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Benchmarking Websites and Sales Tools

Case ABB Motors

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TIIVISTELMÄ

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ABSTRACT

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The aim of this thesis was to discover how ABB Motors can improve their website and sales tools. The objectives were to find out how the webpages and sales tools of ABB Motors and its two biggest competitors on the low voltage market, Siemens and WEG, work and what they offer to the customer.

This subject is important as today's business is becoming more and more competitive and it is vital to have an effective buying process that includes both webpages and sales tools. Firstly, websites should successfully work as a channel for information and communication between organizations and their customers. Furthermore, as sales teams have less time to interact directly with the customers, an effective set of sales tools is needed. The theoretical framework offers further views on the importance of a website and sales tools and how they can be evaluated.

In the empirical study, the websites and sales tools of ABB Motors, Siemens and WEG were analyzed and compared in a benchmarking study. The evaluation of the webpages and sales tools included a set of research questions related to the ease of use and the offered information. These questions were answered by a randomly selected respondent from ABB Motors.

The findings showed that none of the companies had a real "best practice" in the delivery of the webpages or the sales tools. However, some ways to improve the layout of the website and the contents on the sales tool were found in the analysis. These included improving the simplicity of the website and developing a sales tool that allows ordering. The greatest difference was shown on the Siemens sales tools which were more advanced than the others.

TIIVISTELMÄ

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Tämän opinnäytetyön tarkoitus oli selvittää kuinka ABB Motors voi parantaa verkkosivujaan ja myyntityökalujaan. Tavoitteena oli saada selville kuinka ABB Motorsin ja kahden suurimman kilpailijan, Siemensin ja WEGin, verkkosivut ja myyntityökalut toimivat ja mitä ne tarjoavat asiakkaalle.

Aihe on tärkeä, sillä kilpailu nykyajan liiketoiminnassa lisääntyy koko ajan, ja on erittäin tärkeää, että yhtiöllä on tehokas ostoprosessi, joka sisältää sekä verkkosivut että myyntityökalut. Ensinnäkin verkkosivujen tulisi toimia onnistuneesti yhtiöiden ja näiden asiakkaiden tieto- ja kommunikointikanavana. Lisäksi, koska myyntiryhmillä on nykyään vähemmän aikaa olla yhteydessä suoraan asiakkaaseen, tarvitaan tehokkaat myyntityökalut. Teoria tarjoaa enemmän näkemyksiä verkkosivujen ja myyntityökalujen tärkeydestä sekä tapoja arvioida niitä.

Empiirisessä osassa tehtiin vertailuanalyysi ABB Motorsin, Siemensin ja WEGin verkkosivuista ja myyntityökaluista. Näiden arviointi sisälsi joukon tutkimuskysymyksiä liittyen käytön helppouteen ja tarjottuun tietoon. ABB Motorsilta satunnaisesti valittu henkilö vastasi näihin kysymyksiin.

Tulokset osoittivat että yhdelläkään yhtiöstä ei ollut todellista ”parasta käytäntöä” liittyen verkkosivujen ja myyntityökalujen esitystapaan. Siitä huolimatta analyysissä löydettiin joitakin tapoja parantaa verkkosivujen asettelua sekä myyntityökalujen sisältöä. Näihin luettiin mukaan verkkosivun yksinkertaistaminen sekä myyntityökalun kehittäminen niin, että tilaaminen on mahdollista. Suurin ero näkyi Siemensin myyntityökalussa joka oli paljon kehittyneempi kuin muiden.

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1. INTRODUCTION

As there are 3.2 billion internet users in the world (ITU 2015), almost half of the population, websites are vital for businesses. They allow businesses to be accessible virtually without any geographical barriers. Websites also function as a media from which information can be acquired by anyone, any time. (Subhani 2014)

Today it is likely that potential customers go online and research products and companies before making a purchase. Even if the purchase is not made it is still an opportunity to have the user learn about the business. Hence websites can improve the credibility of a business and give opportunity for growth. (Superwebanalyst; Subhani 2014)

As the number of websites and the investments in them are ever increasing, evaluating them has gained an important role. A great deal of time and money is invested in developing websites, which means that they should successfully work as a channel for information and communication between organizations and their customers. (Rocha 2012)

In addition to the websites, also sales tools have a significant role in the buying process. As most of the buying process is performed online, sales teams have less time to interact directly with the customers. Therefore, to be able to perform well in today's economy, an effective set of sales tools is needed. (Chowdry 2014; Rampton 2014)

ABB have recently launched a new website and ABB Motors is working on a new set of sales tools. To be able to offer an effective set of such tools, it is important to analyze how the company is doing now and to learn how the competitors are implementing these tools in their business.

1.1 The aim and methodology of the study

The aim of this study is to analyze and compare the websites and sales tools of ABB and its biggest competitors on the low voltage motor market, namely WEG and Siemens. This is important, as there is a constant need to improve the performance

of a company, and webpages and sales tools are some of the most important tools in doing business with customers.

Evaluating and comparing the webpages and sales tools can be done with benchmarking. It is a tool which enables comparing the company's own practices to those of their competitors and trying to find the best possible solution to overcome the competitors.

There are four objectives to this study. The objectives include finding out what kind of information can be found from the webpages and how easy is it to navigate and use the webpage. Moreover, it should be found out how easy the sales tools are to use and what kind of content they offer to the customer.

There are three sections in this study, the website navigation, website contents and sales tools. Each of these sections has a set of questions related to the aforementioned objectives that are answered with a yes or a no by a randomly picked respondent. The respondent will provide additional comments to clarify the answers and to show the differences on the tools.

1.2 Limitations of the study

The limitations of this study include focusing only on the pages of low voltage motors and related sales tools or configurators. This means that the websites are not analyzed as a whole, instead only the contents and ways of using the website and the sales tools related to low voltage motors are analyzed.

The study is also limited in the way that only one user is interviewed. As the user is an employee at ABB, it is likely that this affects the views. The language on the tools is also very technical and it can be fairly difficult to analyze the differences from this point of view.

1.3 The structure of the study

- Chapter 1** The study is introduced, including the purpose, research questions and the limitations. Also the case company is introduced, including the ABB Group, ABB in Finland and ABB Motors & Generators in Finland.
-
- Chapter 2** The background for evaluating websites and sales tools is reviewed. This chapter also deals with the criteria and the theoretical framework for evaluating them.
-
- Chapter 3** This chapter includes views on benchmarking marking theory and different methods of benchmarking. The chosen method of benchmarking is studied in more detail.
-
- Chapter 4** The empirical study of benchmarking is explained, including the methodology and the reliability of the study. Also the benchmarking process is explained with introductions to the target organizations as well as the information and data requirements.
-
- Chapters 5 to 7** The chapters from five to seven include the research on the websites and sales tools of ABB, Siemens and WEG in this order. In these chapters the tools are studied in detail with tables and pictures.
-
- Chapter 8** The results gathered in chapters five to seven are compared. These results are further analyzed and discussed in this chapter as well.
-
- Chapter 9** This chapter offers a conclusion on the study and gives further suggestions on how to improve. Also suggestions for future research are provided.
-

1.4 Case company

1.4.1 ABB Group

ABB Group is a multinational corporation that has its headquarters and the parent company, ABB Ltd, in Zurich, Switzerland. It was not founded as a single company; instead it has come together after many mergers. In 1988 ASEA from Sweden and Brown Boveri from Switzerland (now BBC), being two of the most well-known companies in European electrical engineering, joined forces and became ABB. (ABB in Brief, History)

Currently it is one of the biggest power and automation technology companies in the world. The offerings of ABB Group include solutions for energy-efficient generation, transmission and distribution of electricity and for increasing productivity in different operations. The entire renewables chain is represented from power generation to transmission, distribution and electric mobility. The product range includes for example switches, sockets and robots as well as large transformers and control systems for power networks or factories. (ABB Annual Group report 2014)

At the end of the year 2014 there were approximately 350 subsidiaries all over the world. Overall the group employs approximately 140 000 people. The ABB Ltd Shares are listed on three different exchanges: the SIX Swiss Exchange, the NASDAQ OMX Stockholm Exchange and the New York Stock Exchange. The market capitalization of ABB Ltd was CHF 48 billion (EUR 45.3 billion) on December 31, 2014. (ABB Annual Group report 2014) In 2014 the revenue of ABB Ltd was EUR 39.8 billion while net income accounted to EUR 2.594 billion. (ABB Key Figures)

1.4.2 ABB Ltd. Finland

ABB Ltd. Finland has over 20 locations with factories in Helsinki, Vaasa, Porvoo and Hamina. ABB employs about 5200 people in Finland and is one of the biggest industrial employers in the country. Approximately 20% of the personnel work in research and development. ABB also employs 1000 summer trainees annually.

The revenue of ABB Finland was almost EUR 2.1 billion in 2014. EUR 204 million was invested in research and development. ABB defines “personnel development,

world-class performance at all levels, health and safety and integrity” as its highest priorities. (Working for a sustainable world – ABB in Finland 2015)

1.4.3 ABB Motors & Generators

Manufacturing uses two thirds of all electric energy and two thirds out of that goes into operating electric motors. Electric motors consume approximately 45 per cent of all of the electricity in the world, and ABB is a forerunner in developing these motors.

