Aleksanteri Marttila

WORKING INSTRUCTIONS FOR ABB GCS UNIT

Technology and Communication
2020

VAASAN AMMATTIKORKEAKOULU
Sähkötekniikka

TIIVISTELMÄ

Tekijä	Aleksanteri Marttila
Opinnäytetyön nimi	Working Instructions for ABB GCS
Vuosi	2020
Kieli	englanti
Sivumäärä	23 + 1 liitettä
Ohjaaja	Tapani Esala & Tero Annola

Tämä insinöörityö tehtiin ABB oy:n Vaasan Motors and Generators Global Customer Support yksikköön. Työn tarkoituksena oli luoda yksikölle yksi yhteinen ohjekirja kaikista sen käyttämistä sähköisistä työkaluista. Työ tehtiin uuden työntekijän näkökulmasta, jotta ohjelmien toiminta olisi mahdollisimman helppo ymmärtää ja niitä oppisi käyttämään vaivattomasti.

Työ aloitettiin kokoamalla vanhat ohjemateriaalit ja oppaat. Tietoa täytyi lisäksi hankkia kokeilemalla työkalujen toimintaa. Pohjamateriaalin tieto oli suurelta osin vanhentunutta, koska ohjelmia oli niiden julkaisun jälkeen jo päivitetty useasti.

Työn tuloksena syntynyttä liitteenä olevaa ohjekirjaa voidaan käyttää yksikön työntekijöiden kouluttamiseen globaalisti, koska se on englanninkielinen. Työtä voivat hyödyntää myös vanhat yksikön työntekijät, tällöin voidaan saavuttaa parempaa työtehokkuutta turhan työn vähentyessä.

Avainsanat   Työohje, Ohjeet, Uusi työntekijä

VAASAN AMMATTIKORKEAKOULU
UNIVERSITY OF APPLIED SCIENCES
Sähkötekniikka

ABSTRACT

Author	Aleksanteri Marttila
Title	Working Instructions for ABB GCS
Year	2020
Language	English
Pages	23 + 1 Appendix
Name of Supervisor	Tapani Esala & Tero Annola

This thesis was done at ABB Oy's Vaasa Motors and Generators Global customer Support unit. The purpose of the thesis was to create a single manual for the unit on all the electronic tools it uses. The thesis was done from the perspective of a new employee to make the operation of the programs as easy as possible.

The work began with collection old education material and guides. In addition, the information had to be obtained by interviewing and experimenting with the tools. The information in the base material was largely outdated as the programs had already been updated several times since their release.

The resulting manual can be used to train unit staff globally as it is in English. The thesis can also be utilized by the old unit employees, which can result in better work efficiency as the unnecessary work is reduced.

Keywords   Work Instruction, Instructions, New Employee

TABLE OF CONTENTS

APPENDICES

APPENDIX 1. Working instructions for ABB GCS unit (concealed)

LIST OF TABLES AND FIGURES

ABBREVIATIONS AND TERMS

ADEPT	Advanced Electrical Design Program
BU	Business unit
BOM	Bill Of Material
CAD	Computer-aided design
CAE	Computer-aided engineering
CAM	Computer-aided manufacturing
ELapp	Electric Application
EPID	Electric Product Info Database
ERP	Enterprise Resource Planning system
GCS	Global Customer Support
HV	High voltage
IE	International Efficiency
IEC	International Electrotecnical Comission
IMS	Integrated Management System
LP	List Price
LV	Low voltage
LSU	Local Sales Unit
MEPS	Minimum Efficiency Performance Standards
MoGeVa	Search engine

MST	Motor Selection Tool
MV	Medium Voltage
NX	3D Design Software
OMS	Order Management System
PG	Product Group
BL	Business Line
SAP	Systeme, Anwendungen Und Produkte in der Datenverarbeitung
TC	Team Center
TP	Transfer Price
VnP	Variants and Prices
VSD	Variable speed drive
kW	Kilowatt

1   INTRODUCTION

This thesis is intended to provide a guide for the software used by ABB's Global Customer Support unit. Previously, the unit did not have a single place to find the information needed for the job. There have been several individual guides that have been developed over the years, but they are mainly focused on a single program and have often been left out, so they are no longer useful. In addition, new features may have been added to the programs that are no longer discussed in the guides. The programs featured in this guide are mainly for pricing electric motors, choosing the right motor, or designing their technical or electrical features.

