manner. (Mercer 2016).

Ultimately, what markets are doing is event tracking. Some of the basic events which can be tracked with GTM are clicks to specific pages, link clicks, such as downloading a PDF document, form submissions, clicking on a video, or registering into a website, among other events. (Kay 2016).

After setting up a tag and a trigger, these changes have to be reviewed in order to see if everything is working correctly. The preview option on GTM, allows the person to test the tags and make sure if these are being triggered correctly. After verifying that all tags and triggers are performing correctly, the person using this tool can publish the changes in order to start tracking the events happening in his or her website. (Mercer 2016).

3 VALMET IN THE WASTEWATER INDUSTRY

One of Valmet's business goals for the upcoming future is to increase the sales activities related to its wastewater applications. The main regions targeted by Valmet are, North America, more specifically USA, Japan, Germany, and China. This thesis work will focus its attention in the North American region. The reasons for these are, the fact that besides English, the author does not speak German, Japanese, or Chinese, which are crucial skills in order to optimize a website. Furthermore, these regions tend to use their own specific channels online, which are all in these languages. Particularly China, has its own platform, which is mainly accessed by Chinese, and it can be complex for outsiders to use. Moreover, using different platforms involves learning the associated techniques to these, in order to implement an online optimization strategy.

Based on Valmet's business goals, the practical target of this thesis work is to develop a strategic plan of search engine marketing (SEM), which can be implemented in the company. Search engine optimization (SEO) is the main focus area, however, Valmet was willing as well to implement a search engine advertising (SEA) campaign. The objectives of this SEM strategic plan were to increase the visibility of Valmet's wastewater applications' webpages in the search engine results page (SERP). The search engine targeted in this work was Google.

By increasing the ranking position of Valmet's wastewater application's webpages online, consequently it is expected an increase in the sales lead. These sales leads can happen in two ways; either the target customer acquires information about the products and ultimately contacts a certain sales manager, or this same customer can leave its contact and explain its needs expecting a sales person to contact them later on. The way a web user can inquire about these products online is through the "virtual agent", which is a pop-up window that appears upon navigating on the webpage, and the customer can directly chat with this agent. This information is later on directed to the relevant contact personnel. It is important to understand that Valmet's website is not e-commerce. It is not possible

to purchase products online. Thus, these sales leads are just inquires which can be forwarded.

Another goal of the practical part of this thesis is to create a generic content plan template, which can be applied alongside the SEO plan. This content plan works more as a guideline for Valmet, and it can be found under future recommendations' chapter. Content and SEO walk hand in hand. This content is to be placed across the wastewater applications' webpages, as well as throughout the relevant social media channels and other platforms. In the end, all these actions are measured by using web analytics. The impact of these activities can be seen in the analytical reports, as well as in the sales leads generated through the "virtual agent".

3.1 North American market

This section introduces Valmet's position as a brand in the North American market when it comes to wastewater industry. The knowledge reflected here is based on the author's and Valmet's managers' experience and perception.

When it comes to the wastewater industry, Valmet is not such a big name in the North American (NA) market. Nevertheless, it is still well-known among a few of the professionals in this business area. Usually, the larger wastewater treatment plants are more familiar with Valmet's applications. The reason for this is the fact that these have more money invested in procurement and for sourcing new solutions.

It is very common for Valmet to attend different kinds of exhibitions and fairs globally. NA's biggest plants have enough resources to send a procurement team to these events, and consequently they get familiar with Valmet's wastewater applications presented on these occasions. Therefore, the largest wastewater treatment plants are aware of Valmet's brand, and know what type of offering these have for the industry.

Nevertheless, there is a large potential among medium sized wastewater plants which are not so familiar with Valmet's applications and solutions for their process. These plants do not usually allocate so much money for procurement, thus it is important that Valmet reaches this audience through different channels.

The smaller sized plants are not exactly Valmet's target audience, for the fact that probably these cannot afford the solutions offered. Therefore, the large and medium sized treatment plants are the main customer segment when it comes to offering Valmet's wastewater applications. Having a strong online presence is certainly a must when helping Valmet reaching its business goals. Besides having a good ranking in a SERP, offering effective and relevant content can greatly increase the probability of persuasion of the targeted audience.

3.2 Before optimization

Before initiating the activities related to SEM concerning Valmet's wastewater applications' webpages, the author of the thesis had to set a benchmark. This benchmarking concerned the ranking position of Valmet's pages before the optimization process when typing a specific set of keywords in Google.

Google learns our behavior and preferences when navigating online, hence upon typing a certain word in the query page, Google will not only use its algorithms for the ranking process, but will use as well data from this learned behavior of a specific web user. Since the author of the thesis has been accessing Valmet's webpages on a daily basis, Google has learned the author's preferences and behavioral patterns. Benchmarking under these circumstances is greatly biased and would not give an accurate picture of the real situation.

Nevertheless, there is a way of verifying the ranking situation impartially. The webpage I Search From (isearchfrom.com) was used, which is a platform that allows simulating Google searches, with the possibility of choosing the location from where this search would be done from, and the language used. There is also the possibility of selecting the device from where the search can be done, such as for example a tablet, a mobile phone, or a computer. The idea is to elim-

inate the possibilities of Google ranking the pages based on the author's preferences and learned behavior. In addition, an incognito window was used to further assure the complete neutrality of the results.

The country used as a benchmark was USA, and the language English. The device section was not at that moment relevant for the benchmarking process. The author has reviewed the ranking position as far as the tenth SERP, which presents the first 100 ranked pages. It is very unlikely for a web user to go past the third SERP, thus it was not relevant for the benchmarking process to go further than the tenth query page in case that specific Valmet's webpage was not found.

This list of keywords used in the benchmarking activity was generated by the author of the thesis, alongside Valmet's key managers which work for the wastewater industry. The brainstorming activity and generation of this final keywords' list is explained with more detail under chapter 4.

Table 2. Valmet's keywords' ranking checked on the 2nd November 2016.

Page	Rank
Main wastewater page	
Wastewater treatment automation	43
Sludge dewatering optimization	Not in first 10 SERP
Wastewater treatment optimization	Not in first 10 SERP
Wastewater solids sensors	Not in first 10 SERP
Sludge transportation costs	Not in first 10 SERP
Polymer costs in wastewater treatment	Not in first 10 SERP
Sewage water treatment	Not in first 10 SERP
Valmet DS	
Dry cake solids	1
Cake solids sensor	1
Cake biosolids	Not in the first 10 SERP
Sludge dewatering	Not in the first 10 SERP
Polymer savings	Not in the first 10 SERP
Dewatered sludge	Not in the first 10 SERP
Cake solids meter	1
Valmet TS	
Wastewater total solids	Not in the first 10 SERP
Sludge solids measurement	3
Total solids measurement	8
Microwave solids meter	5
Total solids meter	1
Total solids sensor	2
Valmet LS	
Wastewater low solid	1
Reject water solids	3
Centrate suspended solids	Not in first 10 SERP
Polymer optimization	Not in first 10 SERP
Centrate water solids	Not in first 10 SERP
Low solids measurement	1
Low solids sensor	1
Low solids meter	1
Valmet SDO	
Sludge dewatering optimization	Not in first 10 SERP
Sludge dewatering control	30

Table 2 presents the ranking position related to these specific sets of keywords in relation to each of the pages needed to be optimized. As it is possible to verify, some of the keywords do produce high ranking for some of Valmet's wastewater pages. However, there are still important sets of keywords which do not generate a favorable ranking position.

3.3 Review of the competitors' online positioning

The main competitors for Valmet when it comes to the wastewater business are Hach, Cerlic, Toshiba, and Process Instruments (Pi). The same keywords' list was tested, as when verifying Valmet's webpages' ranking, in order to confirm the competitors' ranking on a Google's results' page. The process was executed in the same manner as previously, using I Search From through an incognito window. The author verified until the fourth page of the SERP, which displays the first 40 webpages, considering that web users do not usually go further than the third page.

A table found in appendix 2 illustrates the ranking position of these competitors. Eight of these keywords did not return any match for the competition, while with the rest of them Hach has been present most of the times. Cerlic and Process Instruments (Pi) are next in the ranking. Both of these competitors obtain a relatively favorable position in some of the keywords tested. Toshiba is the least ranked, which can lead to the conclusion that probably not much effort is put by them when it comes to optimizing their pages for the wastewater industry. The search also reveals that both Hach and Pi are active in doing online advertising, in the sense that these competitors have placed ads through Google AdWords.

Furthermore, an overall review was done to the competitors' product pages, where their offering is competing against Valmet's wastewater applications. This offers a view on how the pages are organized, what type of content and material is available, and which keywords relevant to Valmet as well are used throughout the products' webpages. This review is showcased in appendix 3.

4 SEM IN ACTION

This chapter will display the practical matters of the thesis work. The author has developed an SEM to be put into action. The plan covers both an SEO strategy and an SEA campaign. Before the planning phase started, a keyword brainstorming session was organized, where each person of interest was given a form (please see appendix 4) to fill with the most relevant keywords. The number of people involved in the brainstorming action was four, and they are deeply involved in the wastewater industry, by being the product managers, business manages, and sales managers of Valmet's wastewater applications. The last step of this practice was setting key performance indicators (KPIs) which can measure the performance of the action plan. Web analytics are used in order to measure and monitor the overall strategy implementation. SEO is the main focus both for Valmet and for this thesis work, being SEA an additional activity which can help enhance the performance of SEO's efforts. The pages which will undergo the optimization process are the following;

- Valmet's main wastewater applications' page (Wastewater measurement and automation)
- Valmet Dry Solids Measurement (Valmet DS) - Product page
- Valmet Total Solids Measurement (Valmet TS) – Product page
- Valmet Low Solids Measurement (Valmet LS) – Product page
- Valmet Sludge Dewatering Optimizer (Valmet SDO) – Product page

Valmet TS is given special attention when executing the SEM plan, due to the fact that this is the best seller among the rest of wastewater's applications, and it generates most of the profits for Valmet inside this industry. A content plan's guideline was drafted, which can be used by Valmet in the near future in order to further develop its webpages' optimization activities, and consequently increase its efficiency.

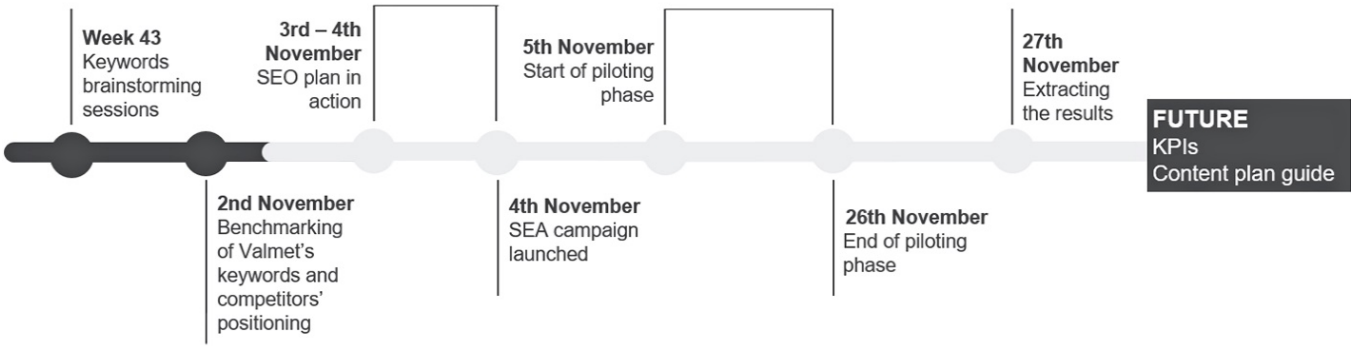

Figure 5. Timeline of the development task.

Figure 5 illustrates the timeline which was followed when progressing with the development task of this thesis work.

4.1 A strategic plan

Following this chapter, the author presents how the final list of keywords to be used was built, where brainstorming sessions were carried, alongside the study of the virtual agent's logs, and ultimately using Moz's Keyword Explorer. Further on, both the SEO plan and the SEA campaign are explained in detail, where the action plan is presented step-by-step. The piloting phase section showcases how and when all these activities have taken place.

4.1.1 Valmet's keywords

The keywords defined for an SEM plan should be associated with the industry or offering of an organization, and need to correspond to what it is expected a web user to type when searching online. In this case, wastewater treatment is the industry, and the main topic is more specifically the automation solutions for a better process control in these plants.

Four key persons were involved in uncovering the relevant keywords for the optimization of Valmet's wastewater applications' webpages. A form developed by

the author of this thesis was delivered to each of these key persons, where they had to fill the relevant keywords, according to them, associated to each one of these applications' pages.

In the keywords brainstorming form which was distributed to these previously mentioned participants, besides explaining what was needed to be done, there was an appeal to be customer-driven when fulfilling this action. The following hints were displayed in the form, so that the people brainstorming about these keywords would have Valmet's customer as a priority in their minds. The purpose of these questions was to serve as guidelines, and were not required to be answered to.

- What is our customer searching for?
- What are some of the most asked questions about our business?
- What type of language and slang, if any, would customers include?
- How would these customers search for a solution online (what would they type in a query page)?