The Finnish ABB Motors and Generators unit is highly concerned in the research and development of high efficiency motors and generators. The unit produces motors and generators for all industries and applications worldwide. The factories reside in Helsinki and Vaasa.

Currently ABB is a leading motor producer. The Vaasa factory is responsible for the production of flameproof motors as well as high voltage motors while diesel generators and permanent magnet motors are developed and produced in the Helsinki factory. ABB is the leading wind turbine generator producer and the Helsinki factory also holds the responsibility for their development. Overall ABB Motors and Generators employs 15 000 people in 45 factories and in 13 countries. (ABB Oy, Motors & Generators yksikköesittely)

2. WEBSITES AND SALES TOOLS

2.1 Websites

As the number of websites and the investments in them are ever increasing, also evaluating the websites has gained an important role. Time and money is invested in developing websites. Therefore they should successfully work as a channel for information and communication between organizations and their customers. (Rocha 2012)

As the website forms a significant connection with the customers, it should also reflect the quality of the work and efforts of the organization. Today different aspects and a large range of offered services are shown on organizations' websites. Hence evaluating websites works as an important factor that can improve user satisfaction as well as optimize invested resources. (Rocha 2012)

An important aspect for the website quality is usability. Usability involves the ease of the use and learnability. Most likely people will leave the site if they find the website difficult to use. If the users get lost on a website, they will leave. If the information on the website is hard to read, the users will leave as well. Users will not spend much time trying to figure out how the website works, and instead they will use other sources for information. (Nielsen 2012)

2.1.1 Six criteria for website evaluation

When evaluating websites in general, there are six criteria that should be dealt with. These criteria are more concerned with the content of the website rather than the graphics.

1. Authority

Authority shows that the responsibility of a site is held by a person, institution or agency that has qualifications and knowledge for it. It should be clear who has developed the site and relevant contact information must be provided.

2. Purpose

It should be apparent what the purpose of the information on the website is. It must be evaluated whether the content on the website supports the purpose of the website and whether the information is targeted to a specific audience. What is also examined is whether the site is organized and focused and if the links on the website are appropriate.

3. Coverage

The extent of coverage may be difficult to evaluate as using different links can make the depth of a site infinite. It should be examined whether the topic is claimed to be covered comprehensively or only with one aspect of it. It is also important to evaluate how in-depth the topics are explored and whether the information is provided with outside links. The value of the information on a website can be compared to other similar sites as well.

4. Currency

The currency of a website is related to how current the given information is and how often the website is maintained. It should be found out when the website has been created, last updated and whether the links are current. The links must also be reliable, meaning that there are no broken links or references to websites that have been moved. Furthermore, it should be reviewed whether some pages are under construction.

5. Objectivity

It should be clear whether the website is objective or contains bias. What is evaluated is whether the information is presented with a particular bias and whether the advertising conflicts with the content. It is important to see if the website is explaining, informing, persuading or selling something.

6. Accuracy

The reader has the responsibility to assess whether the information on a website is accurate. Most importantly it must be found out if the author is reliable and affiliated with a known institution. It is also vital to examine if the statistics and factual

information have references to the origin and if the information is comparable to other websites with the same topic. (6 Criteria for Websites, Dalhousie University)

2.1.2 Website quality

The research done by Álvaro Rocha (2012) proposes a framework for evaluating the global quality of a website. The research suggests that there are three dimensions to website quality: content quality, service quality and technical quality.

The first dimension is concerned more on the quality of the content rather than its existence. Several features are evaluated in the content quality, such as accuracy, completeness, relevance, opportunity, consistency, coherence, updates, orthography and syntax. Rocha suggests that each of these features should be analyzed and classified with the five point Likert scale (1 = bad, 2 = mediocre, 3 = reasonable, 4 = good, 5 = very good).

The second dimension focuses on the quality of services that are offered on the website. The features that are evaluated in the service quality may include security, reliability, privacy, performance, efficiency, accuracy, opportunity, availability, response time, time saving, empathy, reputation and personalization. These features, too, should be analyzed with the five point Likert scale.

The technical dimension evaluates how the content and services are put together and their availability on the website. It is concentrated on the quality attributes that are found in different quality standards. These attributes include navigation, map, path, search engine, download time of pages, browser compatibility, broken links and accessibility. This dimension can be analyzed using the five point Likert scale as well. (Rocha 2012)

2.1.3 Framework for evaluating websites

A set of categories for evaluating websites, as suggested by Hend Al-Khalifa (2014) includes interface, navigation, content and services offered as well as technical aspects. The research involves a framework for evaluating mobile websites, putting together the evaluation for websites and the compatibility with mobile devices.

Category	No. of criteria
<i>Interface</i>	15
Design principles	6
Layout and text	6
Flexibility and compatibility	3
<i>Navigation</i>	23
Logical structure	5
Ease of use of the site	8
Search engine	4
Navigational necessities	6
<i>Content and services offered</i>	27
Information quality	3
Authority	2
Provided services	18
Services quality	4
<i>Technical aspects</i>	5
Loading speed	3
Browser compatibility	2
Total	70

Figure 2-1 Categories for evaluating websites (Al-Khalifa 2014)

The interface includes design principles, layout and text as well as flexibility and compatibility. The design principles involve that the home page is clear, there is effective use of white space and of color and the site is attractive visually. The text and layout include that the page layout and format as well as the fonts are used consistently and the text is easy to read.

The navigation criteria include logical structure, ease of use of the site, search engine and navigational necessities. Logical structure involves that the content is rationally designed, the menus are understandable and the navigation is consistent throughout the whole website. The ease of use of the site includes the ease of learning and navigating the site as well as returning to the homepage. The links should also be obvious and easily recognized. The search engine involves the ease of use, providing accurate results with good description and no search errors. Furthermore, navigational necessities include that there are no broken links, no pages under construction or in separate windows and that the title page shows the location of the user. These criteria are used in analyzing the navigation on the websites in this thesis.

The content and services offered criteria includes the quality of the information, authority, provided services and the service quality. The main things that are explored in this category is what content and services should be offered and what the quality of the information is like.

The last category, the technical aspects criteria include loading speed and browser compatibility. This involves that the pages and the images have fast loading speed and that the website is compatible with different browsers. (Al-Khalifa 2014)

2.2 Sales tools

As a great deal of the buying process is performed online, sales teams get less time to interact directly with the customers. According to the article by Amit Chowdhry (2014), buyers avoid sales teams until the purchasing process is halfway completed. Therefore the sales tools have a more significant role in the process.

To be able to perform well in today's economy, an effective set of sales tools is needed (John Rampton, 2014). These tools enable an organization to remain relevant and they give a competitive advantage. They also ensure that customers are served well. A number of software used by companies helps them achieve success through knowledge and efficiency. According to Rampton, in 2014 there was a growth of 60% in revenues for business-to-business marketing automation systems, which indicates the relevance of these tools.

A sales tool, sometimes also called a configurator, should be a tool to assist customers in configuring products according to their needs. These kinds of configurators are used with for example computers, cars, financial services and telecommunication switches. They have many advantages, such as lowering the amount of incorrect quotations and orders, shorter delivery cycles and higher productivity for sales representatives. However, complex configurators can often make the users feel overwhelmed. In addition, often they do not know exactly which products they want to have. (Mandl, Felfernig & Tiihonen, 2011)

The modeling variable BOM (bill-of-materials) is the basis for most product configurators. It is a practical approach for implementing mass customization and used in many industries. A product variant describes a physical product and a variant has parameters which separates it from other variants. An example of this is the color or the engine type of a car. (Helo, 2006)

2.2.1 Product modeling techniques for configurators

It is important that the configuration process functions so that customer selections do not affect the previous selections. The techniques to describe product variants, as reviewed by Helo, include BOM table, logical tree and VAR variant generator.

1. Bill-of-materials table

BOM table functions as a tool for maintaining modular BOM. Same kinds of products are described by individual parameters. The main parameter types are basic parameters, which are the same for all product variants (for example a motor); variant parameters, which include a selection of choices and option parameters (for example speed of 2, 4, 6 or 8 poles), and option parameters which determine a choice type with yes or a no (does the motor have feet).

The basic parameters describe the structure of the product and variant parameters describe the selections of the structure. Add-ons to a product are the option parameters, which may or may not be used. To specify a product, the variant parameter should have at least one value.

A BOM table is limited as an approach for configuration as it only supports one-level BOM, meaning that there are no available sub-sets. The lower levels have a standardized structure which the higher level parameters cannot affect. (Helo 2006)

2. Logical tree

A logical tree works beneficially when new variations can be created from existing structures. Logical nodes, including product nodes (parts and components), AND-nodes, XOR-nodes and empty nodes are added to the structure. These nodes are originated from the Boolean algebra.

Product nodes are used in all traditional BOMs. AND-nodes show what is required for higher levels and XOR-nodes describe the structure where one of the choices has to be selected. There are no lower structures on an empty node, and it is used when the XOR-node requires a structure from the lower level. This approach only allows choices related to the item. It is not possible to have descriptive features that affect several items. (Helo, 2006)

3. VAR-variant generator

The VAR-variant generator is more advanced than the other two described configurators. All products should be described when all parameters are independent of each other and when the parameter selection is made correctly the product variants can be unambiguous.