The manual was created from the point of view of the new employee and is intended to enable the new employee to quickly integrate with the unit. This will also benefit our customers as it is very important for them to get the right answer to their question quickly and correctly. Not only will the customer benefit from a quick response, it will also reduce the workload of the unit as new employees can search for information more independently and the search for information in the wrong places or other employees will be reduced.

The thesis was done in cooperation with ABB Motors and Generators. ABB's multicultural workplace and English as its working language, so the instructions were made in English.

1.1 Working Instructions for ABB GCS Unit

The manual is concealed in the thesis because it contains internal information that cannot be shared with third parties. An example of the contents of this manual is in Chapter five, which describes the operation of a tool called MotSize. MotSize is software available on the ABB Sites that can be downloaded by anyone. The program is aimed at the company's customers and Local Sales Units (LSU)

1.2 Definition

Many programs are large entities that are used in other units of the company and not all units use the same features, so this thesis focuses on the GCS unit employee perspective.

2 ABB

2.1 General

ABB is a multinational company with operations in over 100 countries. The company has approximately 147,000 employees. In addition, ABB employs a large number of subcontractors around the world. The company focuses on four different business areas: Electrification, Industrial Automation, Motion and Robotics & Discrete Automation. The company's Power Grids business will be divested to Hitachi in 2020. The company is headquartered in Oerlikon, Zurich, Switzerland and the company has a turnover of $ 27.66 (2019) billion dollars.

The Electrification unit provides low and medium-voltage, digital solutions and innovations in the electrical systems of society including EV infrastructure, solar inverters, modular substations, distribution automation, power protection, wiring accessories, switchgear, enclosures, cabling, sensing and control /3/.

The Industrial Automation unit makes solutions for process and hybrid industries, including industry-specific integrated automation, electrification and digital solutions, control technologies, software and advanced services, measurement & analytics, and marine and turbocharging offerings. /3/.

The Motion unit produces electric motors and generators, drives, mechanical transmissions and complete power drives. The unit employs 20,000 people globally /3/.

ABB's Robotics & Discrete Automation business provides solutions in robotics, machine and factory automation. The unit has a strong presence in Asia.

2.2 Motors and Generators

The Motors and Generators unit employs approximately 14,000 people in over 100 countries. Motors are mainly manufactured in Finland, Poland, India, Estonia and China. Finland has manufacturing facilities in Vaasa and Helsinki. LV motors with

the frame size of 80-500 with a voltage of less than 1000 volts are manufactured in Vaasa and MV and HV motors in Helsinki. /1/

The motors manufactured in Finland are mainly custom-made according to the customer's requirements, and elsewhere the motors are mainly manufactured for storage. In addition to Finland, China also makes customized motors for customers. Special motors often go to very demanding destinations, for example, in mines, oil refining or the sea. /1/

3 TENDERING PROCESS

The process begins with the customer's need for a company product, either as part of a brand-new entity, or as a replacement for old broken or old technology equipment. The customer contacts the ABB Local Sales Unit, who will review the ABB product range.

Sales companies have all the information about the company's products and the tools to choose the right product. Very often the customer has wishes and special requirements that cannot be fulfilled by the resources available to the sales companies alone. In addition to special mechanical and electrical structures, customers have a growing need for documentation to be delivered with the motor. For example, it is possible to order different types of records, certificates, dimensional drawings and tests. National requirements for motor manufacture also pose their own challenges in finding the right product.

3.1 LSU

The LSU, or Local Sales Unit, is ABB's in-house sales company, operating in a customer interface that connects the customer and the company. The LSU is the actor between the product manufacturing unit and the customer. If the customer and the LSU come to a solution that requires more specific expertise, the LSU will contact the Global Customer Support (GCS) request, which will describe the customer's needs.