Studying the virtual agent's logs was another method which was used to uncover the keywords to be applied in the optimization process. The initial idea was to go through all the logs related to the wastewater applications' enquires, and uncover what type of words Valmet's potential customers were using to ask about these same products. This method proved to be not so efficient, since the author realized that these web users were asking directly about an application by using its name, as they have been navigating through the pages before. Thus, no relevant keywords were typed in by these potential consumers. In the end, the information from the virtual agents' logs was not meaningful enough for this purpose, therefore, it was not used for the keywords' research process at hand.

The list of keywords provided by Valmet's key persons was rather long, being many of those very similar to each other. After compiling all the individual lists together and eliminating the duplicates, the list increased even more in its num-

ber. A shorter list was in demanded at this point, since the first optimization actions would surround the meta titles and meta descriptions of each webpage. The author later on required these participants to select five to ten of the most relevant keywords from the compiled list. Again, this smaller list was compiled and a final list of keywords was created. In the end, this was shared back to the managers involved in this process, where for the final round they would examine the list and either approve it or suggest other changes.

After having built a list of the relevant words to be used, a keyword research tool was used in order to see if any extra valuable information could be uncovered. Currently, SEMrush is one of the best keyword research tools available, however it is a paid software. Valmet is at the moment considering the acquisition of a license for this tool, nevertheless, the author was not able to use SEMrush when developing this project work. Another effective tool, although not as much as the previous, is Moz's Keyword Explorer. Moz is a company which offers services in inbound marketing, search engine optimization, and web analytics. This keyword explorer tool is not for free, however there is a possibility of having a 30 days free of charge trial.

By using this tool, a person can create individual lists containing as many keywords as he or she wishes. The Moz's Keyword Explorer tool will run an analysis through all those keywords and provide certain information about these. With this tool it is possible to see the ranking of the keyword in relation to a webpage. In other words, it presents the ranking of a specific page when one certain keyword or keywords are typed in a query page. Other parameters available in Moz's Keyword Explorer is the search volume, or how many times has that keyword been searched for in Google over one month period, as well as a difficulty rate, which is related to how difficult it is to rank higher than the competition for that specific keyword. Opportunity and potential are two other sections evaluated by the tool, where in opportunity it is showcased the odds of appealing a user's attention to click on the link, while the potential parameter combines all the previous scores and presents what's the potential of reaching a "sweet spot" in the ranking, balancing the opportunity and difficulty scores.

The final set of keywords was run through Moz's Keyword Explorer, however no real valuable information was attained. The tool did not have sufficient data related to the search volume of some of these keywords, and the ratings of the difficulty, opportunity, and potential parameters did not present any drastic differences between each one of them.

Table 3. Valmet's keywords for optimization activities.

Main wastewater page	
• Wastewater treatment automation • Sludge dewatering optimization • Wastewater treatment optimization • Wastewater solids sensor • Sludge transportation costs • Polymer costs in wastewater treatment • Sewage water treatment	
Valmet DS	**Valmet TS**
• Dry cake solids • Cake solids sensor • Cake biosolids • Sludge dewatering • Polymer savings • Dewatered sludge • Cake solids meter	• Wastewater total solids • Sludge solids measurement • Total solids measurement • Microwave solids meter • Total solids meter • Total solids sensor
Valmet LS	**Valmet SDO**
• Wastewater low solid • Reject water solids • Centrate suspended solids • Polymer optimization • Centrate water solids • Low solids measurement • Low solids sensor • Low solids meter	• Sludge dewatering optimization • Sludge dewatering control

Ultimately, the list of keywords used for both SEO and SEA activities was the result of the brainstorming sessions, being this separated by categories, and presented in table 3.

4.1.2 The SEO plan

The SEO plan developed for this thesis work complies with Valmet's business goals, as well as with what is needed in order to reach a better positioning in an SERP. The visual outlook of the plan consists of a table in excel format, where all the steps needed to be done are well structured and organized. Consequently, the implantation of the plan can be easily tracked. This SEO strategic plan was adapted from a ready-made template, which was later on personalized to the needs of the project at hands.

HubSpot, an American company which offers software products for inbound marketing activities, has available for sharing an SEO ready-made template which can be used by anyone. The plan is largely about on-page optimization, besides the social media sharing part. When adapting the template, the author has include as well the off-page optimization elements to the plan. At the end of the ready-made template there are included the calls to action to be set, and the conversion rate before and after the optimization process. That part has been excluded from the plan since those KPIs will be approached separately in the chapter 5.

On-page optimization

After adapting the plan to the author's needs, this can be seen in two parts. The first section represents the situation of the webpages before engaging in SEO activities. When looking at the plan, which can be found in appendix 5, the first parts are referred to as "current", although now that is the past. The second part represents the actions taken in order to optimize these pages.

The table starts by displaying all the elements before the optimization efforts. These are the main URL, the second URL, the meta page title, and meta page description. The first URL, which is a longer one, is a combination of all the sub-pages which a user goes through until reaching that page. Taking Valmet Dry Solids Measurement as an example, the longer URL is the following; www.valmet.com/products/automation/analyzers-and-

measurements/wastewater/dry-solids-measurement/. The second URL is a short one, which can be seen like a shortcut, as it is showcased in this example; www.valmet.com/valmetds. Both of these URLs direct a user to the same page. The meta page titles of the pre-optimization phase consisted of only the products' names. When it came to the meta page descriptions, only two of the applications' webpages had one set previously, being these Valmet TS and Valmet LS. The others did not have one defined. When there is no meta page description, Google will pick up the first characters out of a webpages' content. Nevertheless, the meta descriptions set for Valmet TS and Valmet LS were not individual descriptions. These were copies of the first sentences from the pages' content. Therefore, all of Valmet's wastewater applications' webpages did not truly have a meta page descriptions set for the purpose of SEO.

Following the SEO plan, the purpose of the pages and the target audience had to be defined. The target audience for Valmet's wastewater applications are the professionals in the wastewater industry. These are engineers who run the process in the municipal wastewater treatment plants, and whom are interested in solutions to improve the efficiency of the process, while being able to reduce their costs. The purpose of the pages varies depending on each one's nature. The main wastewater page has as its purpose to introduce Valmet's solutions for this specific industry, while giving a general idea of its offering. Each individual product page intends to expand on the specific solution being offered, illustrating its benefits, and complementing this with more technical data about the application itself. Setting these target points makes it easier to define the content that has to be built and uploaded to the pages, as well as on what to change or add to these.

The URLs of the webpages did not suffer any changes with the exception of one. The reason why no alterations have been done is due to the fact that these have to follow the company's policies. The only URL which underwent a modification was of Valmet TS's page. The product name used to be Valmet Total Solids Transmitter, and according to decision making by the marketing and product managers, the name was changed to Valmet Total Solids Measurement. Thus,

the word “transmitter” was altered to “measurement” both in the URL, as well as throughout the content of the page itself.

Following the table containing the SEO action plan, the next step was to create a new meta page title and a new meta page description to each of the five pages submitted for change. These titles and descriptions are based on the keywords uncovered in the earlier stage. The objective is that Google will pick up the signals of these changes based on the relevant keywords, and favor the ranking of Valmet’s wastewater applications’ pages in its SERP. While the meta page titles did not suffer drastic changes, as only a few keywords were added to replace others, the meta page descriptions were replaced in their entirety for the two pages which had one, and a new meta description was added to the ones which did not have.

The recommendation is that the number of characters of the meta titles should not be more than 70. When it comes to the meta page descriptions, it is advised to not surpass 150 characters. Google will only show in its totality between 150 and 160 of these. However, many choose to follow these parameters, while others chose to go against them or simply ignore them. There is no set rule on how these should be written, and advantages can be obtained being these descriptions long or short. Besides wanting Google’s algorithms to pick up the signals, the other main goal is to attract web users to click on the page.

Table 4. Previous meta page title versus the new one.

	Previous meta page title	Length	New meta page title	Length
Main page	Wastewater - Valmet	19	Wastewater measurements and automation	38
Valmet DS	Dry Solids Measurement, DS - Valmet	35	Valmet Dry Solids Measurement for wastewater treatment	54
Valmet TS	Total Solids Transmitter, TS - Valmet	37	Valmet Total Solids Measurement for wastewater treatment	56
Valmet LS	Low Solids Measurement, LS - Valmet	35	Valmet Low Solids Measurement for wastewater treatment	54
Valmet SDO	Sludge Dewatering Optimizer, Valmet SDO	42	Valmet Sludge Dewatering Optimizer for wastewater treatment	59

Relevant keywords were added to the new meta page titles, where the number of characters did not exceed the recommended length, as seen in table 4.

Table 5. Previous meta page description versus the new one.

	Previous meta page description	Length	New meta page description	Length
Main page	Wastewater measurements and automation. Valmet's automation and measurement solutions portfolio includes a long tradition of pioneering innovative (...) - Does not have a meta page description, the following text is from the page's content.	Google showing 150	Valmet offers superior solids measurement solutions for wastewater treatment plants, based on many years of experience and know-how. Valmet's solids sensors provide benefits for all sludge processing stages.	207
Valmet DS	Valmet Dry Solids Measurement (Valmet DS) utilizes microwave technology, requiring no special certification or safety procedures, to make a stable and (...) - Does not have a meta page description, the following text is from the page's content.	Google showing 150	Valmet DS is a microwave based cake solids sensor for conveyed sludge, used for better dewatering control, allowing savings in polymer usage and sludge transportation costs.	173
Valmet TS	Valmet Total Solids Transmitter (Valmet TS) has been developed from third generation microwave consistency transmitters, combining cost-efficiency with the (...)	Google showing 155	Valmet TS is a total solids measurement for wastewater sludge treatment, based on microwave technology, to optimize the sludge dewatering process and polymer dosage, as well as primary and secondary clarifiers.	210
Valmet LS	Valmet Low Solids Measurement (Valmet LS) allows wastewater treatment plant operators to measure low solids in difficult applications like centrifuge centrate (...)	Google showing 158	Valmet LS, a low solids measurement, is the first and only meter that works for centrate suspended solids, providing polymer dosage savings while optimizing the wastewater treatment.	182
Valmet SDO	Valmet Sludge Dewatering Optimizer - Valmet SDO. The optimization of processes and their output is more important than ever. Maintaining optimized and (...) - Does not have a meta page description, the following text is from the page's content.	Google showing 150	Valmet SDO is specially developed to be used in the sludge dewatering control process by optimizing the centrate solids and dry cake solids amount, centrifuge performance, and polymer dosing.	191

When it came to meta page descriptions, it was recommended for these not to exceed 150 characters, however, the end result did surpass this number, as displayed in table 5. The meta page titles and descriptions were built in a group combining the efforts of the author and all the different product and business managers, which were previously involved as well in the keywords' brainstorming

sessions. Ultimately, these managers have the last word on the structure and content, since they are the ones responsible for the management and profitability of these applications.

The next steps in the action plan were concerning the actual content of the webpages. The headers were up for change, however the marketing manager decided that these should remain as they were before. Thus, no modifications were done to the headers of each one of the pages. The second parameter to be optimized was the first paragraph of the pages. These give an introduction of what the offering is about, and relevant keywords should be inserted there. All the pages had previously a small introduction, nevertheless these were all modified to consent with the SEO's strategy. Once again, the product and business managers were involved alongside the author for the creation of these first introductory paragraphs. In this case, there was no limit in the number of characters to be used, yet the aim was to have a short but effective overview of the applications and complete offering of Valmet to the wastewater industry. The content related to these paragraphs can be seen in the action plan, in appendix 5.

Together with the first introductory paragraph, different content had to upload to the pages. This content is in the form of PDF documents, a customer story in video format, a ROI animation tool, laboratory correlation images, and a box of benefits on the side of the pages, highlighting certain aspects of the products, and containing as well certain keywords. Not all of this material was uploaded to all the pages, since some of them already had some. For example, the ROI tool animation had been previously placed in both the main wastewater page and Valmet DS's page. In this case, the author just modified slightly the call to action to use this tool. The ROI tool was later on inserted as well in all the other pages which did not include it. The PDF documents are brochures and data sheets about each individual product, as well as Valmet's wastewater business in general. Some part of this PDF material was already available in the webpages, however most of them were outdated. These had to ultimately be updated and replaced with the newest documents. Furthermore, new PDF material which was not available previously online was uploaded. The video of the customer case was already available on YouTube since July, yet it was not placed on Valmet's

wastewater applications' pages. The laboratory correlation images were provided by the product managers, which were later visually improved and posted online.

When it came to the images to be uploaded, Valmet DS and the main page did not need any changes, since these had been already improved somehow earlier, and contained relevant pictures about the offering. Valmet TS, Valmet LS, and Valmet SDO were given new images placed alongside the actual product picture. These images were taken at a customer sight by a professional photographer, and not only are of high quality, these clearly show the placement of these products in an actual plant. An image alt text was inserted to each of these newly uploaded images, in order to comply with the optimization actions at hand. The alt text for each picture included the name of the product and a set of meaningful keywords to be picked up by the search engine. An image alt text was not inputted to Valmet DS's and main page's photographs. In Valmet DS's case there is a slideshow sequence containing more than one image, which does not allow an alt text to be placed. The main page's image is a direct link to a YouTube video about Valmet's wastewater offering. The image alt text can be found in the action plan, in appendix 5.

Google serves its customers first, and these are their main priority. Therefore, when ranking the pages, the algorithms will select the ones which better answer to the web users' needs and wants. The content uploaded on a certain webpage has to fulfill the information needs of the audience. More information to the customers means pleasing both Google and the web users. Having this in mind, the internal links were not only used to direct the audience to the other applications' pages, but as well to direct them to a page which would offer more technical data about these specific products.