This approach involves that a particular product can have specific lower level structures, which are a set or a cluster of parts with more values. One expression of each cluster can be selected to describe the product. It is selected according to a rule that defines the parts on the lower level. (Helo, 2006)

2.2.2 Evaluating a configurator

The theoretical frameworks on evaluating configurators are very technical and put more focus into the assembly of the configurator rather than the looks and the contents from the customer point-of-view.

Helo (2006) proposes an approach to analyze configurators in a design structure matrix. The matrix is designed to analyze different types of configurators, which were mentioned earlier, rather than a particular configurator. It analyzes the types by listing the configurators and their variants based on how the variants affect each other. The way in which the effects are analyzed is whether

- a. the variants have a parallel relationship, meaning that they do not depend on each other and can be processed separately,
- b. the variants are sequential, meaning that the second variant is fed from the first variant; and

- c. the variants are coupled, meaning that the variants are dependent on each other and that changing one variant affects the second one as well.

To conclude, Helo further gives three key requirements for an effective configurator regardless of the approach, which are flexible modeling features, smooth process with minimum errors and product modeling that is easy to learn. These will be further analyzed in this thesis with a series of questions and compared in a benchmarking study.

3. BENCHMARKING IN THEORY

As quoted in the article by Anand and Kodali (2008), benchmarking is the “search for the best industry practices which will lead to exceptional performance through the implementation of these best practices”. Benchmarking usually includes measuring, comparing, identifying these best practices as well as implementing and improving.

It is thought that the current way of benchmarking is based on the practices set by Xerox in the 1970s. Up until then there was no specific management improvement tool. Xerox was having problems and needed a tool to decrease waste and costs and increase quality. Their idea was Business Effectiveness, a strategy that would improve their competitiveness. It included two initial notions – employee involvement and benchmarking. Xerox was aiming to be the best in quality, product reliability as well as cost. With this in mind they identified the company that was the best in each step of performance and used it as an example to become better.

The focal point of benchmarking is that benchmarking is performed always when data is compared. The former CEO of Xerox, David T. Kearns has also described benchmarking as “the continuous process of measuring products, services and practices against the toughest competitors or those companies recognized as the industry leaders.” (Stapenhurst 2009, 4-10)

Essentially, benchmarking requires one to be humble enough to admit that others might be better at something and wise enough to try to find a way to get on the same level or possibly even become better than them. (Tuominen, Niva & Malmberg 2012, 5)

It is suggested that there are several benefits for benchmarking, such as looking for new ideas, in other words “thinking outside the box”, improving processes, accelerated processes and more likely implementation of new ideas. It also enables the organization to “focus externally and constantly capture opportunities and counter potential threats” and it stretches goals instead of making organizations and people complacent. In addition, benchmarking promotes a culture of constant learning. In

longer term benchmarking will be a leverage in financial terms. (Zairi & Al-Mashari 2005)

3.1 Methods of benchmarking

In the book by Tim Stapenhurst “The Benchmarking Book: A How-to-Guide to Best Practice for Managers and Practitioners” (2009, 19-46) it is suggested that there are more than just one single right method to benchmark.

The different methods of benchmarking as proposed by Stapenhurst are:

<i>Benchmarking Method</i>	<i>Features of the method</i>
Public Domain Benchmarking	Data is collected from public sources, then analyzed and reported.
One-to-one Benchmarking	Initially developed by Xerox in the 1970s and 1980s. The concept includes finding out the best organization on the area and learning their ways of achieving the level of performance. The practices are studied and eventually adopted into the researcher’s own organization.
Review Benchmarking	A number of participants are visited in order to try out different activities at the facilities. The findings are then compared.
Database Benchmarking	The researcher compares data from a database that includes performance levels from different organizations.
Trial Benchmarking	Fairly similar to public domain benchmarking. The biggest difference is that the benchmarking is carried out by the initiating organization.
Survey Benchmarking	Fairly similar to public domain benchmarking and trial benchmarking. The biggest difference to these methods is that with survey benchmarking the customers and potential customers are surveyed.
Business Excellence Model Benchmarking	The organization is benchmarked by an independent assessor. The assessor scores different aspects according to a Business Excellence Model such as the Baldrige Award or the European Foundation for Quality Management (EFQM).

Table 3-1 Benchmarking methods

3.1.1 Trial benchmarking

This method entails that the initiating organization does the benchmarking. The other participants are not aware that they are used in the benchmarking. The study is done by using the wanted services or products. Quite often this method is also performed to stay on hold of the competition and find new ideas.

As trial benchmarking is performed and controlled by the initiating organization, in principle there are close to no risks associated. This also means that the learning potential is limited as only the output of the process is measured instead of analyzing the process itself. Usually this method would give limited information on how to improve. (Stapenhurst 2009, 37-39)

Nonetheless, as this thesis is used to benchmark websites and sales tools, there is less need to find out ways to improve processes. Instead, there is a greater need to find new ideas for functionality, including ease of navigation and use, segmentation and the range of offered material.

4. EMPIRICAL STUDY OF BENCHMARKING

4.1 Research methodology

A qualitative research method will be applied to this thesis. As explained by Jha (2008), qualitative research involves an interpretive approach to the subject, meaning that the subject is studied in its natural setting. It involves the studied use and collection of different empirical materials such as case study, personal experience, observational and visual texts. (Jha 2008, 45-46)

As Jha quotes Patton (1990), qualitative data are “detailed descriptions of situations, events, people, interactions, observed behaviors, direct quotations from people about their experiences, attitudes, beliefs, and thoughts and excerpts or entire passages from documents, correspondence, records and case histories”.

To draw difference between the studied companies, the answers to questions are first given as a yes or a no. However, as these answers do not give much qualitative data, they need to be opened up with comments and further explanation.

To collect more in-depth data the websites and sales tools will be examined from the customer point-of-view. To get primary data on the user experience, random sampling is used. Using a random sample in a study means that a member in a subset has an equal probability of being chosen and the sample should represent the group unbiasedly. (Simple random sample, Investopedia)

The primary data is collected through an interview with an employee from ABB Motors. To avoid bias, the interviewee was chosen so that they do not have any previous experience on the webpages or sales tools of either of the companies. The research questions are presented to the employee and they will give their views and opinions on the subject.

This method is relevant and suitable for this research as the aim of the case company is to develop their own websites and sales tools. The company aims to know how their competitors are implementing the delivery of low voltage motors on the websites and sales tools and what can be learned from the competitors.

4.2 Reliability and validity of the study

There are threats for the validity and the reliability of the study throughout the whole research process. In order for a research to be reliable, the conditions for the test process should remain the same and provide the same result every time it is performed. A high risk for reliability is caused by making assessments over a long time, having different people making the assessments or having highly subjective assessments. (Handley 2010)

As this research is performed by one user, it is likely that the reliability is decreased by possible subjective views. However, as the point is to give opinions from the viewpoint of a prospective buyer, it is important to express views that the anonymous user might have as well.

On the other hand, validity is the extent of how much a test measures what is claimed to be measured. To be able to apply and interpret the results accurately, it is crucial for a test to be valid. (Cherry 2010)

In order to have a measure of things in things in this research, a series of questions that can be answered with a yes or a no are processed. However, because these answers do not cover the objectives as a whole, further explanation must be given.

4.3 Benchmarking process

The chosen method for the benchmarking study is trial benchmarking, which means that the data is collected from the public websites and sales tools of the chosen organizations, then compared and further analyzed. The process of the study (Stapenhurst 2009, 39) is as follows:

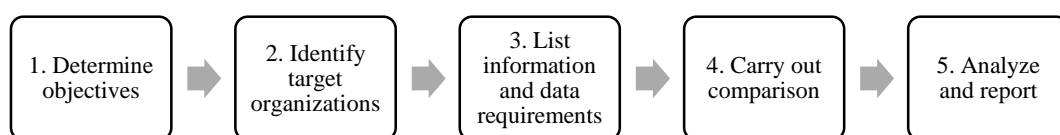


Figure 4-1 Process flow chart

1. Determine objectives

Objectives have to be determined in order to know what should be achieved with the study. The objectives themselves also function as the benchmark against which the success of the study can be measured. The objectives of this study are further explained in chapter 4.4.

2. Identify target organizations

It is essential to determine whether to benchmark internally or externally. When benchmarked externally, like in this study, it is important to identify who should be benchmarked and why. The target organizations are further discussed in chapter 4.5.

3. List information and data requirements

To be able to measure the performance there should be a set of information and data requirements. This enables comparing the performances between organizations and quantifying future improvements. Sources of potential metrics can be analyzing statements such as mission, vision or aim related to the benchmark area and reported metrics. In order to achieve the objectives of the study, the metrics are used to compare performance levels, quantify performance gaps and potential gains. The information and data requirements are looked into in chapter 4.6.

4. Carry out comparison

The benchmarker can acquire the product or service in order to experience the products or services without revealing their intent. The acquired data can then be compared and further analyzed. The data is acquired in chapters 5, 6 and 7 and further discussed in chapter 8.

5. Analyze and report

The analysis can begin when all the data have been collected and validated. The depth of analysis varies between different studies. Minimum analysis may be in-

involved in small studies such as product and service reviews. Other studies may include more in-depth analysis, such as performance level comparison, testing of theories as well as evaluation of practices. The data is analyzed and compared in chapter 8 and further conclusions are given in chapter 9.