3.2 Global Customer Support

The Global Customer Support (GCS) is located in eight different support centers, serving for low-voltage motor customers and Local Sales Units (LSU) in all technical, electric, pricing and documentation matters. The unit employs salesmen and electrical and mechanical engineers. The unit solves about 1000 cases a week.

Cases are sent to the GCS mainly by LSU's in addition to sales support. The GCS trains sales companies to use tools and assists in customer visits at the factory.

Sales companies, if necessary, will contact the GCS unit serving their area. Contact is made in the Pre-order base, where a case is created that describes the customer's needs as accurately as possible. The program used is called Salesforce.

The case will be handled by the GCS Unit. The individual employee takes the case to resolve. The GCS will determine if the customer's requirements can be met and, if necessary, will ask for further information. The degree of urgency of the cases may vary and will be taken into account by the handlers. To help them with their work, GCS employees use a variety of computer programs that can be used to calculate various electric structures on motor, mechanical design programs, databases containing information on old motors sold and programs that contain pricing information. The unit also employs persons specializing solely in mechanical and electrical design to assist in the resolution of the case.

Figure 1. Hub locations

3.3 Tender to Local Sales Unit

Once the GCS has accumulated a response to a question sent by the LSU, the question will be answered in the pre-order database, if necessary, the answer will include price information and delivery time.

4   WORKING INSTRUCTIONS FOR GCS

The manual contains information on several programs used to assist in the company's offering process. The process includes, for example, pricing, determining delivery times, obtaining information about a customer's old product, drawings, and electronic data.

The manual has been drafted from the perspective of the new employee, and attempts have been made to anticipate potential problems and issues raised by the programs. Many of the programs are very large entities used by many parts and units of the company, and not all of them are tailor-made for use only in the unit where the manual is made. As a result, many programs also have features that require little or no use. Features beyond our unit's need were not addressed in the manual. The purpose of this manual is specifically to show what different information is available about the program, and not to be step by step guide to using the program.

The program will be outlined at the beginning. The main features of the program, what area it is used for and who mainly uses it.

The next section is where the program can be found. Programming sources come from different sources, some are fully browser-based, log in with user IDs, and others are installed on a computer. A link or path to the login or download page for each program has been added at the beginning.

5   MOTSIZE EXAMPLE

5.1 General Program Features

MotSize is one of the most important motor sizing tools. The tool can be used to create the most common datasheets for motors that are not powered by VSD. The program has compilation variables that are the most common variables needed to select a suitable motor, for example, voltage, frequency, power, speed, ambient, starting current, efficiency standards, mounting of the motor, altitude from sea level and easy restamping function. MotSize should be updated whenever the program suggests it. The information is then up to date. /3/

5.2 Motor Selection

First, a dialog box will open, this defines the basic information for select motors and network. The most relevant information can be found in the red boxes in **(**Figure 2**)** Selected values can be changed later, and new networks can be added. Finally, press the OK key.

Yritä välttää näin paljontyhjää tilaa sivujen lopussa, pyri täyttämään sivut. Kuvan alta voi siirtää tekstiä tähän. Sivun loppu jää tyhjäksi vain jos uusi luku alkaa (ei siis alaotsikko).