The idea was to create an entirely new page, which would come under each of these applications' main webpages, and in there the customer can find more technical information about Valmet's offerings. When accessing, for example, Valmet TS's page, a call to action was placed half way, where the audience is invited to navigate further into the website, and read more about this product's technical data. In bold Valmet's green letters, a web user can read "click here for more Valmet Total Solids technical data". The same was done with all the other

pages, with the exception of the main page. These pages cannot be found under the navigation panel on the left side of the webpage, for the simple reason of not wanting to “stuff” the panel with more subpages visible there. The only way to access the technical data pages is to go through first the applications’ main webpages. This also allows potential customers to get familiar with a product first, before getting more in-depth information.

A new URL and a second shorter one were created for the technical pages. These follow the same pattern as of the other Valmet’s webpages. The main purpose for these technical pages was, as mentioned earlier, to give access to more information to the customer, and to create an internal link. The content to be uploaded was developed alongside with the product and business managers, who more than anyone know what they want to share when selecting the most relevant information. The same PDF material available in the main applications’ pages was also placed on these technical pages, as well as additional boxes with highlights about the products. The headers were of the products’ names, and all the images uploaded had the same image alt text as the others.

However, in this case, a new image alt text was also created for Valmet DS’s page, since earlier it did not have one. The internal links in these technical pages referred back to the applications’ main pages. The meta page title and meta page descriptions were defined separately for these sub-webpages, meaning that they did not have the same meta information as their “mother” pages. The intention is for Google to distinguish both pages, since, although they are connected, these are still individual separate pages. Moreover, the meta information attributed to these pages contain as well keywords from the list set earlier. The meta data of these pages, and their new URLs can be found in appendix 6.

All of these SEO on-page optimization actions are intended to give the right signals to Google’s crawlers, and increase the chances to rank higher on a result’s page. Furthermore, the content should fulfill the needs and wants of the audience when they are searching for information. The relevant keywords were applied whenever it was possible, always avoiding “stuffing” the webpages with these. The material was placed in a form of call to action, intending that the potential customers see and use them.

Off-page optimization

External linking, social media activity, and blogging, are the main actions to be taken into consideration when it comes to SEO off-page optimization. Nevertheless, it was not possible to put into action these activities when optimizing these webpages.

Concerning the external linking part, the goal is to link Valmet's wastewater pages in other domains which do not belong to Valmet. When releasing certain articles in relevant online news outlets, such as magazines, blogs, and newspapers related to the industry, there is an opportunity to place these external links in these platforms. Another form of external linking, is to link these applications' webpages onto Wikipedia pages. This form of linking has been done in Valmet's automation department before, yet to different kind of products, and it has proved to be fruitful. These Wikipedia pages have to be relevant to the topic, always considering Valmet's wastewater offering. External linking is valuable when it is done in both directions, which means that besides having these external platforms with Valmet's links, Valmet's own pages should as well direct back to the external domains. The reason why no external linking has been done when developing this thesis work, is due to the fact that no article is currently being released externally, and the content in the body of the pages needs to be improved in or-der to place the Wikipedia links there. These activities take quite a long time to be developed and made ready, though it is recommended that Valmet pursues these actions and implement them in the near future

Social media activities are very important when considering SEO activities. Valmet has its own channels on LinkedIn, Twitter, YouTube, and Facebook. The objective is to always share relevant and new content on these platforms, in order to in-crease the visibility of the webpages, as well as their ranking in an SERP. When it comes to wastewater applications, there has been in the near past many activities in LinkedIn, and some across the other channels. The author of the thesis is not able to perform any social media actions at this point, for the fact that no new content has been generated in order to be shared. The production of new articles, videos, and other types of media, is a long process, besides the

fact that it always has to be approved by the head office in order to be released externally.

Setting up a blog is another long process, due to the fact that it takes time to create the needed content. Blogging is an essential part for SEO's activities, since it greatly increases the chances of a website to rank higher in an SERP. The content plan developed for this thesis, and which it serves as a guideline, can aid Valmet's optimization activities. This content plan can be applied when creating a blog, since it divides by categories the type of material which can be created and uploaded. When blogging, new content should be uploaded regularly, where marketing professionals can follow its performance, and always enhance the next steps to be taken.

Content plan

Content has to be relevant for the audience. When a web user finds the content shared to be useful, it can be very likely that he or she returns to that webpage, expecting to continuously receive valuable insights. Besides introducing the different applications, their benefits, and other types of technical information, the most valuable tool for marketing purposes and persuasion of the target audience are customer references. These stories from previous customer experiences come to reaffirm and prove Valmet's technology, the efficiency of its service, and the reliability of their products. It is important to give valuable arguments to convince consumers in order to make the investment and purchase Valmet's applications. However, having being able to prove these statements by using other buyers' experience, brings an extra value to the table.

Valmet's main customers are from the paper and pulp industry. As marketers, trying to obtain customer stories from these industries can be quite frustrating at times, due to the fact that customer permissions to publish these are difficult to attain. These are large privately owned firms, who control very well how their brands are being used by other companies when engaging in external communication. The wastewater industry works rather differently when it comes to this matter. Wastewater treatment plants are usually municipally owned, thus it is

easier to get customer permission, against if it was privately owned. Besides this being an advantage for Valmet, in a sense that they can use these testimonials for content making, the wastewater treatment plants can benefit from it as well. The municipalities are always eager to demonstrate how well they are optimizing the process, so that cost reductions can be derived from it. Tax payers are interested in these types of updates from the municipalities where they reside. Furthermore, engineers which work at these wastewater plants are very eager to build a reputation. When these are involved in the optimization of the plant where they work, for example by investing in measurement applications such as the ones Valmet offers, they are usually willing to share the “story” on how the process went, at events such as conferences, seminars, or either by giving interviews. This allows Valmet to take advantage of the situation, and use this extra form of brand awareness. Ultimately, it is essential to transmit the idea that professionals in the wastewater industry trust Valmet’s solutions.

The material suggested to be created in the content plan revolves mostly around customer stories. Some of this content also considers the basic functions of a wastewater plant, and how Valmet’s applications can be applied there. Furthermore, results such as cost reductions and other valuable parameters need to be translated into a visually effective media, where the audience can get Valmet’s message related to the benefits it offers in a more “entertaining” way. Merely text does not perform well as a stand-alone. Therefore, different types of formats can be created to transmit Valmet’s message to the wastewater industry.

It is recommended by the author to create a new content plan every three month, where all the new materials are specified, alongside with which channels these should be uploaded to, and the dates when it will happen. A person should be assigned to each one of this content, where he or she will be responsible for the actions related to that specific material. In the end, all this content has to be measured and its online engagement tracked. Thus, a parameter in the content plan needs to include the conversion rate associated to that specific material uploaded.

Table 6. Content plan guideline.

Articles	- Detailed customer cases - Articles depicting the efficient performance of these applications - Articles related to the conferences attended
Press releases	- Newly sold applications - When a number of application has been sold in a specific region (e.g. "*number x sold in y region*")
Technical data	More technical data to the page to enrich the content (can be copied from the data sheets and brochures)
Webinars	Organize webinar sessions open for customers, which are advertised on the webpages
Videos	- Customer interviews - Attendance in exhibitions - One video showing all the applications, and where these can be placed (“a walk through a wastewater plant”) - Instructional videos
Photographs (alongside other content)	- Customers' plants and portraits - Valmet’s applications installed in a plant - Exhibitions and conferences attended
Infographics	Savings that can be attained with the applications
Reference cases	Stories through customers’ own words, detailing their experience

Table 6 presents the different types of content which can be created, in a general way. This serves as a guideline, so that Valmet can create their own content plan.

4.1.3 SEA campaign

SEA comes into play at this phase to complement the SEO actions done previously. It is expected that by releasing a number of advertisement campaigns will help the SEO efforts, and consequently increase the visibility online of Valmet’s wastewater webpages. The chosen service provider for these campaigns is Google AdWords.

SEA has been done in Valmet for some of the wastewater applications' pages before. Nevertheless, these were not performing well, and Google attributed a low ranking to the advertisements. The initial idea when defining the action plan was to generate individual ads for each of the wastewater pages. However, the decision making by the marketing manager was to release a few ads related to only one of the applications, and study which one performs the best. Each one of these campaigns used different keywords so that it is possible to validate which ones are more effective. Ultimately, the goal is to learn from these campaigns, in order to release the rest of the ads related to the rest of the wastewater applications' pages.

The character number available in Google AdWords is quite limited, against the limit for meta page titles and descriptions. Thus, the message needs to be very effective and direct. The characters' limit is 30 for both headline 1 and headline 2, while the body of the ad cannot exceed 80 characters.

Table 7. Valmet TS's online advertisements.

	Headline 1	Headline 2	Ad content (value proposition)	Landing page	Bid	Daily budget
Valmet TS (1)	Wastewater Total Solids Meter	Most Reliable Solution	Valmet TS is a reliable and accurate meter for sludge treatment applications.	www.valmet.com/valmetts	3 €	30 €
Valmet TS (2)	Sludge Solids Measurement	For Wastewater Treatment	Great savings in polymer dosage. Request information today!	www.valmet.com/valmetts	3 €	30 €
Valmet TS (3)	Microwave Total Solids Sensor	For Reliable Sludge Treatment	Valmet TS, a reliable solution for primary and secondary clarifier optimization	www.valmet.com/valmetts	3 €	30 €

Table 7 presents the three ads built using Google AdWords, where the chosen landing page is of Valmet TS. Since this is the application where most of Valmet's profit is generated inside the wastewater industry, most of the optimization efforts are concentrated in this product against the others. Each of the ads con-

tain one set of keywords from the list developed in the earlier stage, and are only displayed for USA and Canada regions.

4.2 Piloting phase

The piloting phase occurred throughout three stages. The first step was agreeing on the written content for the webpages and what to upload to each individual page. The second phase was the collection of all the needed material, and the third and last step concerned actually executing the SEO and SEA action plans.

All the meta titles, descriptions, and first paragraphs were defined through a co-operation between the author of the thesis and all of the previously mentioned Valmet's managers. These occurred throughout five Skype meeting sessions of approximately two hours each. Since all these managers are located in different offices, Skype meetings and email exchanging were the source of communication between all the parties involved. All Valmet's managers had an input on these parameters, as well as in deciding on the material to be uploaded to the webpages. The final outcome was approved by all participants. The author of this thesis had to collect all the needed material which would be later on uploaded to Valmet's wastewater applications' webpages. Great part of the material had small outdated details which had to be updated. In the end, all the right format and visual outlooks were set, so that the material would be ready for uploading.

The SEO action plan was carried out between the 3rd and 4th November 2016, while all three SEA campaigns were launched on the 4th November 2016, alongside Analyzers, Measurements, and Performance Solutions (AMP) marketing manager. The reason of having only the author and AMP's marketing manager building the advertisements, was to keep a more marketing-oriented perspective. Thus, the product and business managers were not involved in the SEA campaign launch. Nevertheless, all the insights previously given were taken into account by the author and AMP's marketing manager when undertaken this action.

5 MEASURING THE TAKEN ACTIONS

In this chapter the results from the past, the present outcomes, and the future key performance indicators (KPIs) will be presented. The first part considers the analytics' reports corresponding to the pre optimization phase. These are Valmet's wastewater pages' numbers before any SEO or SEA activities have been put into action. Later in this chapter, this data will be compared against the analytics of post optimization activities. This way, it will be possible to see the effectiveness of the SEM's performance. The last item to be approached in this section refers to the metrics to be used in the future, in order to further measure Valmet's online marketing activities.

5.1 Trends from the past

In this section it is presents the web analytics referring to Valmet's wastewater webpages before these have been optimized. This way it is possible to measure the performance of the action plan. The results extracted to reveal Valmet's wastewater applications' webpages' situation before the optimization activities, correspond to the period of time between 3rd August 2016 and 2nd November 2016. This accounts for exactly 13 weeks. The time period set to benchmark these activities was determined by the commissioner.

When extracting the report from Google Analytics (GA), first the parameters to be considered were defined. Besides the metrics which GA displays automatically, there are three additional parameters which were examined. These were the traffic type, the country, and user type. The traffic type refers to the fact if the traffic was organic, paid, direct, or referral, while the user type considers new visitors and returning ones. The country refers to the location of these visitors. The analytics reports of all five pages were gathered, with the results from the previously specified time frame. At this stage, the reports present only the top two countries from where these web users are originating. The metrics with more value at this moment are the number of pageviews, the country, and the traffic type, leaving

bounce rate and exit percentage for second plan. For a more detailed GA report, please see appendix 7.

Table 8. GA's report of Wastewater's main page, Valmet DS, and Valmet TS.