4.4 Objectives

There are several things to explore in this study. In order to make a comparison, the websites and sales tools of the organizations are studied from the low voltage motors point-of-view. The main things to find and compare are usability and the contents of the websites and tools. This includes evaluating the following things:

- How easy is it to navigate and to use the websites?
- How does the search function work on the websites?
- How easy is it to use the sales tools?
- What kind of information is provided on the websites and the sales tools?
- Is there different information for different segments and regions?

4.5 Target organizations

Market position¹

<i>Business line</i>	1	2	3
Drives and power electronics	ABB	Siemens	Rockwell
Low-voltage systems ²	ABB	Schneider	Siemens
Motors and machines	ABB	Siemens	WEG
Industrial low-voltage products	Schneider	Siemens	Rockwell/ ABB
Installation material ²	Schneider	Legrand	ABB
Instrumentation	Emerson	Yokogawa	Endress+H/ ABB

¹ ABB estimates, based on orders received ² IEC standard

Figure 4-2 ABB Strategy 2011

The target organizations have been predetermined on the basis of the ABB Strategy 2011. The strategy places ABB as the first one on the motor market with Siemens being the second and WEG the third, as seen in Figure 4-1.

4.5.1 Siemens

Siemens, established in Germany in 1847, is currently one of the biggest technology companies in the world. The company as a whole employs over 340 000 people

worldwide while generating a revenue of almost EUR 72 billion and net income of EUR 5.5 billion in the year 2014. (About Siemens)

Siemens has over 289 major production and manufacturing plants all over the world. The company also has office buildings, warehouses, research and development facilities as well as sales offices in almost every country in the world. (Worldwide Presence, Siemens)

The scope of Siemens' products and solutions includes power generation i.e. power and gas as well as wind power and renewables, power transmission, power distribution and smart grid, energy application i.e. building technologies, mobility, digital factory and process industries and drives, healthcare, financial services and real estate activities. (Siemens at a glance)

4.5.2 WEG

WEG, named after its founders Werner Ricardo Voigt, Eggon João da Silva and Geraldo Werninghaus was established in 1961. As a Brazilian electric motor manufacturer it is the biggest company on its market in Latin America and one of the largest in the world.

The headquarters and the main manufacturing unit is located in Brazil, in Jaraguá do Sul, state of Santa Catarina. There are other production sites located in the same state as well as in Rio Grande do Sul, São Paulo, Espírito Santo and Amazonas. WEG also has manufacturing units in Argentina, Mexico, South Africa, Portugal, China and India as well as distribution and commercialization units in the United States, Venezuela, Colombia, Chile, Germany, England, Belgium, France, Spain, Italy, Sweden, Australia, Japan, Singapore, India, Russia and the United Arab Emirates.

WEG started off with manufacturing electric motors, but in the 1980's made an effort to diversify with the production of electronic components, industrial automation products, power and distribution transformers, liquid and powdered paints and

insulating varnishes. Rather than being just an electric motor manufacturer the company identifies itself as a supplier of complete industrial electrical systems. (About WEG)

4.6 Information and data requirements

4.6.1 Website

The evaluation of the website is divided into navigation and content. These two parts have been divided into categories with a series of questions that were developed according to the needs of the case company. All of the questions can be answered with a simple yes or no. Additional comments are also added to justify the answer. The websites are evaluated using Google Chrome as the browser.

It should be noted that the technical properties of the website cannot be analyzed in great detail. Instead what is analyzed and compared is how the websites “look and feel” for a prospective buyer.

4.6.1.1 Navigation

Navigation is divided into four categories: logical structure, ease of use of the site, search engine and navigational necessities. These questions have been developed according to the needs of the case company using Hend Al-Khalifa’s article (2014) as a guideline.

Logical Structure

The first category for evaluation is the logical structure of website navigation. The point of this is to find out how the structure of the website works. This includes having a clear path that shows the current location. The content should be designed rationally, which includes fitting all relevant information on the screen in a way that it is easy to find. Also the menus should be understandable and straightforward, meaning that they give relevant information for the user to be able to navigate. The choice of links on the menus is such that the user knows which part takes them to the desired location. This way the navigation should stay consistent as well.

1. Is the current location indicated clearly?
2. Is the content designed rationally?

3. Are the menus understandable and straightforward?
4. Is the navigation consistent throughout the whole website?

Ease of use of the site

The second category for evaluation is the use of use of the site. This category is used to study how easy it is to use the website as the user should not get easily lost on the website. This includes the ease of learning the use of website and having obvious links. It should also be easy to return to the home page.

5. Is the website easy to learn and navigate?
6. Is it easy to return to home page?
7. Are the links obvious and take you to relevant places?
8. Is it easy to recognize linked text?

Search engine

The third category evaluates the website's own search engine. This part in particular has great significance as the user must be able to find what they need with a simple search function.

The search engine is studied with a pre-determined set of keywords. The keywords are "motor selection tool", "dimensioning tool", "configurator", "AC induction motor", "AC induction motors", "low voltage motor", "low voltage motors", "marine", "mining" as well as "food and beverage".

9. Is the search engine easy to use?
10. Does the search engine provide accurate and useful results?
11. Is there a good description of search engine findings?
12. Are there any search engine errors?

Navigational necessities

The fourth category for navigation studies the navigational necessities. In order to have a functioning website there can be no errors such as broken links or pages that are under construction.

13. Are there any broken links?
14. Are there any “under construction” pages?
15. Are the links clearly discernible, well labelled and defined?
16. Are there any pages in a separate window?

4.6.1.2 Content

Content is divided into three categories: product information, segments/industries/applications and regions.

Product information

The first category evaluates what information can be found about the products, i.e. the motors. The information should be fairly detailed and include for example technical data and different features of the motor. Also the argumentation, such as assumed benefits are an important part of the product information.

1. Do the motor types have detailed information?
2. Is there any argumentation for the motors?

Segments/Industries/Applications

The second category evaluates the different segments that the websites might have. It is used in order to find out whether the competitors have any segmentation and how they deal with it. The marine, mining as well as food and beverage segments have been chosen to be studied with more detail as they are important industries for ABB’s low voltage motors in particular.

3. Is there any general segmentation?
4. Is there a marine segment?
5. Does the marine segment have any specific information about the motors?
6. Is there a mining segment?
7. Does the mining segment have any specific information about the motors?
8. Is there a food and beverage segment?
9. Does the food and beverage segment have any specific information about the motors?

Regions

The third category evaluates how low voltage motors are shown in three different regions. To get the best picture, an important customer country from three different continents is chosen. Hence, the German, the Chinese and the Mexican websites of the organizations are studied.

10. Does the motor information differ in Germany?

11. Does the motor information differ in China?

12. Does the motor information differ in Mexico?

4.6.2 Sales tools

The evaluation of the sales tools includes categories with a series of questions. The categories are Using the sales tool, Options, Finishing configuration and Documents. The questions have been developed according to the needs of the case company. Ultimately, they are used to find out what information can be found from the sales tool. All of the questions can be answered with a simple yes or no and additional comments are added to justify the answer.

It should be noted, that the technical properties of the sales tool or the configurator cannot be analyzed in great detail. Instead what is analyzed and compared is how the tools “look and feel” for a prospective buyer. The research questions on using the sales tools are based on Helo’s statement (2006) that a configurator should have flexible modeling features, the process should be smooth and have minimum errors and that it is easy to learn.

The sales tools are tested out with similar motors that are common in the market. The tools have a similar approach, the logical tree, which was introduced earlier in this study. To get comparable results the technical data has to be as similar as possible. The values used in this study are the following:

- IE3 Cast iron
- Frequency: 50Hz
- Voltage: 400V
- Speed: 4 poles or 1500 r/min depending on the sales tool

- Output: 132-160kW depending on the sales tool

Using the sales tool

Using the sales tools involves mainly the ease of the use. This includes that the tool is easy to find from the website and looks attractive, meaning that it looks such that the user finds it pleasurable to use. An easy-to-use sales tool should not require downloading or registration either.

1. Is the sales tool easy to find from the website?
2. Does the sales tool look attractive?
3. Does the use of the sales tool require downloading?
4. Does the use of the sales tool require registration?
5. Is there a manual for the sales tool?
6. Can the language be changed?
7. Is the sales tool easy to learn and to use?

Options

The options include segmentation and products specific to regions or MEPS (Minimum Energy Performance Standard). It is also studied whether the values can be changed any time during the process or if it is possible to have additional features, such as options or variants to the standard products.

8. Is there any segmentation?
9. Are there any region specific products?
10. Are there any MEPS specific products?
11. Can the values be changed in the process?
12. Can other options or variants be added for the product?

Finishing configuration

Finishing configuration should allow the customer to order a product or at least provide a product code for a finished product.