Figure 2. Settings

In the following window (Figure 3) if necessary, grid values can be modified. In addition, a tolerance range for voltage and frequency can be defined. The default values are preset in the program. The networks and motors selected in the program will appear under the System configuration. Once the grid values are set to select the motor, click on undefined.
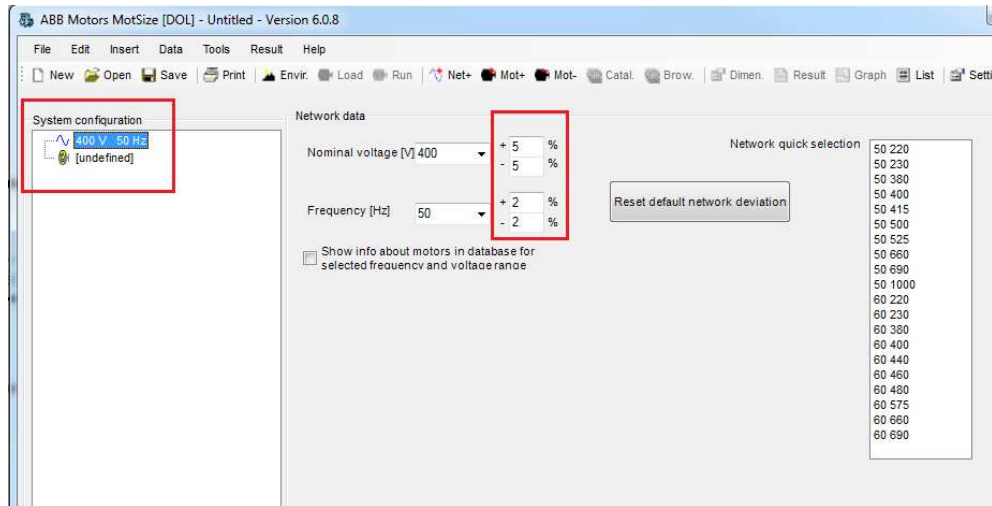
Figure 3. Grid values

Undefined opens the main program page (Figure 4) where the motor selection is made. In this view, electrical and mechanical values related to motor selection can be changed. After selecting the motor values, press the Dimen button. If there are more possible options, a dialog box will open. The selected motor can also be easily re-stamped with Restamp power [KW] function. Data - browse Catalog can be used to search and select the motor using the Catalog Product code. (Figure 6)

It is possible to have more than one motor at a time and have different networks. If a new motor is to be added or one in existing network removed , or a whole new network added , it can be done with the Net+, Mot+ and Mot- buttons in toolbar.