	Parameter	Pageviews	Unique Pageviews	Entrances
Main page	**Overall**	**312**	**250**	**60**
	Traffic type			
	Organic	233**(74.68%)**	186**(74.40%)**	46**(76.67%)**
	Direct	68**(21.79%)**	53**(21.20%)**	11**(18.33%)**
	Referral	9**(2.88%)**	9**(3.60%)**	3**(5.00%)**
	Paid	2**(0.64%)**	2**(0.80%)**	0**(0.00%)**
	Country			
	Finland	72**(23.08%)**	46**(18.40%)**	12**(20.00%)**
	United States	46**(14.74%)**	41**(16.40%)**	12**(20.00%)**
Valmet DS	**Overall**	**273**	**220**	**143**
	Traffic type			
	Organic	233(**85.35%**)	190**(86.36%)**	130**(90.91%)**
	Direct	39**(14.29%)**	29**(13.18%)**	13**(9.09%)**
	Referral	1**(0.37%)**	1**(0.45%)**	0**(0.00%)**
	Country			
	United States	58**(21.25%)**	47**(21.36%)**	30**(20.98%)**
	Finland	40**(14.65%)**	27**(12.27%)**	9**(6.29%)**
Valmet TS	**Overall**	**721**	**608**	**492**
	Traffic type			
	Organic	520**(72.12%)**	438**(72.04%)**	352**(71.54%)**
	Direct	188(**26.07%**)	160**(26.32%)**	139**(28.25%)**
	Referral	7**(0.97%)**	6**(0.99%)**	1**(0.20%)**
	Paid	6**(0.83%)**	4(**0.66%**)	0**(0.00%)**
	Country			
	United States	335**(46.46%)**	287**(47.20%)**	256**(52.03%)**
	Canada	121**(16.78%)**	110**(18.09%)**	103**(20.93%)**

When examining the results of table 8, it is possible to see that Valmet TS is the best performing webpage out of the rest of Valmet's wastewater pages. This complies somehow with the business objectives, by wanting to give an extra focus to Valmet TS's page. Valmet's wastewater's main page and Valmet DS are the following pages which attract more views, being United States and Finland the countries which lead the most traffic to these webpages. Canada, Germany, and United Kingdom are the following regions which drive more traffic.

Table 9. GA's report of Valmet LS and Valmet SDO.

	Parameter	Pageviews	Unique Pageviews	Entrances
Valmet LS	**Overall**	**106**	**84**	**30**
	Traffic type			
	Organic	84**(79.25%)**	66**(78.57%)**	24**(80.00%)**
	Direct	21**(19.81%)**	17**(20.24%)**	6**(20.00%)**
	Referral	1**(0.94%)**	1**(1.19%)**	0**(0.00%)**
	Country			
	United States	30**(28.30%)**	24**(28.57%)**	9**(30.00%)**
	Finland	20**(18.87%)**	13**(15.48%)**	5**(16.67%)**
Valmet SDO	**Overall**	**104**	**86**	**33**
	Traffic type			
	Organic	65**(62.50%)**	53**(61.63%)**	14**(42.42%)**
	Direct	33**(31.73%)**	29**(33.72%)**	17**(51.52%)**
	Referral	4**(3.85%)**	3**(3.49%)**	2**(6.06%)**
	Paid	2**(1.92%)**	1**(1.16%)**	0**(0.00%)**
	Country			
	United States	26**(25.00%)**	23**(26.74%)**	11**(33.33%)**
	Finland	21**(20.19%)**	14**(16.28%)**	3**(9.09%)**

Table 9 reflects the analytics' results of Valmet LS and Valmet SDO's webpages, where it is evident that these do not perform so effectively when compared to the rest of Valmet's wastewater pages. As with the other applications, most of the inbound traffic results from the organic results, being USA and Finland the originating country of most visitors.

Table 10. Number of sales leads between 3rd August and 2nd November 2016.

Time frame	Leads
August (from the 3rd)	3
September	3
October	4
Novemeber (until the 2nd)	0

Table 10 showcases the leads obtained through Valmet's Virtual Agent inside the same time frame as used to extract the web analytics' results. The average is of 0,77 leads per week, or 3,33 per month.

5.2 Reporting on the results

This section presents the outcomes of SEO and SEA activities. Since these actions were realized on the 3rd and 4th November 2016, the measurement comprises the time frame between 5th November and 26th November 2016. This accounts for exactly three weeks. Having this, the author calculated the average per week corresponding to the past results, which were presented above, in order to compare these with the post optimization metrics. While these benchmarking results correspond to the 13 weeks pre SEO and SEA actions, the final outcome corresponds to three weeks after the optimization. This average per week was a calculation where only the pageviews, unique pageviews, and entrances were counted. The average time on page, bounce rate, and exit rate, are already an average in their nature. The countries of origin of the web visitors is another important metric which was taken into account. For a more detailed analytics' report, see appendix 8.

Table 11. Web analytics' average per week compared.

	Pre and post optimization	Pageviews	Unique Pageviews	Entrances
Main page	**Pre**	24	19.23	4.61
	Post	61.66	26	9
Valmet DS	**Pre**	21	16.92	11
	Post	58	19.33	14
Valmet TS	**Pre**	55.46	46.76	37.84
	Post	60.66	20.33	6.66
Valmet LS	**Pre**	8.15	6.46	2.30
	Post	31.66	9.66	4
Valmet SDO	**Pre**	8	6.61	2.53
	Post	26.33	11	2

After examining table 11, the results present a few slight changes when compared. Valmet's main wastewater page had a slight increase in its pageviews, as well as in its unique pageviews and entrances. In the 13 weeks before the optimization process, Finland and USA occupied the first and second position respectively, when analyzing the origin of the web visitors. After optimizing this page, Finland still occupies the first place, while France is now in second, and USA has dropped to the third position. Valmet DS's webpage has witnessed the same slight increase in its overall numbers, and while USA was the first country to attract more visitors, followed by Finland, now the positions are inverted. Finland has occupied the first place, and USA has dropped to the second position.

Valmet TS did not record a big difference in the number of its pageviews, when comparing the before and after optimization efforts. However the amount of unique pageviews has dropped by half, and there was a steep decrease in the number of entrances. Most of web users visiting Valmet TS' page originated from USA and Canada. The results show that after optimizing this webpage, Finland, USA, and Sweden are the first three countries positioned. Canada has fallen to the fourth place.

Considering Valmet LS's page, there was a slight increase as well in its analytics, when it comes to its pageviews, unique pageviews, and entrances. While USA and Finland occupied the first and second place respectively, now the countries which attract more traffic are originating from Finland in the first position, followed by Germany, having USA placing in the fifth position. A similar increase has been witnessed in Valmet SDO's analytics, and the locations attracting more traffic continue to be Finland and USA.

While SEA's efforts are fast in generating results, SEO activities take a longer period of time to produce any returns. When comparing the analytics from before the optimization actions and after, although there are slight differences, there are no major discrepancies, thus no significant final conclusions can be taken. Although web analytics should be tracked regularly, final conclusions can be better taken when examining a trend after a longer period of time, usually of three to six months.

As with the keywords' benchmarking process, when analyzing the current ranking position of these in a Google's results' page, it was done in incognito mode, and by using the website I Search From. Valmet's main wastewater page had no changes in all its associated keywords, expect for one, which has rose from the fifth page to the 11th position (first top result on the second query page). Valmet DS had barely no changes. Almost half of the keywords already occupied a first page position, which did not alter, while the other still do not rank in the first ten results' pages.

All keywords associated to Valmet TS's page already ranked previously in the first page, with the exception of one. There were slight improvements in the positioning of all the keywords which were already ranked favorably. The one keyword, which earlier did not rank in the first ten result's pages, occupies now the fourth position in the first page. Valmet LS was beforehand well positioned in all its keywords, with the exception of three. Two of these keywords still do not ranin Google's first ten results' pages, however one of the keywords has increased its positioning, and it is now the third link in the first page. Valmet SDO's two associated keywords have improved greatly their ranking, with one occupying the fifth position, and the other keyword ranking seventh in Google's results' pages.

Having some of the pages being more affected in their ranking against others allows for interesting conclusions to be taken. Valmet's main wastewater page and Valmet DS's were the least changed when performing SEO, since these already had a well-structured webpage. When examining the ranking results of these pages, it is possible to see that these were the least affected. The pages of Valmet LS and Valmet SDO had many alterations, and new different types of media were added to these. Based on the theoretical background and the findings at hand, it is possible to conclude that one important factor is the continuous updates to a webpage, where relevant content is inserted. When a page does not suffer regular updates, Google's crawlers do not get the constant signals to rank this page higher. It is not possible to take great conclusions from Valmet TS's ranking results, due to the fact that most of the keywords already placed in the first page of Google's results' page. However, there was a big improvement in one of the keywords, and the others have increased their positioning slightly.

Valmet TS's page was among the ones which underwent more changes, and thus it was possible to see regular shifts in the ranking of its webpage.

Another interesting conclusion relates to the actual keywords themselves. Valmet SDO had only two keywords in its list, while the other pages had at least six. The fact of having a narrower list, allowed that all the focus revolved around these two keywords. When building the meta page description and first paragraph, great attention was directed to both these keywords. The other Valmet's wastewater applications' webpages had gathered a higher number of keywords, which did not allow for a narrower focus. These applications have very similar benefits, although they are different in their nature, and are positioned at different stages of a wastewater treatment process. Some difficulties rose when building the meta descriptions and first paragraphs to these pages, since the intention was to be able to differentiate them by not repeating the same benefits to each one of them. Having a bigger keywords' list complicated this process even more. These results allow to conclude that a shorter but effective list is in need to improve SEO's performance activities. Ultimately, a narrow selection of keywords allows marketers to stay more in focus of the path to be taken. Because Valmet SDO had only two sets of keywords associated, these were repeated in a higher rate against the other webpages' keywords. Therefore, it is taken as a conclusion that these keywords have to be mentioned more times, nevertheless always avoiding stuffing them throughout the webpages. For more detailed information on the ranking of the keywords associated to each webpage, please see appendix 9.

The tracking activities activated with Google Tag Manager (GTM) cannot be compared with any previous results, since these events were not set previously. The tags and triggers set with GTM were defined and put into motion on the 8th and 9th November 2016. Thus, the results presented in table 11 are from the time period between 10th November and 28th November 2016. The events being tracked are the clicks in the ROI tool, the clicks leading to the technical pages of Valmet DS, Valmet TS, Valmet LS, and Valmet SDO, and the clicks on the PDF material available on these pages. More information on which PDFs were clicked on can be found in appendix 10.

Table 12. Events' tracking results.

Events	Total events	Unique events
ROI tool	22	17
Click DS	2	2
Click TS	9	9
Click LS	4	4
Click SDO	5	5
Click PDFs	48	47

Clicks on DS, TS, LS, and SDO, displayed in table 12, translate to clicks on the links which direct to the newly created technical pages. The material available in PDF had a high rate of clicks, however not so many have been done in these internal links. These results need to continuously be tracked, while using this starting point as a benchmark to compare future results.

When it comes to SEA's campaign, the time period analyzed to measure the performance of the ads placed with Google AdWords, is from the 5th November until the 26th November 2016. This time accounts for exactly three weeks.

Table 13. Valmet TS's ads' performance.

Ads	% Served	Clicks	Impressions	CTR	Average CPC
Valmet TS (1) Wastewater Total Solids Meter	68.37%	57	28 876	0.20%	€2.65
Valmet TS (2) Sludge Solids Measurement	4.25%	13	1794	0.72%	€1.94
Valmet TS (3) Microwave Total Solids Sensor	2.36%	3	997	0.30%	€2.22

As seen in table 13, only one advertisement succeed in appearing more to the audience in an SERP. The first ad was served 68.37% of the times, and the au-

dience clicked on the ad 57 times. The other two ads did not perform as effectively. The other two advertisements need to be revised, based on the reflected results.

Table 14. Valmet's keywords' performance in Google AdWords.

Keywords	Clicks	Impressions	CTR	Average CPC
Total solids meter	79	40 803	0.19%	€2.64
Total solids measurement	9	676	1.33%	€2.23
Wastewater total solids	9	699	1.29%	€2.30
Total solids sensor	2	59	3.39%	€1.96
Sludge solids measurement	0	0	0.00%	€0.00
Microwave solids meter	0	0	0.00%	€0.00
Primary clarifier optimization	0	0	0.00%	€0.00
Secondary clarifier optimization	0	0	0.00%	€0.00

Table 14 clearly shows that total solids meter was the keyword which had the highest impressions, meaning that more web users typed in these set of words against the others, when searching online. That keyword was also the one which attracted more visitors to click on the ad. Nevertheless, total solids measurement, wastewater total solids, and total solids sensor do reattribute an outcome as well, as opposing of the last four sets of keywords. More focus needs to be placed on the keywords which return a favorable result, while the others need to be revised.

In the end, the most important factor is to generate sales leads in order to increase Valmet's wastewater applications' profitability. As seen in the previous results, the sales leads average per week was of approximately 0,77. Since 5th November until the 26th November 2016, the total number of inquiries through

the virtual agent was six. That adds up to an average of two sales leads per week. Although there was a clear increase in the number of leads, it is still quite early to pin this development task a success. At this point, it is not possible to determine the profitability generated by these sales inquiries, since a sales process in the wastewater industry takes a longer period of time to be finalized. Lastly, these numbers need to be tracked continuously, while always following the trend, and ultimately calculate these applications' profitability which were generated by the online sales leads.

5.3 Future KPIs

There are different KPIs that can be used to measure the efficiency of marketing activities. The ones presented in this section refer to the online optimization actions, and how can these be tracked in the future. The KPIs suggested are mostly the same as already used in earlier stages, with the addition of a few more. The author recommends that these are tracked on a monthly basis, so that it is possible to quickly notice which changes are needed to be done, and always consider which new factors can be applied in order to enhance the performance. An overall look should be done after a period of three to four months, where the trends can be seen more clearly, and future actions can be assessed.