13. Does the sales tool provide a product code for a finished product?

14. Does the sales tool allow ordering?

Documents

15. Are the following documents provided:

- Datasheet
- Dimension drawing
- 3D CAD
- Certificates
- Test reports
- Brochures
- Catalogues
- Connection Diagrams
- Manuals

5. ABB

5.1 Website

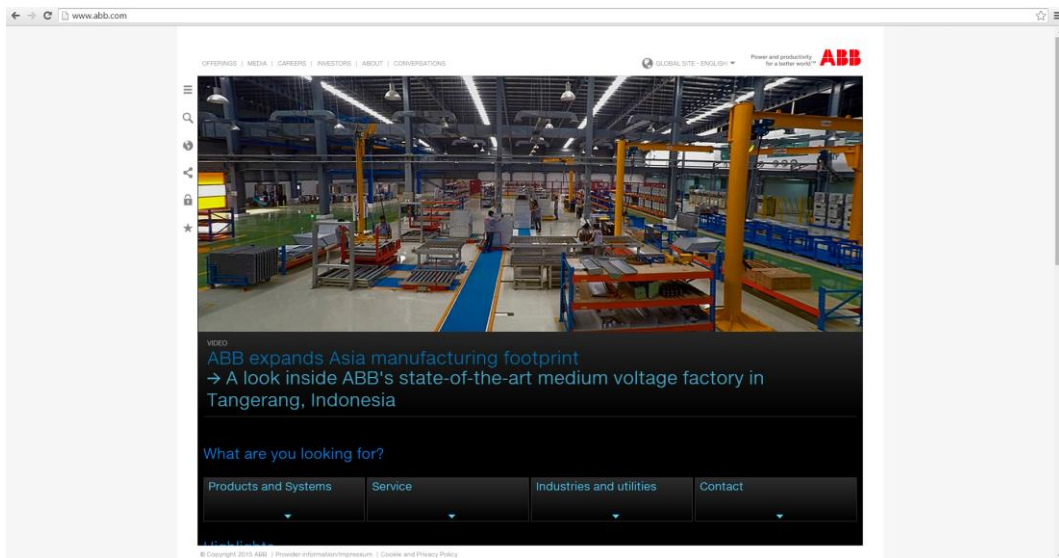


Figure 5-1 Global ABB Website

In this part the navigation and the contents of the Global website of ABB are evaluated. The website can be found from the address <http://www.abb.com/>.

5.1.1 Navigation

	<i>Logical Structure</i>	<i>Yes/No</i>	<i>Comments</i>
1	Is the current location indicated clearly?	Yes	The path is shown on top of the page below the address bar.
2	Is the content designed rationally?	No	The user has to go down the whole page to see what can be found from the page.
3	Are the menus understandable and straightforward?	Yes	The menus are easy to understand.
4	Is the navigation consistent throughout the whole website?	Yes	The navigation works similarly throughout the whole website.

Table 5-1 ABB Website logical structure

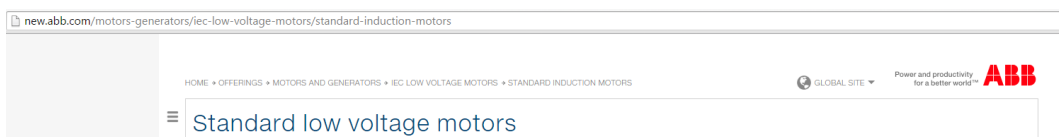


Figure 5-2 ABB website path

The logical structure of the ABB website is fairly consistent. The website is optimized to the center of the screen which makes it attractive for the user. There is a path on top of the page below the address bar (Figure 5-2), but the interviewee felt that it was not visible enough. What was also noticed is that the content is not very rational as the user has to scroll down the whole page to see what can be found. Nevertheless, the menus are easy to understand as the text is short and effective and the navigation works similarly throughout the whole website.

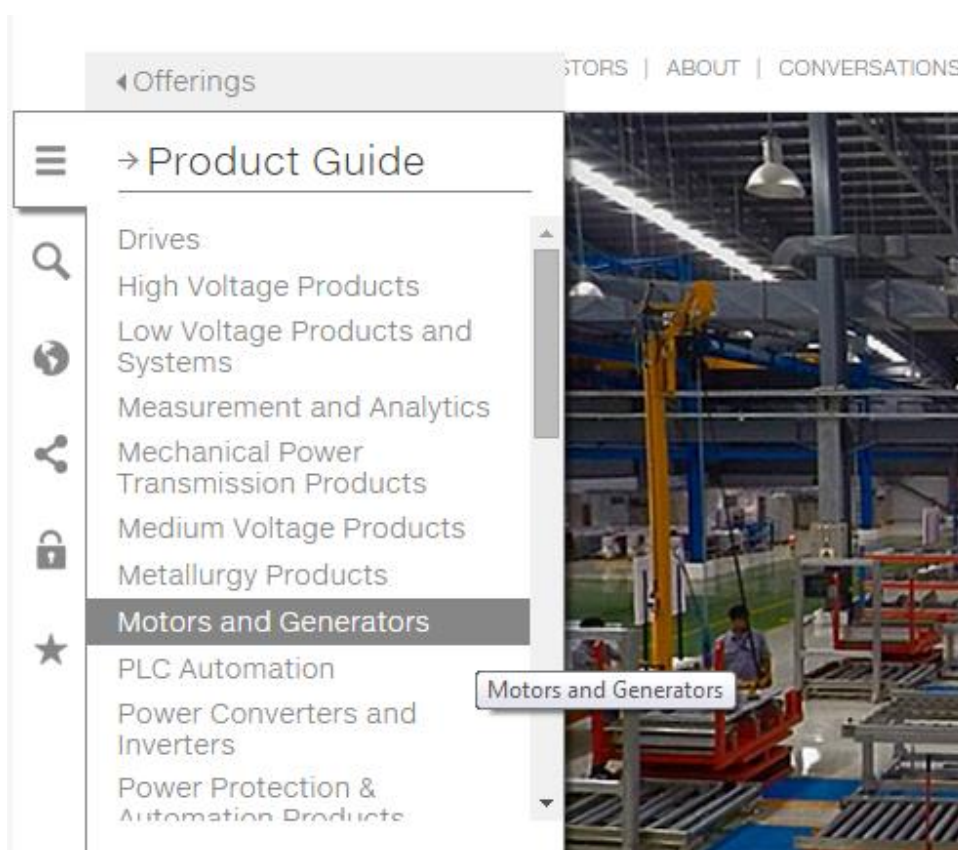


Figure 5-3 ABB Navigation pane

There is a navigation pane on the left (Figure 5-3) which helps the user to browse the website without having to click through different pages but according to the interviewee this pane was difficult to find at first. Quick links and news are provided on the bottom of the page.

	<i>Ease of use of the site</i>	<i>Yes/No</i>	<i>Comments</i>
5	Is the website easy to navigate?	No	To see all the content the user has to scroll down the page.
6	Is it easy to return to home page?	Yes	Company logo on the upper right corner.
7	Are the links obvious? Do they take you to relevant places?	Yes	The links are obvious and relevant.
8	Is it easy to recognize linked text?	Yes	The links are colored blue and often in boxes.

Table 5-2 ABB Ease of use of the site

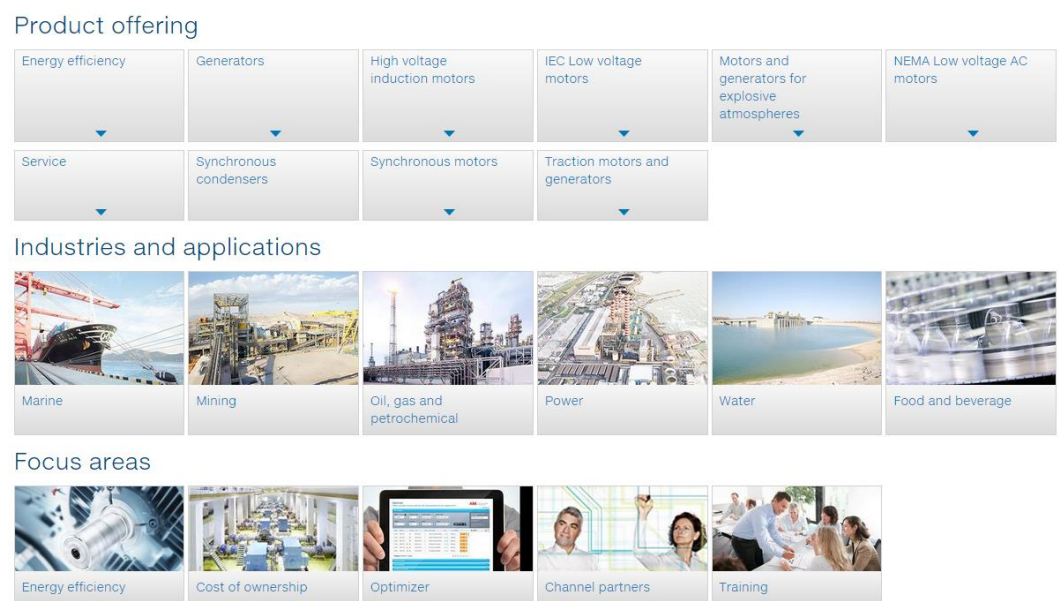


Figure 5-4 ABB Motors and Generators menu

As the user has to scroll down the whole page to see all of the contents, it makes the navigation a bit more complex. The interviewee felt that it was easy to recognize and understand the links as they are blue colored and often fit into visual boxes (Figure 5-4). It was also mentioned that there are enough links on the page but not too many. Returning to the home page is easy as the company logo on the upper right corner works as a link and there is also a home link in the beginning of the path.

	<i>Search engine</i>	<i>Yes/No</i>	<i>Comments</i>
9	Is the search engine easy to use?	Yes	Insert a keyword into the text box. Search tips are provided.
10	Does the search engine provide accurate and useful results?	Yes	All used keywords provided relevant results.
11	Is there a good description of search engine findings?	Yes	A short take from the text where the keyword can be found.
12	Are there any search engine errors?	No	No errors were found.