The Load button (Figure 5) on the toolbar can be used to set starting conditions, such as torque curve, current and speed curve, thermal curve, 80% un curve Y/D starting, transformer, time to start, number of consecutive starts and other results.
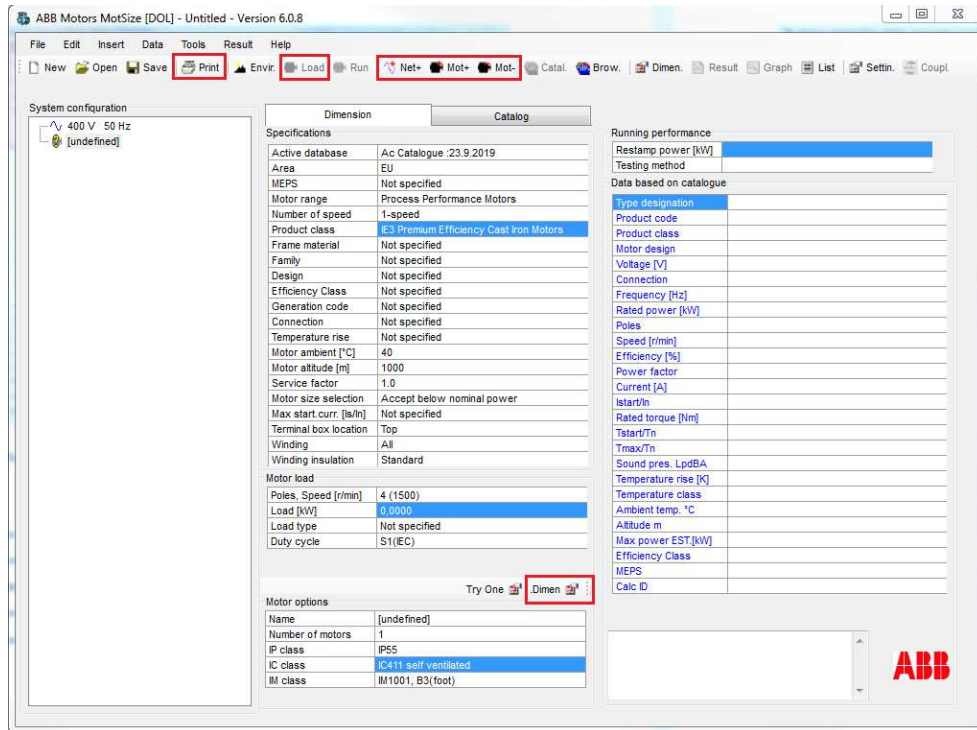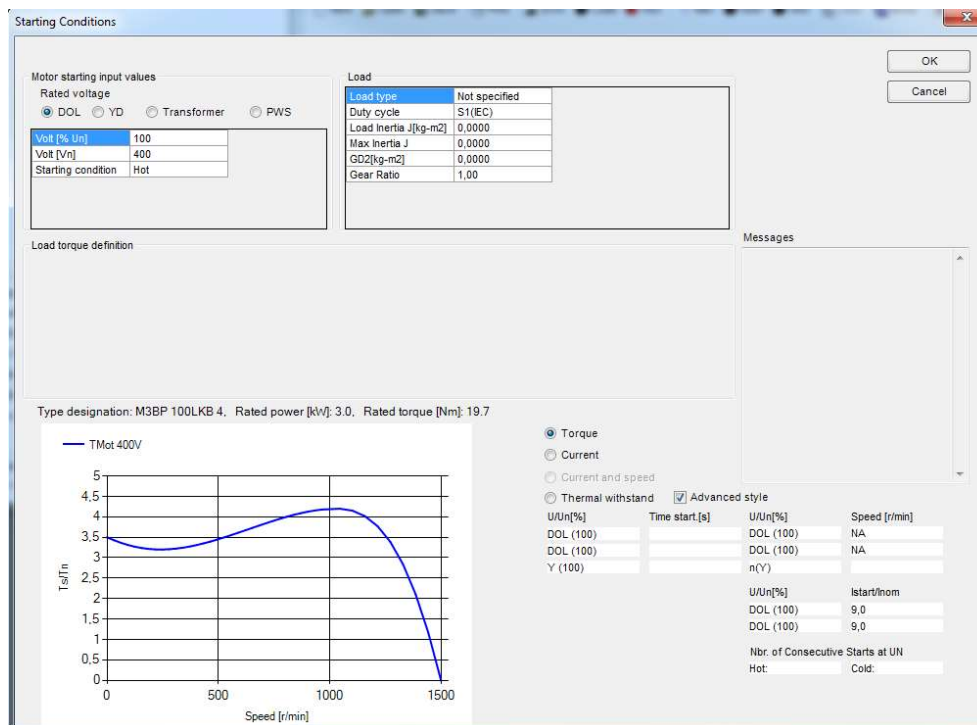
Figure 4. Main program page
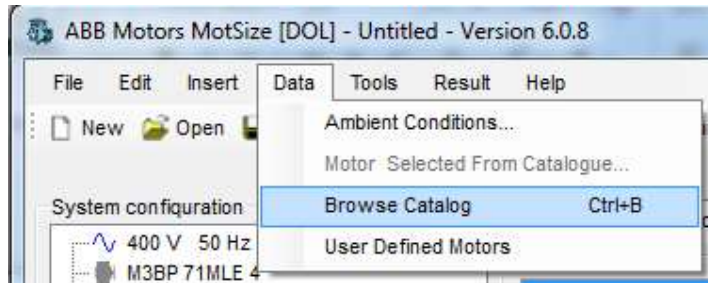