The number of unique site visitors is quite relevant in order to see how many new potential customers are accessing the webpages. Having this, it is possible to deduce how the brand is growing in the wastewater industry, considering whether the awareness is increasing in the online world. The traffic source is another meaningful KPI to be tracked, where Valmet can realize which channel is driving more traffic. This KPI will shed light on how Valmet's wastewater pages are found, either by new visitors or returning ones. When engaging in SEO activities, the goal is to rank high in the organic results' page. Thus, this parameter is quite relevant, where it is important to monitor if the organic traffic is increasing. Since SEA efforts were merely to complement SEO's actions, the organic traffic is more relevant to attain. Nevertheless, conversions of the paid ads are still important and should not be overlooked. Social media activities are very significant

in today's age, both for brand awareness and SEO purposes. Thus, besides requiring more action in these channels, the referral traffic source is meaningful, since it is possible to track how the message is being received in these social media platforms. These referrals can come as well from the external links placed in different domains. In Google Analytics it is possible to follow the channel source of the incoming traffic.

Returning visitors is as well relevant, since this proves that web users are returning to either seek more information, or to see if new content has been added. Blogging is an effective way of attracting returning visitors, since there new media and relevant content would be updated continuously. Another KPI which is important to track is the users' country of origin, which allows to measure how well the optimization activities are being targeted. The time spent in the webpages is quite important, being possible to see if web users find the content relevant enough to go through, and also if they are engaging with it. The bounce rate and exit percentage are also meaningful KPIs, giving emphases to the exit rate. This will show how many visitors have exited a specific webpage after navigating through other pages. If there is a high rate of exit percentage on a certain page, it can indicate that the content is not fulfilling the needs and wants of the audience. A fast reaction is consequently in need, in order to increase the efficiency of that webpage.

Another relevant KPI refers to the goals and calls to action set previously. It is important to track if users are actually engaging in these calls to action, and completing the events which were set by tags with Google Tag Manager. These tags concern the usage of the ROI tool, the downloading of the PDFs, and the clicks to the technical pages. By measuring these events, Valmet can see if visitors find these materials relevant to go through, and if they give any additional valuable information.

Ultimately, the most important KPI refers to the sales leads obtained through these webpages, which can actually reveal the profitability obtained after the optimization efforts. This will further indicate the actual marketing contribution to the sales generated through Valmet's virtual agent.

5.4 Summary of findings

The outcomes of the SEO and SEA action plans show a variation in certain webpages, while in others these are not so visible. Valmet's wastewater webpages which suffered more modifications throughout this process, performed better when ranking on an SERP, as opposing to the ones which were not altered as much. Another key point to retain from this development's task findings, is that the webpages which had a larger keywords' list did not have as evident changes in their online ranking position. Valmet SDO's keywords' list was narrower, which allowed for a higher focus when applying SEO actions, hence being the webpage which better performed.

The results extracted from Google Analytics' report did not offer any major conclusions. Although there was a positive change overall, these are not conclusive, since SEO's performance efficiency needs a longer period of time to be noticed. Furthermore, since these products serve a niche market, their webpages are not constantly being searched for online. The development of these activities has to be analyzed after approximately three to four months. At that time it will be possible to compare the outcomes with past trends, and make final assumptions.

SEA's campaign allowed to uncover that Valmet TS's first advertisement had more impressions among web users, and performed largely better than the other two ads. When analyzing the impressions and clicks of each keyword in Google AdWords, total solids meter is the one which attracts more attention. Three other sets of keywords still generate, although in lower numbers, some inbound traffic, while the rest of the list leads zero impressions.

As no event tracking action was set previously, it is at this point impossible to compare the performance of these calls to action. However, it is visible that the PDF material placed across Valmet's wastewater pages has attracted attention, being the best performing event among others. The number of sales leads, which accounts as the most important call to action, has increased from 0,77 to two per week, representing an increase of approximately 160%.

6 CONCLUSION AND FUTURE RECOMMENDATIONS

SEM uses different sets of practices, which are highly targeted to potential consumers, in order to increase a webpage's ranking online, draw inbound traffic, and retain the audience by providing relevant content. These methods range between optimization techniques for organic results, and paid online advertisements. With search engines continuously updating their algorithms, it is difficult to perceive how they will rank webpages in their results' page. Moreover, these algorithms are never shared with the public. However, it is a known fact that search engines have their users' best interest in mind, meaning that these will always try to answer to their needs.

The actual SEO and SEA practices are generalized throughout the theory available, since these usually have to be adapted to a company's needs and objectives. Thus, it is possible to conclude that the techniques previously revealed serve as guidelines, where marketers have to experiment and determine the actions which perform best, and in which quantity to apply each one of them. The trial and error method will help defining SEO and SEA strategies in a more specific and detailed form.

The discrepancy between the results obtained after implementing the SEO plan and SEA campaign, provided interesting conclusions. While certain Valmet's wastewater pages did not witness any major change in their performance after executing SEM, other ones did display a slight variation. This allowed for a comparison to be made, where it is possible to try to understand which practices created a bigger impact.

This development task concluded that a narrower list of keywords is needed. A shorter list allows for a higher focus on these sets of keywords, where they have to be repeated at a bigger rate throughout the content of the webpages. Besides being an efficient way of sharing Valmet's new content, a continuously updated blog has high probabilities of ranking high in an SERP, not only for the fact that fresh and relevant content is always uploaded, but it also gives room for marketers to insert more of the meaningful keywords efficiently. Furthermore, blogging

offers the possibility of sharing this content on social media channels, which complements all the individual actions when optimizing a webpage online. If the content proves to be relevant and valuable for the target audience, blogging is extremely effective when trying to obtain returning visitors, and possibly convert them into customers.

Another conclusion of this thesis work complies with the knowledge uncovered in the theoretical background. Valmet's wastewater pages which suffered more alterations, revealed a higher positioning increase in an SERP. Thus, a continuously updated webpage will be favored by Google when ranking online. Moreover, the ads launched with Google AdWords gave a new insight on which keywords were attracting most of the traffic. This knowledge is valuable when updating and improving the final list of keywords to be used in the future. The ones which are not returning favorable results need to be revised or changed.

Time was the biggest challenge faced throughout this development task. The fact that the piloting phase was only three weeks, posed a limitation when interpreting web analytics' results. A longer period of time is needed in order to notice the benefits of SEO activities, by examining the trends. Another challenge derived from the fact that all participants who aided in the development of the action plans are located in different regions across Finland and USA. The form of communication was through email and skype meetings. A face-to-face interaction would have increased the efficiency of these activities, where there would be more room for deeper discussions. Furthermore, all Valmet's wastewater applications have similar general characteristics and benefits, however, these are placed at different stages of the process in a wastewater treatment plant. Since meta tiles and meta page descriptions are limited in space, difficulties emerged when defining these, in order for all webpages to be distinguishable from one another.

When it comes to the future, social media actions and external linking are recommended to be fulfilled, since these complement all SEO's on-page optimization efforts. Although currently LinkedIn is used quite regularly to share content, there are other social media platforms which would enhance Valmet's wastewater pages' visibility online, such as Twitter and Facebook. Both of these

social media platforms offer their own analytics' analysis, which can bring valuable insight concerning Valmet's audience's engagement with the content. When it comes to external linking, it is recommended that the full body of the webpages is optimized first in order to insert these. When improving the main body text, it is important to have in mind the type of external linking to be done. The suggested forms are to link to online news' outlets, when a Valmet's article is presented there, as well as to create links between certain Wikipedia pages, which are relevant to the industry and topic.

The keyword researching activity should not stop here. A deeper analysis can still be made. First, it is important to keep tracking the performance of the already set keywords, in order to see if these are actually converting into a high position when ranking in an SERP. By measuring the performance of the previously built keywords' list, it is possible to continuously adapt and improve its efficiency. Another way to unveil relevant keywords for SEO and SEA purposes, is going through emails which have been previously shared between Valmet's sales managers and their customers, where it can be revealed the type of words that they are using. This method can ultimately expose new valuable keywords to be added to Valmet's list.

The KPIs for the future displayed in chapter 5, which are adapted to Valmet's business targets, will help to continuously track and measure the performance of SEM actions. Besides following the number of sessions, traffic source, and time spent on the webpages, events' tracking is essential in order to determine the efficiency of calls to action. Future strategies can be improved when tracing visitors' behavior online, and learn how they are engaging with the content placed across these pages.

All the different SEM practices applied throughout the development task are valid, however these need to be improved and expanded, in order to produce the wanted outcome. Ultimately, online marketing activities are a continuous process, working in a cycle. By measuring these efforts, new valuable knowledge can be attained and later applied. The set KPIs have to be aligned with the end business goals, in order to help marketers keep on track, and continuously improve the efficiency of the overall strategy.

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APPENDICES

Appendix 1	Measurement metrics which can be used in Google Analytics.
Appendix 2	Ranking position of competitors' webpages.
Appendix 3	Review of competitors' product pages (performed on the 17th November 2016).
Appendix 4	Keywords' brainstorming form.
Appendix 5	SEO action plan divided in different sections.
Appendix 6	SEO action plan for the technical pages, divided in different sections.
Appendix 7	Pre optimization web analytics' report.
Appendix 8	Post optimization web analytics' report.
Appendix 9	Ranking comparison of Valmet's keywords, before and after the optimization activities.
Appendix 10	PDFs' event tracking.

Appendix 1 – Measurement metrics which can be used in Google Analytics.

Audience	The demographics of the audience which visits a website. (Manzanares 2015).
Acquisition	Acquisition refers to where the web users are coming from. This can be trough an organic search, a referral link, or direct traffic. Organic search refers to visitors who originate from search engines, such as Google or Bing. Referral link are the links inserted in other domains, which the audience clicks on to get to that specific website. Direct traffic is when web users type the URL directly into the navigation bar. (Haden 2015).
Behavior	This metric describes the users' behavior while navigating a webpage. This means that it is possible to see a web user's path since the first page viewed until the one from which they exited. (Manzanares 2015).
Conversions	Conversions are the web users which either convert into customers, or complete a call to action set by the marketers. (Manzanares 2015).
Sessions	The time spent by a web user actively navigating on a webpage. The same user can initiate multiple sessions. (Manzanares 2015).
Users	A user is a person who visits a website. Users are counted when they have initiated at least one session. (Manzanares 2015).
Pageviews	The number of times a single webpage was viewed. (Manzanares 2015).
Unique pageviews	The number of times a specific webpage is viewed per one user. Even if this same user returns to that specific webpage, the count will not be repeated. (Manzanares 2015).
Pages/session	This metric refers to how many pages were viewed in one session. (Manzanares 2015).
Average session duration	The average time spent by web users on a website. (Manzanares 2015).
Average time on page	The average time spent by web users on an individual webpage. (Manzanares 2015).
Bounce rate	Bounce rate refers to the percentage of web users who have entered a website and exited from the exact same page, without visiting other webpages on that website. (Manzanares 2015).
% Exit	This metric considers the percentage of users which have exited the website from a specific webpage. (Manzanares 2015).
Entrances	The number of times a web user enters a website. (Teixeira 2011).

Page value	Page value refers to the relationship which Google calculates, between the previously set value by marketers, and the amount of unique pageviews in a single webpage. These values can be monetary, if the website is of e-commerce, or a value given when defining a goal in Google Analytics. (Thomas 2012).

Appendix 2 – Ranking position of competitors' webpages.

	Hach	Cerlic	Toshiba	Process Instruments (Pi)
Wastewater treatment automation	22			
Sludge dewatering optimization	Ad + 1			
Wastewater treatment optimization	Ad			
Wastewater solids sensors	22	39		23
Sludge transportation costs				
Polymer costs in wastewater treatment	Ad			
Sewage water treatment	Ad			
Dry cake solids				
Cake solids sensor	7			
Cake biosolids				
Sludge dewatering	Ad			
Polymer savings				
Dewatered sludge				
Cake solids meter	10			Ad
Wastewater total solids				
Sludge solids measurement	9			

Total solids measurement	20			
Microwave solids meter		33	40 + 41	Ad
Total solids meter	16	41		Ad
Total solids sensor	4 + 29			46
Wastewater low solid	11			
Reject water solids				
Centrate suspended solids	1	16		2
Polymer optimization				
Centrate water solids	10			
Low solids measurement	22			
Low solids sensor		5 + 13		7
Low solids meter		10 + 23		Ad + 9
Sludge dewatering control	1 + 2	11		

Appendix 3 – Review of competitors' product pages (performed on the 17th November 2016).