Table 5-3 ABB Search engine

→ Search tips → Feedback on search

powered by

All results (3670) | Products & services (2030) | Products catalog (2113) | News (7)

Sort by: Relevance ▾ File type: Show all ▾ → View more results in Download Center

Displaying results in English, Suomi. → Change.

Did you mean: [low voltage monitor ?](#)

Products & Services for low voltage motor

[Global MEPS Energy efficiency regulations for low voltage ...](#)
Motors and Generators > IEC Low Voltage AC Motors
... **low voltage motors** around the world ... principles when defining, measuring and publishing **motor efficiencies**. ... easier to select the right **motors** to save ...

[EU MEPS Efficiency requirements for low voltage motors ...](#)
Motors and Generators > IEC Low Voltage AC Motors
... MEPS mean **lower** energy costs and emissions ... Efficiency requirements for **low voltage motors** | **ABB Motors** ... be based on the **lowest** efficiency value ...

[Marine motors - Special application motors \(IEC Low voltage ...](#)
... **motors**, ensuring that the right **motor** can be ... **Low voltage motors** are used, both on deck and under deck ... in applications such as **engine** room pumps ...

→ View more results in Products & Services

Products catalog for low voltage motor

[MSMNO / 1SAM101923R0012](#)
Product ID: 1SAM101923R0012
Product Main Type: Accessories for Manual Motor Starters
MSMNO Driver

[DMS325-G / 1SAM101941R1000](#)
Product ID: 1SAM101941R1000
Product Main Type: DMS325
DMS325-G Door Mounting Kit

[DMS132-Y / 1SAM201912R1011](#)
Product ID: 1SAM201912R1011
Product Main Type: DMS132
DMS132-Y Door Mounting Kit

→ View more results in Products catalog

[IEC Low voltage motors - Motors and Generators | ABB](#) Web page
... Logout. Rate this page. General impression. Positive Negative. Your cart. Learn more about shopping on ABB.com. Checkout. IEC **Low voltage motors** ...

[NEMA Low voltage AC motors - Motors and Generators | ABB](#) Web page
... NEMA **Low voltage AC motors**. ... the broadest line of energy-efficient NEMA **motors** to meet ... Designed and built with reliability and **lowest** total cost of ...

Figure 5-5 ABB Search Engine

The interviewee could not find the search engine very easily at first. She still felt that it was easy to use. The search engine is also powered by Google, which should help the user (Figure 5-5). The user inserts a keyword into the text box and the search function provides search tips. The search engine also provides suggestions for keywords. Furthermore, if the keyword has been written wrong, the search engine will propose a different keyword with “Did you mean..?”

The search engine offers four different categories for results: All results, Products & Services, Products Catalog and News. The results can also be sorted by relevance or according to latest update. In addition, the user can choose to include only web pages or only documents, either in .pdf, .xls, .ppt, .doc, or .zip form.

The search engine provided relevant results with all used keywords (see appendix 1). However, according to the interviewee there were too many search results and it was difficult to find what they were looking for. A description of the findings is relevant as it gives a short take from the text where the keyword can be found. In addition, there were no search engine errors.

	<i>Navigational necessities</i>	<i>Yes/No</i>	<i>Comments</i>
13	Are there broken links?	Yes	There is a broken link to a News Feed.
14	Are there "under construction" pages?	No	No "under construction" pages were found.
15	Are the links clearly noticeable, well labelled and defined?	Yes	The links are easy to recognize.
16	Are there any pages in a separate window?	No	No pages in separate windows.

Table 5-4 ABB Website navigational necessities

The navigational necessities of the website work well apart from a couple broken links on the bottom of the page. Both Main Page News and Motors and Generators latest news take the user to a document tree (Figures 5-6 and 5-7). However, these links were noticed to be functioning on Internet Explorer.

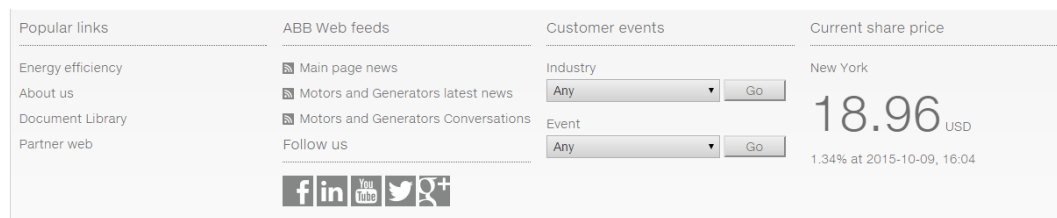
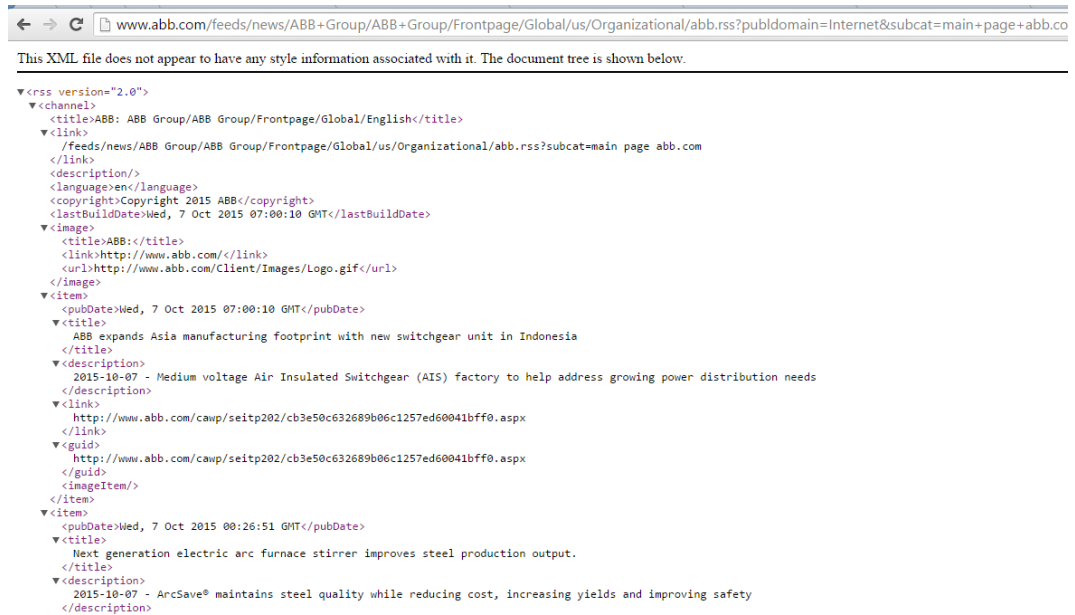


Figure 5-6 ABB Quick Links



```

This XML file does not appear to have any style information associated with it. The document tree is shown below.
▼<rss version="2.0">
  ▼<channel>
    <title>ABB: ABB Group/ABB Group/Frontpage/Global/English</title>
    ▼<link>
      /feeds/news/ABB Group/ABB Group/Frontpage/Global/us/Organizational/abb.rss?subcat=main page abb.com
    </link>
    <description/>
    <language>en</language>
    <copyright>Copyright 2015 ABB</copyright>
    <lastBuildDate>Wed, 7 Oct 2015 07:00:10 GMT</lastBuildDate>
    ▼<image>
      <title>ABB:</title>
      <link>http://www.abb.com/</link>
      <url>http://www.abb.com/Client/Images/Logo.gif</url>
    </image>
    ▼<item>
      <pubDate>Wed, 7 Oct 2015 07:00:10 GMT</pubDate>
      ▼<title>
        ABB expands Asia manufacturing footprint with new switchgear unit in Indonesia
      </title>
      ▼<description>
        2015-10-07 - Medium voltage Air Insulated Switchgear (AIS) factory to help address growing power distribution needs
      </description>
      ▼<link>
        http://www.abb.com/cawp/seitp202/cb3e50c632689b06c1257ed60041bff0.aspx
      </link>
      ▼<guid>
        http://www.abb.com/cawp/seitp202/cb3e50c632689b06c1257ed60041bff0.aspx
      </guid>
      <imageItem/>
    </item>
    ▼<item>
      <pubDate>Wed, 7 Oct 2015 00:26:51 GMT</pubDate>
      ▼<title>
        Next generation electric arc furnace stirrer improves steel production output.
      </title>
      ▼<description>
        2015-10-07 - ArcSave® maintains steel quality while reducing cost, increasing yields and improving safety
      </description>
    </item>
  </channel>
</rss>

```

Figure 5-7 ABB Main News document tree

There are no pages in separate windows, but the interviewee felt that these could be useful in some cases. This could help the user when for example opening the Optimizer. If the Optimizer opened to a separate window the user could still browse the website without closing the Optimizer page.

5.1.2 Contents

	<i>Product information</i>	<i>Yes/No</i>	<i>Comments</i>
1	Do the motor types have detailed information?	No	Not on the pages itself, the user can download a pdf catalogue.
2	Is there any argumentation for the motors?	Yes	There are several arguments for the motors throughout the path.

Table 5-5 ABB Website product information

IE3 Process performance cast iron motors

Four properties set ABB Process performance motors apart: their efficiency, reliability, use of leading-edge technology, and the virtually limitless options they provide for customization.