Figure 5. Starting conditions

Figure 6. Browse catalog

5.3 Datasheet

Once the motor selection is complete, the motor data datasheets can be displayed in Excel format by pressing Print and then Preview. The data sheet that opens can either be printed or saved to a computer. In the Print function, you can select the required information can be selected to present with the datasheet. The default value is the most commonly used. If all datasheets need to be open in the same Excel, Current network or All Motors can be selected. It is also possible to select different languages. (Figure 7)
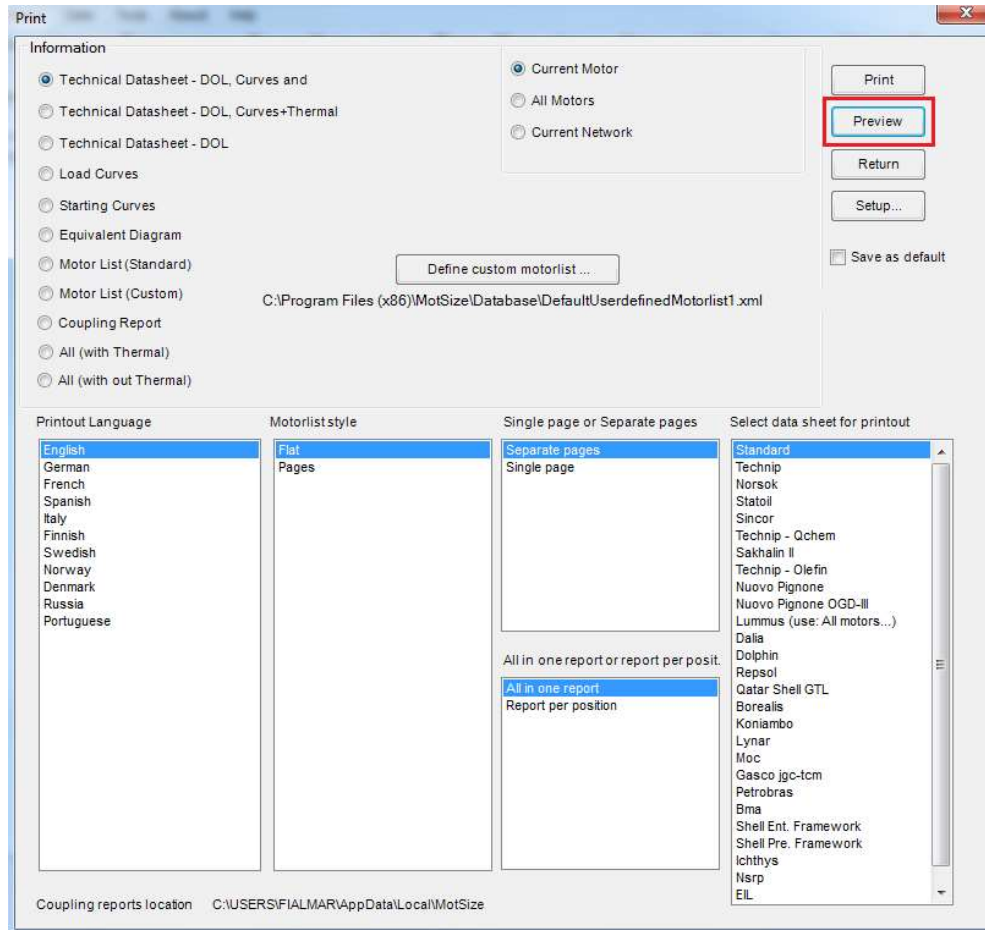
Figure 7. Print function

6 DEVELOPMENT IDEAS AND CONCLUSIONS

A manual is only necessary if it is up to date. The contents of many programs changes over time and new programs are also launched. All new programs should be added to the manual to fulfill its purpose and presented to a new employee as a comprehensive and holistic package for unit operations and understanding of work. The descriptions of the contents of old programs should be updated and checked regularly, for example once a year.

REFERENCES

/1/   ABB main site.https://new.abb.com/fi/abb-lyhyesti.Accessed 17.10.2019

/2/   ABB Global Customer support handbook Rev.E. https://search.abb.com/library/Download.aspx?DocumentID=8AMF 300047&LanguageCode=en&DocumentPartId=&Action=Launch Accessed 24.10.2019.

/3/   ABB business site.https://new.abb.com/about/our-businesses Accessed 15.01.2020.