Competition's webpage	Review
Cerlic **CMC TS-Meter** *http://www.cerlic.se/en/products/water-and-waste-water/ts-meter/*	The website at first view does not offer much content. There is only a small introduction and three separate documents available for download, in English, Swedish, and French languages. The PDF material offers more information about the product. The page's content includes the following keywords which are relevant for Valmet as well; • microwave total solids meter • suspended solids meter • online TS concentration measurement • waste water treatment • biosolids applications
Cerlic **CTX Suspended Solids** *http://www.cerlic.se/en/products/water-and-waste-water/ctx-suspended-solids/*	There is not much information given as soon as the page loads. There is only one sentence referring to the product. The rest of the information concerning this is available in multiple PDF documents, in English, Swedish, French, and German languages. For more details, the website directs the user to another section called *downloads*, however it does not make it easy for the web user to quickly access what he or she is looking for. The page's content includes the following keywords which are relevant for Valmet as well; • sensor for suspended solids • low suspended solids meter • TSS meter
Toshiba **Flange - LQ500 Microwave Density Analyzer** *https://www.toshiba.com/tic/other-products/instrumentation/microwave-density-analyzers/flange-lq500*	The webpage does not offer a lot of information concerning the product. At first view there is an introduction where general details are presented. For more information there are two documents which can be downloaded, however it requires registration to do so. The page's content includes the following keywords which are relevant for Valmet as well; • microwave analyzer • total solids • wastewater
Hach **SOLITAX sc** *http://www.hach.com/solitax-sc-suspended-solids-and-turbidity-analyzer-for-immersion-in-open-tanks/product?id=7640286049*	When entering the page, a small introduction and benefits of the product can be seen. For more information the web user can navigate the upper bar easily, where more technical data is available. There are numerous PDF documents which can be downloaded, and these are all in English language. Both in the first page and in one section of the navigation bar, the user can see suggestions for similar products. The page's content includes the following keywords which are relevant for Valmet as well;

	• suspended solids • measurement • wastewater
Process Instruments (Pi) SoliSense *http://www.processinstruments.net/products/suspended-solids-monitor/*	The page offers a general introduction about the product, and the web user can easily navigate the upper bar for more information. There is also a section called downloads, where it is possible to access a few PDF documents related to the product. Another section called FAQs (Frequently Asked Questions) gives answers to general questions, where Pi has used to its advantage to insert more relevant keywords. The contact section to require information about the product is very effective, since on the right side of the page, the salesforces' photographs and contact information is displayed. The page's content includes the following keywords which are relevant for Valmet as well; • suspended solids (mentioned numerous times) • sensor • mixed liquor suspended solids monitoring • return activated sludge • centrate monitoring • filtrate monitoring, sludge • suspended solids meters • WAS (Waste Activated Sludge) • Thickened sludge, Centrate • RAS (Return Activated Sludge) • waste water treatment plant

Appendix 4 – Keywords' brainstorming form.

Thesis development task – Optimizing wastewater application's webpages to generate more traffic and sales leads

The purpose of this form is to collect the relevant sets of keywords in order to carry out a search engine marketing (SEM) plan which will be implemented. Please fill in each sections with the keywords which you feel are relevant to the subject. The keywords can be either one word or a set of words. These should be coherent with the industry and Valmet's offering. The first priority are the customers, thus it is important to try to think like them. Having this, these keywords should be thought from the customers' perspectives. You don't need to answer to the following questions. These are just guidelines to help with the brainstorming action.

- What is our customer searching for?
- What are some of the most asked questions about our business?
- What type of language and slang, if any, would customers include?
- How would these customers search for a solution online (what would they type in a query page)?

Valmet Dry Solids Measurement	Valmet Total Solids Transmitter	Valmet Low Solids Measurement	Valmet Sludge Dewatering Optimizer	Main wastewater applications' page

Appendix 5 – SEO action plan divided in different sections.

First part – Valmet's wastewater pages' situation before optimization.

	Current URL	2nd URL	Current meta page title	Length	Current meta page description	Length
				70 characters max		150 characters max
Main page	/products/automation/analyzers-and-measurements/wastewater/	http://www.valmet.com/wastewater	Wastewater - Valmet	19	Wastewater measurements and automation. Valmet's automation and measurement solutions portfolio includes a long tradition of pioneering innovative (...) - **Does not have a meta page description, the following text is from the page's content.**	150
Valmet DS	/products/automation/analyzers-and-measurements/wastewater/dry-solids-measurement/	http://www.valmet.com/valmetds	Dry Solids Measurement, DS - Valmet	35	Valmet Dry Solids Measurement (Valmet DS) utilizes microwave technology, requiring no special certification or safety procedures, to make a stable and (...) - **Does not have a meta page description, the following text is from the page's content.**	150
Valmet TS	/products/automation/analyzers-and-measurements/wastewater/total-solids-transmitter-ts/	http://www.valmet.com/valmetts	Total Solids Transmitter, TS - Valmet	37	Valmet Total Solids Transmitter (Valmet TS) has been developed from third generation microwave consistency transmitters, combining cost-efficiency with the (...)	155
Valmet LS	/products/automation/analyzers-and-measurements/wastewater/low-solids-measurement-ls/	http://www.valmet.com/valmetls	Low Solids Measurement, LS - Valmet	35	Valmet Low Solids Measurement (Valmet LS) allows wastewater treatment plant operators to measure low solids in difficult applications like centrifuge centrate (...)	158
Valmet SDO	/products/automation/analyzers-and-measurements/wastewater/sludge-dewatering-optimization-valmet-sdo/	http://www.valmet.com/valmetsdo	Sludge Dewatering Optimization, Valmet SDO	42	Valmet Sludge Dewatering Optimizer - **Valmet SDO**. The optimization of processes and their output is more important than ever. Maintaining optimized and (...) - **Does not have a meta page description, the following text is from the page's content.**	150

Second part – Purpose and target of Valmet's wastewater pages.

Purpose of the page	Target audience	Edit date	Changes in URL
Introduce Valmet's solutions for the wastewater treatment industry (give a general idea of the offering)	Professionals of the wastewater treatment industry	4.11.2016	None
Product offering (DS) - Introduce the product + illustrate the benefits + share technical data	Professionals of the wastewater treatment industry	4.11.2016	None
Product offering (TS) - Introduce the product + illustrate the benefits + share technical data	Professionals of the wastewater treatment industry	3.11.2016	products/automation/analyzers-and-measurements/wastewater/total-solids-measurement-ts/
Product offering (LS) - Introduce the product + illustrate the benefits + share technical data	Professionals of the wastewater treatment industry	3.11.2016	None
Product offering (SDO) - Introduce the product + illustrate the benefits + share technical data	Professionals of the wastewater treatment industry	4.11.2016	None

Third part – New meta data and list of the targeted keywords.

New meta page title	Length	New meta page description	Length	Target keywords
	70 characters max		150 characters max	
Wastewater measurements and automation	38	Valmet offers superior solids measurement solutions for wastewater treatment plants, based on many years of experience and know-how. Valmet's solids sensors provide benefits for all sludge processing stages.	207	1. Wastewater treatment automation 2. Sludge dewatering optimization 3. Wastewater treatment optimization 4. Wastewater solids sensor 5. Sludge transportation costs 6. Polymer costs in wastewater treatment 7. Sewage water treatment
Valmet Dry Solids Measurement for wastewater treatment	54	Valmet DS is a microwave based cake solids sensor for conveyed sludge, used for better dewatering control, allowing savings in polymer usage and sludge transportation costs.	173	1. Dry cake solids 2. Cake solids sensor 3. Cake solids meter 4. Cake biosolids 5. Sludge dewatering 6. Polymer savings 7. Dewatered sludge
Valmet Total Solids Measurement for wastewater treatment	56	Valmet TS is a total solids measurement for wastewater sludge treatment, based on microwave technology, to optimize the sludge dewatering process and polymer dosage, as well as primary and secondary clarifiers.	210	1. Wastewater total solids 2. Sludge solids measurement 3. Total solids measurement 4. Microwave solids meter 5. Total solids meter 6. Total solids sensor 7. Primary clarifier optimization 8. Secondary clarifier optimization
Valmet Low Solids Measurement for wastewater treatment	54	Valmet LS, a low solids measurement, is the first and only meter that works for centrate suspended solids, providing polymer dosage savings while optimizing the wastewater treatment.	182	1. Wastewater low solid 2. Reject water solids 3. Centrate suspended solids 4. Polymer optimization 5. Centrate water solids 6. Low solids measurement 7. Low solids sensor 8. Low solids meter
Valmet Sludge Dewatering Optimizer for wastewater treatment	59	Valmet SDO is specially developed to be used in the sludge dewatering control process by optimizing the centrate solids and dry cake solids amount, centrifuge performance, and polymer dosing.	191	1. Sludge dewatering optimization 2. Sludge dewatering control

Fourth part – Content to be uploaded to Valmet's wastewater pages.

Content to be uploaded	Header
• Tampere Vesi video • Wastewater new brochures + update older versions of product brochures • Retouch of ROI tool	Wastewater measurements and automation (no change)
• Tampere Vesi video • Wastewater new brochures • Lab correlation graph • Retouch of ROI tool	Valmet Dry Solids Measurement - Valmet DS (no change)
• Tampere Vesi Video • Box of benefits • Wastewater new brochures + update older versions of product brochure and data sheet • ROI tool • Lab correlation graph	Valmet Total Solids Measurement - Valmet TS (no change)
• Tampere Vesi Video • New benefits list for the page's content • Wastewater new brochures + update older version product data sheet • ROI tool • Lab correlation graph	Valmet Low Solids Measurement - Valmet LS (no change)
• Tampere Vesi Video • Box of benefits • Wastewater new brochures + update older versions product brochure and data sheet • ROI tool	Valmet Sludge Dewatering Optimizer - Valmet SDO (no chnage)

Fifth part – New first paragraph for each page and the images uploaded.

1st paragraph	Images	Image alt text
Valmet offers superior solids measurement solutions for wastewater treatment plants based on many years of experience and know-how. Valmet's solids sensors provide benefits for all sludge processing stages. Having over 10 years of experience in the wastewater treatment industry, Valmet has over 1000 references of solids measurement systems in municipal and industrial plants globally, with great proven results. These applications are used in the sludge dewatering, as well as at the primary clarifier, thickening, and digester process stages. Valmet's solids measurement systems are backed up with innovative technology, offering reliability to the end customer when optimizing their wastewater treatment plants. Valmet's professionals work closely to customers around the world, having a high service availability.	None	None
Valmet Dry Solids Measurement (Valmet DS) for dried wastewater sludge (dry cake), is installed after the dewatering machine at municipal wastewater treatment plants. Accurate measurement of biosolids provides significant savings in polymer dosage, energy, and dewatered solids transportation.	None	None
Valmet Total Solids Measurement (Valmet TS), based on microwave technology, is a reliable and accurate meter for all wastewater sludge treatment applications (0 – 40% total solids), providing savings in energy, polymer dosing, and transportation.	Image from Tampere Vesi as main	Valmet Total Solids Measurement - sludge solids sensor
Valmet Low Solids Measurement (Valmet LS) provides great savings in costs to wastewater treatment plants, by optimizing their polymer dosage and minimizing the solids content in the reject water. Valmet LS is the first and only meter which can measure centrate suspended solids reliably, and is used specially with the sludge dewatering machines. With Valmet LS the operators can easily select the right type of polymer while continuously following its quality.	Image from Tampere Vesi as main	Valmet Low Solids Measurement - centrate suspended solids
Valmet Sludge Dewatering Optimizer (Valmet SDO) allows wastewater treatment plants to improve the control of its sludge dewatering process. With Valmet SDO the operators can minimize the solids amount in the centrate, while maximizing the solids content in the dry cake. With Valmet SDO a great deal of savings in the polymer usage and energy spending can be obtained, while continuously providing real time data. The transportation costs are lower when the dry cake solids are higher, as well as needing less support fuel at the incineration plant.	Image from Tampere Vesi as main	Valmet Sludge Dewatering Optimizer - sludge dewatering control for wastewater treatment plants

Sixth part – Structure of the internal linking and off-page optimization secion.

Internal linking	External linking	Social media sharing
Linking to the products in a more organized way	• Media and articles from other domains	None - No new content to share (all the other content has been shared before)
Linking to "more technical data page" and back	• Media and articles from other domains • Relevant Wikipedia pages	None - No new content to share (all the other content has been shared before)
Linking to "more technical data page" and back	• Media and articles from other domains • Relevant Wikipedia pages	None - No new content to share (all the other content has been shared before)
Linking to "more technical data page" and back	• Media and articles from other domains • Relevant Wikipedia pages	None - No new content to share (all the other content has been shared before)
Linking to "more technical data page" and back	• Media and articles from other domains • Relevant Wikipedia pages	None - No new content to share (all the other content has been shared before)

Appendix 6 – SEO action plan for the technical pages, divided in different sections.

First part – New URLs of Valmet's wastewater technical pages.

	New URL	2nd URL
Valmet DS Technical page	/products/automation/analyzers-and-measurements/wastewater/dry-solids-measurement/technical-specifications/	http://www.valmet.com/valmetds-technical-specifications
Valmet TS Technical page	/products/automation/analyzers-and-measurements/wastewater/total-solids-measurement-ts/technical-specifications/	http://www.valmet.com/valmetts-technical-specifications
Valmet LS Technical page	/products/automation/analyzers-and-measurements/wastewater/low-solids-measurement-ls/technical-specifications/	http://www.valmet.com/valmetls-technical-specifications
Valmet SDO Technical page	/products/automation/analyzers-and-measurements/wastewater/sludge-dewatering-optimizer-valmet-sdo/technical-specifications/	http://www.valmet.com/valmetsdo-technical-specifications

Second part – Technical pages' purpose and target.

Purpose of the page	Target audience	Edit date
Give more technical data about the product and create internal linking	Professionals of the wastewater treatment industry	4.11.2016
Give more technical data about the product and create internal linking	Professionals of the wastewater treatment industry	4.11.2016
Give more technical data about the product and create internal linking	Professionals of the wastewater treatment industry	4.11.2016
Give more technical data about the product and create internal linking	Professionals of the wastewater treatment industry	4.11.2016

Third part – New meta data for Valmet's wastewater technical pages and the targeted keywords.