Process performance motors fulfill all international and national energy efficiency - both now and in the future.

Motor type and frame sizes	M3BP 80 to 355
Output power	0.75 to 355 kW
Efficiency class	IE3



Figure 5-8 ABB IE3 Process performance cast iron motors page

The interviewee felt that the pages do not give much detailed information on the products (Figure 5-8). It is still possible to download a PDF catalogue which includes all standard motors. These catalogues are provided for EU MEPS and AU MEPS.

There are several arguments about the motors throughout the website, for example the Motors and Generators page states the following:

“ABB offers a comprehensive range of reliable and high efficiency motors and generators for all applications. ABB has what it takes to help every industry and application reach new levels of efficiency and energy savings even under the most demanding conditions. Combining the best available materials with superior technology, the electric motors and generators are designed to operate reliably no matter how challenging the process or application, and to have low life cycle costs.”

In addition, on the IE3 Process Performance cast iron motors page the following is stated:

“Four properties set ABB Process performance motors apart: their efficiency, reliability, use of leading-edge technology, and the virtually limitless options they provide for customization.”

	<i>Segments/Industries/Applications</i>	<i>Yes/No</i>	<i>Comments</i>
3	Is there any general segmentation?	Yes	Industries and Utilities menu
4	Is there a marine segment?	Yes	Marine and ports industry page
5	Does the marine segment have any specific information about the motors?	No	A link to motors and generators
6	Is there a mining segment?	Yes	Mining page
7	Does the mining segment have any specific information about the motors?	No	Nothing about motors on the mining page
8	Is there a food and beverage segment?	Yes	Food & Beverage page
9	Does the food and beverage segment have any specific information about the motors?	No	A general page about motors in the industry

Table 5-6 ABB Website Segments/Industries/Applications

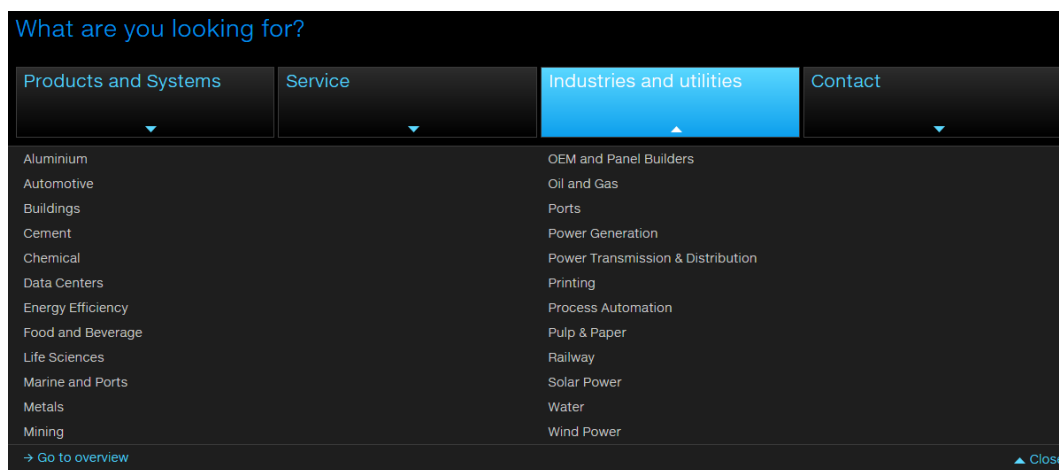


Figure 5-9 ABB Industries and Utilities menu

The segmentation for ABB products can be found from the Industries and Utilities menu on the home page (Figure 5-9). Pages for marine, mining as well as food and beverage are provided, with some difference on the information about motors.

The marine segment provides a link straight to the motors and generators page but there is no specific information about the marine motors in particular. In contrast, the mining segment does not provide any information about motors at all. The food and beverage page provides some general information about motors used in the industry. However, the product pages go straight back to the Motors and Generators page.

The interviewee became confused when they clicked the link to the motor pages on the segment page. She further thought that having a link to the motor pages on the segment pages is misleading as all motors might not be sold for that specific industry.

	<i>Regions</i>	<i>Yes/No</i>	<i>Comments</i>
10	Does the motor information differ in Germany?	No	The user is taken to the global LV motor page.
11	Does the motor information differ in China?	No	The user is taken to the global LV motor page.
12	Does the motor information differ in Mexico?	Yes	The LV motor pages are completely different for Mexico.

Table 5-7 ABB Website regions

Germany has their version of the website in German. However the low voltage motor page is the same as the global one, so there is no difference on the information. The website can be chosen in English for China, but this version is the same as the global website, meaning that there is no difference in the information here either. On the other hand the Mexican website is completely different from the others. The low voltage motor pages have a very different layout and the information is outdated.

5.2 Sales tools

Optimizer
Select, compare running costs and find documentation for low voltage motors

Power and productivity for a better world™ **ABB**

[Clear saved data](#) | [Language](#) | [Contact us](#)

Find motors

MEPS [Required] ?	Efficiency class	Frame mat.	Motor range	Find by product code or motor type Product code / motor type e.g. M3B280SMA / 3GBP28210 Input the product code to quickly find the motor you are looking for.
Select MEPS	All types	All frames	All motor ranges	
Voltage	Frequency	Speed	Output	
All voltages	All frequency	All poles	All outputs (kW)	RESET FILTERS ✕

Output	Volt./Hz	Eff. class	Type	Product code	Speed	Data	Type of protection	My motors
Start your selections by selecting a meps.								<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;">Cost of ownership +</div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;">Documentation +</div> <div style="border: 1px solid #ccc; padding: 5px;">Summary and export +</div>

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Figure 5-10 ABB Optimizer

The online sales tool for ABB low voltage motors is Optimizer, which is an “easy-to-use tool for selecting MEPS compliant low voltage motors as well as a handy calculator to compute and compare a list of suitable motors and a fast way to access drawings, test reports and data sheets.” Optimizer can be found at <http://www145.abb.com/selection>.

The values used in this study are the following:

- MEPS: EU MEPS
- Efficiency class: IE3
- Frame material: Cast Iron
- Motor range: Process Performance
- Voltage: 400V
- Frequency: 50 Hz
- Speed: 4 Pole
- Output: 132 kW

	<i>Using the sales tool</i>	<i>Yes/No</i>	<i>Comments</i>
1	Is the sales tool easy to find from the website?	Yes	Optimizer is displayed frequently on the website.
2	Does the sales tool look attractive?	Yes	It looks simple and everything fits on the screen.
3	Does the use of the sales tool require downloading?	No	No need to download on PC, an iPad application is provided.
4	Does the use of the sales tool require registration?	No	No need to register.
5	Is there a manual for the sales tool?	Yes	There is a manual in video form.
6	Can the language be changed?	Yes	The sales tool is provided in English, Russian, Chinese, Polish and French.
7	Is the sales tool easy to learn and to use?	Yes	The user puts in values as filters and gets more specific results the more filters are used.

Table 5-8 ABB Using the sales tool

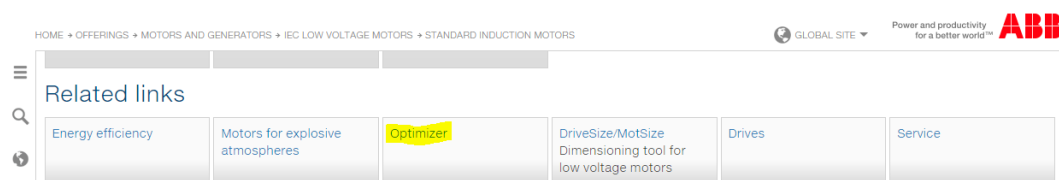


Figure 5-11 ABB Optimizer link on IEC LV page

Optimizer is fairly easy to find as it is displayed on every page throughout the IEC LV pages (Figure 5-11). However, the interviewee noted that the output of the link is not consistent – it is displayed with different pictures or with no pictures at all. The sales tool looks attractive as it is simple and it fits in the middle of the screen. The color scheme is blue and grey, which is quite similar to that of WEG's. In addition to English, Optimizer can also be used in Russian, Chinese, Polish and French.

Using Optimizer on a computer does not require downloading, but there is a downloadable application offered for iPad. There is no need to register either. A manual for using Optimizer is provided in video form of which is only offered in English.

Optimizer
Select, compare running costs and find documentation for low voltage motors

Power and productivity
for a better world™ **ABB**

[Clear saved data](#) | [Language](#) | [Contact us](#)

Find motors

MEPS [Required] Efficiency class Frame mat. Motor range
 EU - MEPS > IE3 > Cast Iron > Process Performance

Voltage Frequency Speed Output
 400V > 50Hz > 4 pole > 75

RESET FILTERS

Find by product code or motor type
 Product code / motor type
 e.g. M3BP280SMA / 3GBP282210
 Input the product code to quickly find the motor you are looking for.

Output	Volt./Hz	Eff. class	Type	Product code	Speed	Data	Type of protection	
75kW	400V 50Hz	IE3	M3BP 250SMB 4	3GBP 252 052-L	4			ADD →
75kW	400V 50Hz	IE3	M3BP 250SMB 4	3GBP 252 052-L	4			ADD →
75kW	400V 50Hz	IE3	M3BP 250SMB 4	3GBP 252 220-L	4			ADD →
75kW	400V 50Hz	IE3	M3BP 250SMB 4	3GBP 252 220-L	4			ADD →
75kW	400V 50Hz	IE3	M3BP 280SMB 4	3GBP 282 220-K	4			ADD →
75kW	400V 50Hz	IE3	M3BP 280SMB 4	3GBP 282 220-L	4			ADD →

A total of 6 motors found.