New meta page title	Length	New meta page description	Length	Target keywords
	70 characters max		150 characters max	
Valmet Dry Cake Solids Measurement - Technical specifications	61	Valmet Dry Cake Solids Measurement for wastewater treatment plant. Valmet DS provides great savings in polymer dosage and sludge transportation costs, as well as better dewatering control.	188	Same as main product page
Valmet Total Solids Measurement - Technical specifications	58	Valmet Total Solids Measurement for wastewater treatment plants. A microwave total solids sensor to optimize primary and secondary clarifiers, as well as optimizing the sludge dewatering process.	195	Same as main product page
Valmet Low Solids Measurement - Technical specifications	56	Valmet Low Solids Measurement for wastewater treatment plants. Valmet LS is the most reliable solution to optimize polymer dosage and minimize the solids content in the reject water.	182	Same as main product page
Valmet Sludge Dewatering Optimizer - Technical specifications	61	Valmet Sludge Dewatering Optimizer for wastewater treatment. With Valmet SDO the operators can minimize the solids amount in the centrate, while maximizing the solids content in the dry cake.	191	Same as main product page

Fourth part – Content to be uploaded to the technical pages.

Content to be uploaded	Header
• Box with highlight • Connections • Measurement principle • Brochures and data sheet	Valmet Dry Solids Measurement
• Box with highlight • Process image • Technical specifications • Conductivity limits • Brochures and data sheet	Valmet Total Solids Measurement
• Box with highlight • Technical specifications • Process image • Brochures and data sheet	Valmet Low Solids Measurement
• Box with highlight • Technical specifications • Inputs and outputs • Brochures and data sheet	Valmet Sludge Dewatering Optimizer

Fifth part – New images for Valmet's wastewater technical pages, and their internal linking structure.

Images	Image alt text	Internal linking
Image from Tampere Vesi as main	Valmet Dry Solids Measurement - Cake biosolids	Link back to product's main page
Product image	Valmet Total Solids Measurement for wastewater treatment	Link back to product's main page
Image from Tampere Vesi as main	Valmet Low Solids Measurement - polymer optimization	Link back to product's main page
Process image	Valmet Sludge Dewatering Optimizer for wastewater treatment plants	Link back to product's main page + links to the other products' pages (included in the page's content)

Appendix 7 – Pre optimization web analytics' report.

Main page analytics report

	Parameter	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit
	Overall	**312**	**250**	**00:01:23**	**60**	**51.67%**	**29.17%**
	Traffic type						
	Organic	233 **(74.68%)**	186**(74.40 %)**	00:01:32	46**(76.67%)**	52,17 %	28,76 %
	Direct	68 **(21.79%)**	53**(21.20%)**	00:00:54	11**(18.33%)**	45,45 %	32,35 %
	Referral	9 **(2.88%)**	9**(3.60%)**	00:01:16	3**(5.00%)**	66,67 %	22,22 %
	Paid	2 **(0.64%)**	2**(0.80%)**	00:00:25	0**(0.00%)**	0,00 %	0,00 %
	Country						
	Finland	72 **(23.08%)**	46**(18.40%)**	00:02:38	12**(20.00%)**	41,67 %	18,06 %
	United States	46 **(14.74%)**	41**(16.40%)**	00:00:43	12**(20.00%)**	58,33 %	34,78 %
Main page	Germany	33 **(10.58%)**	28**(11.20%)**	00:00:24	4**(6.67%)**	25,00 %	21,21 %
	Sweden	20 **(6.41%)**	18(**7.20%)**	00:00:13	1**(1.67%)**	100,00 %	20,00 %
	United Kingdom	18 **(5.77%)**	13**(5.20%)**	00:01:42	3**(5.00%)**	66,67 %	27,78 %
	Canada	14 **(4.49%)**	14**(5.60%)**	00:00:29	4**(6.67%)**	100,00 %	50,00 %
	France	13 **(4.17%)**	10(**4.00%)**	00:00:37	6**(10.00%)**	33,33 %	38,46 %
	Italy	11 **(3.53%)**	7**(2.80%)**	00:00:46	1**(1.67%)**	100,00 %	27,27 %
	Russia	8 **(2.56%)**	7**(2.80%)**	00:03:42	1**(1.67%)**	0,00 %	37,50 %
	Denmark	6 **(1.92%)**	6**(2.40%)**	00:00:35	0**(0.00%)**	0,00 %	50,00 %
	User type						
	New Visitor	165 **(52.88%)**	136 **(54.40%)**	00:00:46	37**(61.67%)**	51,35 %	32,12 %
	Returning Visitor	147 **(47.12%)**	114 **(45.60%)**	00:02:01	23**(38.33%)**	52,17 %	25,85 %

Valmet DS analytics report

	Parameter	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit
Valmet DS	**Overall**	**273**	**220**	**00:01:41**	**143**	**73.43%**	**52.01%**
	Traffic type						
	Organic	233(**85.35%)**	190 **(86.36%)**	00:01:45	130 **(90.91%)**	74.62%	54.51%
	Direct	39**(14.29%)**	29**(13.18%)**	00:01:29	13**(9.09%)**	61.54%	32,35 %
	Referral	1**(0.37%)**	1**(0.45%)**	00:00:10	0**(0.00%)**	0.00%	0.00%
	Country						
	United States	58**(21.25%)**	47**(21.36%)**	00:02:29	30**(20.98%)**	63.33%	51.72%
	Finland	40**(14.65%)**	27**(12.27%)**	00:01:52	9**(6.29%)**	55.56%	22.50%
	United Kingdom	26**(9.52%)**	24**(10.91%)**	00:01:34	19**(13.29%)**	68.42%	21,21 %
	Germany	22**(8.06%)**	14**(6.36%)**	00:00:23	4**(2.80%)**	50.00%	20,00 %
	Italy	10**(3.66%)**	7**(3.18%)**	00:00:48	3**(2.10%)**	100.00 %	27,78 %
	France	7**(2.56%)**	6**(2.73%)**	00:01:01	3**(2.10%)**	100.00 %	57.14%
	Turkey	6**(2.20%)**	6**(2.73%)**	00:00:00	4(**2.80%)**	100.00 %	50,00 %
	Argentina	5**(1.83%)**	2**(0.91%)**	00:02:03	1**(0.70%)**	0.00%	38,46 %
	Australia	5**(1.83%)**	4**(1.82%)**	00:03:39	4**(2.80%)**	75.00%	27,27 %
	Switzerland	5**(1.83%)**	3**(1.36%)**	00:00:31	2**(1.40%)**	0.00%	37,50 %
	User type						
	New Visitor	199**(72.89%)**	166 **(75.45%)**	00:01:54	123 **(86.01%)**	78.05%	61.31%
	Returning Visitor	74**(27.11%)**	54**(24.55%)**	00:01:24	20**(13.99%)**	45.00%	27.03%

Valmet TS analytics report

	Parameter	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit
	Overall	**721**	**608**	**00:02:32**	**492**	**79.07%**	**68.52%**
	Traffic type						
	Organic	520**(72.12%)**	438 **(72.04%)**	00:02:26	352 **(71.54%)**	76.42%	66.73%
	Direct	188(**26.07%)**	160 **(26.32%)**	00:03:14	139 **(28.25%)**	85.61%	76.06%
	Referral	7**(0.97%)**	6**(0.99%)**	00:00:57	1**(0.20%)**	100.00 %	42.86%
	Paid	6**(0.83%)**	4(**0.66%)**	00:00:38	0**(0.00%)**	0.00%	16.67%
	Country						
Valmet TS	United States	335**(46.46%)**	287 **(47.20%)**	00:02:38	256 **(52.03%)**	80.08%	74.63%
	Canada	121**(16.78%)**	110 **(18.09%)**	00:02:07	103 **(20.93%)**	86.41%	81.82%
	Finland	41**(5.69%)**	29**(4.77%)**	00:02:13	11**(2.24%)**	63.64%	46.34%
	Germany	39**(5.41%)**	33**(5.43%)**	00:03:04	17**(3.46%)**	76.47%	51.28%
	United Kingdom	18**(2.50%)**	15**(2.47%)**	00:05:18	7**(1.42%)**	71.43%	50.00%
	Italy	14**(1.94%)**	7**(1.15%)**	00:02:50	3(**0.61%)**	33.33%	14.29%
	India	13**(1.80%)**	12**(1.97%)**	00:02:53	12**(2.44%)**	83.33%	84.62%
	Netherlands	11**(1.53%)**	9**(1.48%)**	00:06:10	7**(1.42%)**	71.43%	81.82%
	Sweden	10**(1.39%)**	9**(1.48%)**	00:01:21	3**(0.61%)**	33.33%	40.00%
	(not set)	10**(1.39%)**	6**(0.99%)**	00:00:25	5(**1.02%)**	80.00%	60.00%
	User type						
	New Visitor	595**(82.52%)**	511 **(84.05%)**	00:02:32	432 **(87.80%)**	81.48%	73.45%
	Returning Visitor	126**(17.48%)**	97**(15.95%)**	00:02:30	60**(12.20%)**	61.67%	45.24%

Valmet LS analytics report

	Parameter	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit
	Overall	**106**	**84**	**00:01:13**	**30**	**53.33%**	**31.13%**
	Traffic type						
	Organic	84 **(79.25%)**	66**(78.57%)**	00:01:13	24**(80.00%)**	41.67%	29.76%
	Direct	21 **(19.81%)**	17**(20.24%)**	00:01:14	6**(20.00%)**	100.00 %	33.33%
	Referral	1**(0.94%)**	1**(1.19%)**	00:00:00	0**(0.00%)**	0.00%	100.00 %
	Country						
	United States	30 **(28.30%)**	24**(28.57%)**	00:02:00	9**(30.00%)**	33.33%	36.67%
Valmet LS	Finland	20 **(18.87%)**	13**(15.48%)**	00:00:48	5**(16.67%)**	40.00%	15.00%
	Germany	13 **(12.26%)**	10**(11.90%)**	00:00:44	4**(13.33%)**	75.00%	30.77%
	Italy	5**(4.72%)**	3**(3.57%)**	00:00:35	0**(0.00%)**	0.00%	20.00%
	Japan	5**(4.72%)**	4**(4.76%)**	00:00:49	0**(0.00%)**	0.00%	40.00%
	Canada	4**(3.77%)**	4**(4.76%)**	00:05:27	4**(13.33%)**	50.00%	50.00%
	United Kingdom	4**(3.77%)**	4**(4.76%)**	00:01:08	1**(3.33%)**	100.00 %	50.00%
	Sweden	3**(2.83%)**	2**(2.38%)**	00:02:50	0(**0.00%)**	0.00%	33.33%
	Brazil	2**(1.89%)**	2**(2.38%)**	00:00:06	1**(3.33%)**	100.00 %	50.00%
	Spain	2**(1.89%)**	1**(1.19%)**	00:01:17	1**(3.33%)**	0.00%	50.00%
	User type						
	Returning Visitor	56 **(52.83%)**	42**(50.00%)**	00:00:50	16**(53.33%)**	50.00%	32.14%
	New Visitor	50 **(47.17%)**	42**(50.00%)**	00:01:38	14**(46.67%)**	57.14%	30.00%

Valmet SDO analytics report

	Parameter	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit
Valmet SDO	**Overall**	**104**	**86**	**00:01:03**	**33**	**66.67%**	**34.62%**
	Traffic type						
	Organic	65**(62.50%)**	53**(61.63%)**	00:01:06	14**(42.42%)**	64.29%	27.69%
	Direct	33**(31.73%)**	29**(33.72%)**	00:01:01	17**(51.52%)**	70.59%	45.45%
	Referral	4**(3.85%)**	3**(3.49%)**	00:01:40	2**(6.06%)**	50.00%	75.00%
	Paid	2**(1.92%)**	1**(1.16%)**	00:00:12	0**(0.00%)**	0.00%	0.00%
	Country						
	United States	26**(25.00%)**	23**(26.74%)**	00:01:30	11**(33.33%)**	72.73%	42.31%
	Finland	21**(20.19%)**	14**(16.28%)**	00:01:20	3**(9.09%)**	66.67%	28.57%
	United Kingdom	13**(12.50%)**	11**(12.79%)**	00:01:04	5**(15.15%)**	80.00%	38.46%
	Germany	10**(9.62%)**	8**(9.30%)**	00:00:55	5**(15.15%)**	40.00%	40.00%
	Canada	4**(3.85%)**	4**(4.65%)**	00:01:35	2**(6.06%)**	100.00%	50.00%
	Japan	4**(3.85%)**	3**(3.49%)**	00:00:14	0**(0.00%)**	0.00%	0.00%
	Sweden	4**(3.85%)**	3**(3.49%)**	00:01:26	2**(6.06%)**	50.00%	25.00%
	Italy	3**(2.88%)**	2**(2.33%)**	00:00:25	0**(0.00%)**	0.00%	33.33%
	Singapore	2**(1.92%)**	2**(2.33%)**	00:00:00	1**(3.03%)**	0.00%	50.00%
	Taiwan	2**(1.92%)**	1**(1.16%)**	00:00:08	1**(3.03%)**	0.00%	50.00%
	User type						
	New Visitor	52**(50.00%)**	45**(52.33%)**	00:01:11	22**(66.67%)**	59.09%	36.54%
	Returning Visitor	52**(50.00%)**	41**(47.67%)**	00:00:56	11**(33.33%)**	81.82%	32.69%

Appendix 8 – Post optimization web analytics' report.

Main page analytics report

	Parameter	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit
	Overall	**185**	**78**	**00:00:44**	**27**	**7.41%**	**14.05%**
	Traffic type						
	Organic	134 **(72.43%)**	53**(67.95%)**	00:00:47	19**(70.37%)**	5.26%	12.69%
	Direct	39**(21.08%)**	19**(24.36%)**	00:00:41	6**(22.22%)**	16.67%	20.51%
	Referral	10**(5.41%)**	5**(6.41%)**	00:00:25	2**(7.41%)**	0.00%	10.00%
	Paid	2**(1.08%)**	1**(1.28%)**	00:00:29	0**(0.00%)**	0.00%	0.00%
	Country						
	Finland	54**(29.19%)**	21**(26.92%)**	00:00:30	7**(25.93%)**	0.00%	9.26%
	France	20**(10.81%)**	8**(10.26%)**	00:00:32	7**(25.93%)**	14.29%	20.00%
Main page	United States	16**(8.65%)**	6**(7.69%)**	00:00:11	1**(3.70%)**	0.00%	0.00%
	Canada	15**(8.11%)**	7**(8.97%)**	00:00:10	1**(3.70%)**	0.00%	20.00%
	Norway	10**(5.41%)**	5**(6.41%)**	00:03:44	4**(14.81%)**	0.00%	40.00%
	Sweden	10**(5.41%)**	4**(5.13%)**	00:00:10	1**(3.70%)**	0.00%	0.00%
	Germany	8**(4.32%)**	3**(3.85%)**	00:00:02	0**(0.00%)**	0.00%	12.50%
	United Kingdom	8**(4.32%)**	4**(5.13%)**	00:00:36	1**(3.70%)**	0.00%	25.00%
	Russia	8**(4.32%)**	3**(3.85%)**	00:00:27	0**(0.00%)**	0.00%	0.00%
	India	7**(3.78%)**	3**(3.85%)**	00:00:22	2**(7.41%)**	50.00%	28.57%
	User type						
	Returning Visitor	108 **(58.38%)**	42**(53.85%)**	00:00:33	13**(48.15%)**	0.00%	14.81%
	New Visitor	77**(41.62%)**	36**(46.15%)**	00:01:00	14**(51.85%)**	14.29%	12.99%

Valmet DS analytics report

	Parameter	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit
	Overall	**174**	**58**	**00:00:29**	**42**	**2.38%**	**20.69%**
	Traffic type						
	Organic	152 **(87.36%)**	50**(86.21%)**	00:00:33	38**(90.48%)**	2.63%	21.05%
	Direct	14**(8.05%)**	6**(10.34%)**	00:00:05	4**(9.52%)**	0.00%	28.57%
	Paid	8**(4.60%)**	2**(3.45%)**	00:00:07	0**(0.00%)**	0.00%	0.00%
	Country						
	Finland	62**(35.63%)**	9**(15.52%)**	00:00:50	2**(4.76%)**	50.00%	4.84%
	United States	28**(16.09%)**	13**(22.41%)**	00:00:13	10**(23.81%)**	0.00%	35.71%
Valmet DS	United Kingdom	16**(9.20%)**	7**(12.07%)**	00:00:10	7**(16.67%)**	0.00%	18.75%
	Spain	8**(4.60%)**	3**(5.17%)**	00:00:09	3**(7.14%)**	0.00%	25.00%
	Canada	6**(3.45%)**	1**(1.72%)**	00:00:07	0**(0.00%)**	0.00%	0.00%
	Colombia	6**(3.45%)**	3**(5.17%)**	00:00:01	2**(4.76%)**	0.00%	33.33%
	Philippines	6**(3.45%)**	3**(5.17%)**	00:00:19	3**(7.14%)**	0.00%	16.67%
	Sweden	6**(3.45%)**	3**(5.17%)**	00:00:13	2**(4.76%)**	0.00%	33.33%
	France	4**(2.30%)**	1**(1.72%)**	00:01:11	0**(0.00%)**	0.00%	0.00%
	Indonesia	4**(2.30%)**	2**(3.45%)**	00:00:05	2**(4.76%)**	0.00%	50.00%
	User type						
	New Visitor	87**(50.00%)**	39**(67.24%)**	00:00:08	32**(76.19%)**	3.12%	33.33%
	Returning Visitor	87**(50.00%)**	19**(32.76%)**	00:00:45	10**(23.81%)**	0.00%	8.05%

Valmet TS analytics report

	Parameter	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit
	Overall	182	61	00:00:40	20	5.00%	17.58%
	Traffic type						
	Organic	130 **(71.43%)**	40**(65.57%)**	00:00:33	14**(70.00%)**	0.00%	14.62%
	Direct	44**(24.18%)**	18**(29.51%)**	00:01:09	6**(30.00%)**	16.67%	27.27%
	Paid	6**(3.30%)**	2**(3.28%)**	00:00:05	0**(0.00%)**	0.00%	16.67%
	Referral	2**(1.10%)**	1**(1.64%)**	00:00:38	0**(0.00%)**	0.00%	0.00%
	Country						
	Finland	74**(40.66%)**	12**(19.67%)**	00:00:22	2**(10.00%)**	0.00%	6.76%
Valmet TS	United States	28**(15.38%)**	12**(19.67%)**	00:00:14	4**(20.00%)**	0.00%	28.57%
	Sweden	17**(9.34%)**	8**(13.11%)**	00:02:21	4**(20.00%)**	0.00%	41.18%
	Canada	12**(6.59%)**	5**(8.20%)**	00:00:09	2**(10.00%)**	0.00%	25.00%
	Germany	10**(5.49%)**	4**(6.56%)**	00:00:50	1**(5.00%)**	0.00%	30.00%
	India	8**(4.40%)**	4**(6.56%)**	00:00:38	3**(15.00%)**	0.00%	25.00%
	Colombia	4**(2.20%)**	1**(1.64%)**	00:00:01	0**(0.00%)**	0.00%	0.00%
	Spain	4**(2.20%)**	2**(3.28%)**	00:00:41	0**(0.00%)**	0.00%	0.00%
	France	4**(2.20%)**	2**(3.28%)**	00:01:04	0**(0.00%)**	0.00%	0.00%
	United Kingdom	4**(2.20%)**	2**(3.28%)**	00:00:06	0**(0.00%)**	0.00%	25.00%
	User type						
	Returning Visitor	104 **(57.14%)**	26**(42.62%)**	00:00:52	7**(35.00%)**	0.00%	11.54%
	New Visitor	78**(42.86%)**	35**(57.38%)**	00:00:20	13**(65.00%)**	7.69%	25.64%

Valmet LS analytics report

	Parameter	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit
Valmet LS	**Overall**	**95**	**29**	**00:00:55**	**12**	**8.33%**	**7.37%**
	Traffic type						
	Organic	76**(80.00%)**	20**(68.97%)**	00:00:51	8**(66.67%)**	0.00%	5.26%
	Direct	13**(13.68%)**	6**(20.69%)**	00:01:39	4**(33.33%)**	25.00%	15.38%
	Paid	4**(4.21%)**	2**(6.90%)**	00:00:09	0**(0.00%)**	0.00%	25.00%
	Referral	2**(2.11%)**	1**(3.45%)**	00:00:21	0**(0.00%)**	0.00%	0.00%
	Country						
	Finland	53**(55.79%)**	10**(34.48%)**	00:00:51	2**(16.67%)**	0.00%	1.89%
	Germany	15**(15.79%)**	6**(20.69%)**	00:02:07	5**(41.67%)**	0.00%	6.67%
	Canada	6**(6.32%)**	3**(10.34%)**	00:00:35	2**(16.67%)**	0.00%	0.00%
	Spain	6**(6.32%)**	3**(10.34%)**	00:00:10	0**(0.00%)**	0.00%	16.67%
	United States	6**(6.32%)**	2**(6.90%)**	00:00:14	0**(0.00%)**	0.00%	33.33%
	France	4**(4.21%)**	2**(6.90%)**	00:00:24	0**(0.00%)**	0.00%	0.00%
	Denmark	2**(2.11%)**	1**(3.45%)**	00:00:04	1**(8.33%)**	0.00%	0.00%
	Sweden	2**(2.11%)**	1**(3.45%)**	00:00:00	1**(8.33%)**	0.00%	50.00%
	South Africa	1**(1.05%)**	1**(3.45%)**	00:00:00	1**(8.33%)**	100.00 %	100.00 %
	User type						
	Returning Visitor	62**(65.26%)**	14**(48.28%)**	00:00:50	5**(41.67%)**	20.00%	3.23%
	New Visitor	33**(34.74%)**	15**(51.72%)**	00:01:07	7**(58.33%)**	0.00%	15.15%

Valmet SDO analytics report

	Parameter	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit
Valmet SDO	**Overall**	**79**	**33**	**00:00:47**	**6**	**16.67%**	**13.92%**
	Traffic type						
	Organic	65**(82.28%)**	28**(84.85%)**	00:00:53	5**(83.33%)**	20.00%	12.31%
	Referral	8**(10.13%)**	2**(6.06%)**	00:00:22	0**(0.00%)**	0.00%	25.00%
	Direct	6**(7.59%)**	3**(9.09%)**	00:00:05	1**(16.67%)**	0.00%	16.67%
	Country						
	Finland	34**(43.04%)**	10**(30.30%)**	00:00:52	0**(0.00%)**	0.00%	5.88%
	United States	17**(21.52%)**	10**(30.30%)**	00:01:21	5**(83.33%)**	20.00%	23.53%
	Spain	6**(7.59%)**	3**(9.09%)**	00:00:03	0**(0.00%)**	0.00%	33.33%
	Portugal	4**(5.06%)**	1**(3.03%)**	00:01:02	0**(0.00%)**	0.00%	0.00%
	Sweden	4**(5.06%)**	2**(6.06%)**	00:00:04	1**(16.67%)**	0.00%	0.00%
	Canada	2**(2.53%)**	1**(3.03%)**	00:00:10	0**(0.00%)**	0.00%	0.00%
	Colombia	2**(2.53%)**	1**(3.03%)**	00:00:09	0**(0.00%)**	0.00%	0.00%
	Germany	2**(2.53%)**	1**(3.03%)**	00:00:20	0**(0.00%)**	0.00%	0.00%
	France	2**(2.53%)**	1**(3.03%)**	00:00:08	0**(0.00%)**	0.00%	0.00%
	Ireland	2**(2.53%)**	1**(3.03%)**	00:00:00	0**(0.00%)**	0.00%	50.00%
	User type						
	Returning Visitor	44**(55.70%)**	16**(48.48%)**	00:00:50	0**(0.00%)**	0.00%	13.64%
	New Visitor	35**(44.30%)**	17**(51.52%)**	00:00:42	6**(100.00%)**	16.67%	14.29%

Appendix 9 – Ranking comparison of Valmet's keywords, before and after the optimization activities.

Main page	Past	Present
Wastewater treatment automation	43	11
Sludge dewatering optimization	Not in first 10 SERP	Not in first 10 SERP
Wastewater treatment optimization	Not in first 10 SERP	Not in first 10 SERP
Wastewater solids sensors	Not in first 10 SERP	Not in first 10 SERP
Sludge transportation costs	Not in first 10 SERP	Not in first 10 SERP
Polymer costs in wastewater treatment	Not in first 10 SERP	Not in first 10 SERP
Sewage water treatment	Not in first 10 SERP	Not in first 10 SERP
Valmet DS	**Past**	**Present**
Dry cake solids	1	1
Cake solids sensor	1	2
Cake biosolids	Not in the first 10 SERP	Not in the first 10 SERP
Sludge dewatering	Not in the first 10 SERP	Not in the first 10 SERP
Polymer savings	Not in the first 10 SERP	Not in the first 10 SERP
Dewatered sludge	Not in the first 10 SERP	Not in the first 10 SERP
Cake solids meter	1	2
Valmet TS	**Past**	**Present**
Wastewater total solids	Not in the first 10 SERP	4
Sludge solids measurement	3	2
Total solids measurement	8	3
Microwave solids meter	5	3
Total solids meter	1	1
Total solids sensor	2	2
Valmet LS	**Past**	**Present**
Wastewater low solid	1	1
Reject water solids	3	2
Centrate suspended solids	Not in first 10 SERP	3
Polymer optimization	Not in first 10 SERP	Not in first 10 SERP
Centrate water solids	Not in first 10 SERP	Not in first 10 SERP
Low solids measurement	1	1
Low solids sensor	1	1
Low solids meter	1	1
Valmet SDO	**Past**	**Present**
Sludge dewatering optimization	Not in first 10 SERP	5
Sludge dewatering control	30	7

Appendix 10 – PDFs' event tracking.

PDFs	Total events	Unique events
Valmet Wastewater brochure	9	9
Valmet TS data sheet	8	7
Valmet Water and Wastewater	7	7
Valmet DS brochure	4	4
Valmet TS brochure	3	3
Valmet TS brochure, English	3	3
Valmet DS data sheet	2	2
Valmet LS data sheet	2	2
Valmet SDO brochure, English	2	2
Wastewater brochure, English	2	2
Optimize Food Waster Processes	1	1
Surface Water Treatment	1	1
Valmet SDO brochure	1	1
Valmet SDO data sheet	1	1
Valmet TS brochure, Finnish	1	1
Wastewater brochure, Finnish	1	1