My motors

M3BP 280SMB 4, IE3
75kW / 400V / 50Hz

Cost of ownership +

Documentation +

Summary and export +

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Specifications subject to change without notice.

Figure 5-12 Optimizer filters and results

Optimizer is easy to learn and to use as the user can simply put in values as filters (Figure 5-12) according to what they need. The interviewee noted that using the Optimizer is eased by the possibility of searching for a product with a product code. There are only eight fields to fill, which makes it fast and simple to use. The more filters are used, the more specific results can be found.

	<i>Options</i>	<i>Yes/No</i>	<i>Comments</i>
8	Is there any segmentation?	No	There is no segmentation.
9	Are there any region specific products?	No	There are no region specific products. Instead there are MEPS specific products.
10	Are there MEPS specific products?	Yes	The user has to specify a MEPS when starting the configuration.
11	Can the values be changed in the process?	Yes	The user can change the values in the process.
12	Can other options or variants be added for the product?	No	No options can be added.

Table 5-9 ABB Sales tool options

Optimizer does not provide any segmentation of products. There are no region specific products, but the user must specify a MEPS to start the configuration. Using this filter will give results that are either specific to that MEPS or ones that are general i.e. not specific to any MEPS area. The different MEPS include Australia, Brazil, Canada, China, EU, Korea, Turkey, United States, Not Defined and No requirements (Figure 5-13).

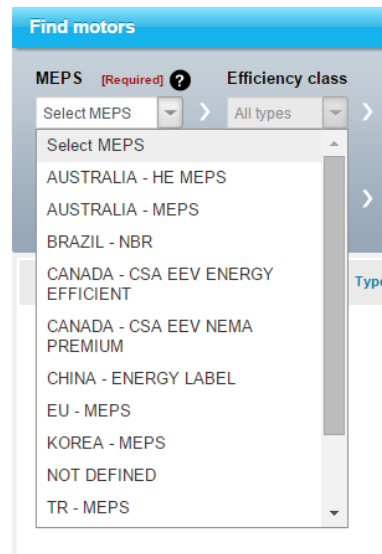


Figure 5-13 MEPS

132kW	400V 50Hz	IE3	M3BP 315SMD 4	3GBP 312 240-K	4		ADD →	
132kW	400V 50Hz	This motor is not subject to MEPS due to output power or pole number.					ADD →	
160kW	400V 50Hz		IE3	M3BP 280MLB 4	3GBP 282 420-L	4		ADD →

Figure 5-14 MEPS products

The warning triangle tells the user that the motor is not MEPS specific while the product without a warning triangle is specific to the chosen MEPS (Figure 5-14).

The values can be changed easily in the configuration process without having to go back in steps. However, if the user changes the MEPS, all values will be reset. Optimizer does not allow adding any options or variants for the product.

	<i>Finishing configuration</i>	<i>Yes/No</i>	<i>Comments</i>
13	Does the sales tool provide a product code for a finished product?	No	The user has to contact the sales unit to find a specific motor.
14	Does the sales tool allow ordering?	No	The user has to contact the sales unit to order a motor.

Table 5-10 ABB Sales tool - finishing configuration

Optimizer does not provide a product code for a finished product. It does however give a product code such as 3GBP 312 230-**L. The ** denotes that the code is still missing a mounting position and the voltage code. It is not possible to choose a mounting with Optimizer. In addition, even though voltage 400V was chosen in the filters, it does not show on the product code. Normally it would be in the place of the second *.



Figure 5-15 Contact us form on the upper right corner

In order to find a specific motor and to book an actual motor, the user has to contact a sales unit. The sales unit can be contacted via a Contact us form for which the link is provided on the upper right corner on the Optimizer page (Figure 5-15)

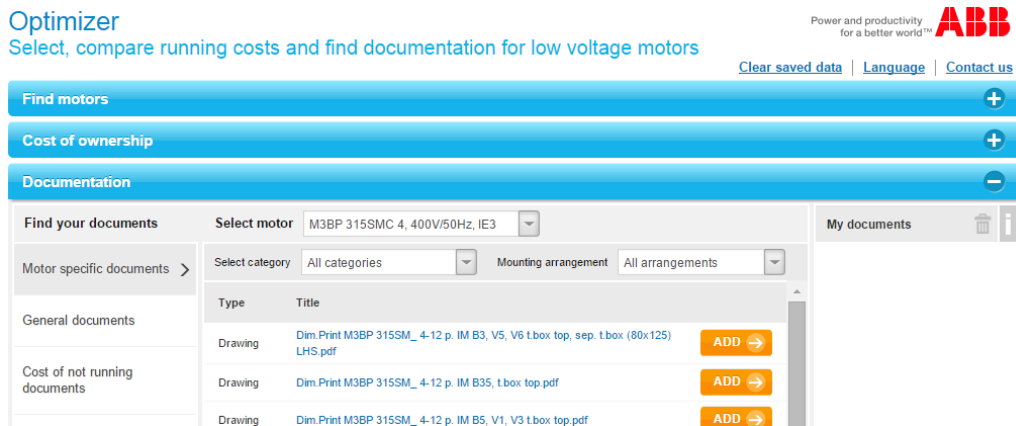


Figure 5-16 Optimizer documents

<i>Are the following documents provided</i>	<i>Yes/No</i>	<i>Comments</i>
Datasheet	Yes	PDF, not found from the same place as the other documents.
Dimension drawing	Yes	PDF
3D CAD	No	
Certificates	Yes	
Test reports	Yes	
Brochures	Yes	
Catalogues	Yes	
Connection diagrams	Yes	
Manuals	Yes	

Table 5-11 ABB Sales tool documents

Optimizer offers a great deal of different documents (Figure 5-16) for the user without having to actually order a product. The data sheet is found from a different place than the other documents (Data column in Figure 5-12). The interviewee noted that it was a good idea to have the data sheet on the first page so that it is easy to find. In addition to the data sheet there is a plethora of irrelevant documents as which makes it more difficult to find the ones that are actually relevant for the product and the user. Normally a 3D CAD would be provided, but it was not found for this motor in particular.

6. SIEMENS

6.1 Website

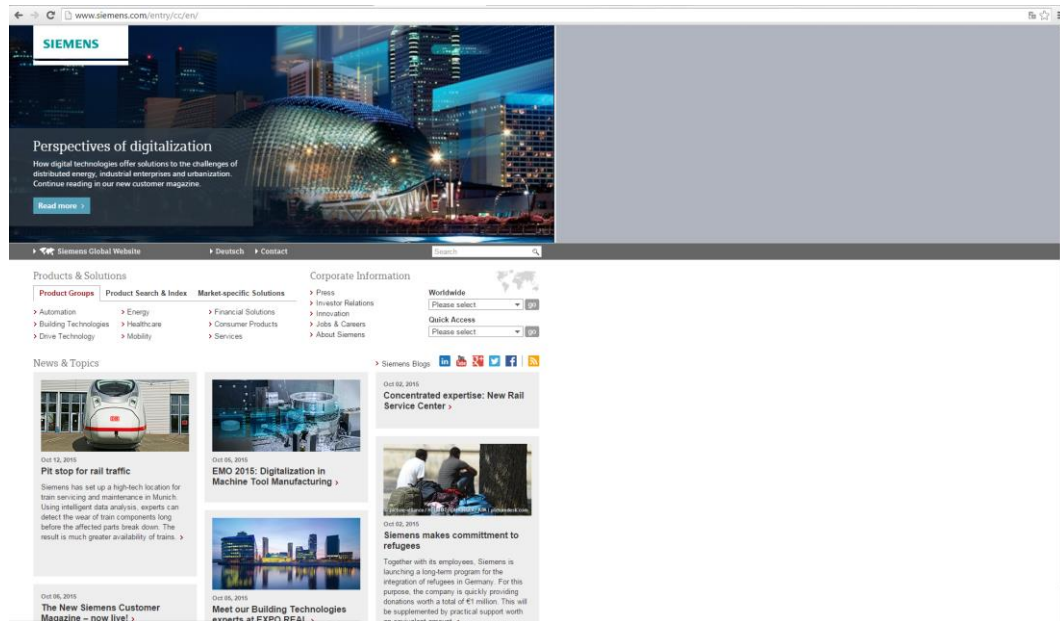


Figure 6-1 Global Siemens website

In this part the navigation and the contents of the Global website of Siemens are evaluated. The website can be found at www.siemens.com.

6.1.1 Navigation

	<i>Logical Structure</i>	<i>Yes/No</i>	<i>Comments</i>
1	Is the current location indicated clearly?	Yes	The path is shown on the page and it also includes drop down menus.
2	Is the content designed rationally?	Yes	Almost all of the content fits on the screen.
3	Are the menus understandable and straightforward?	No	The user has to know Siemens language to be able to browse the website.
4	Is the navigation consistent throughout the whole website?	Yes	The navigation works similarly throughout the whole website.

Table 6-1 Siemens Website logical structure

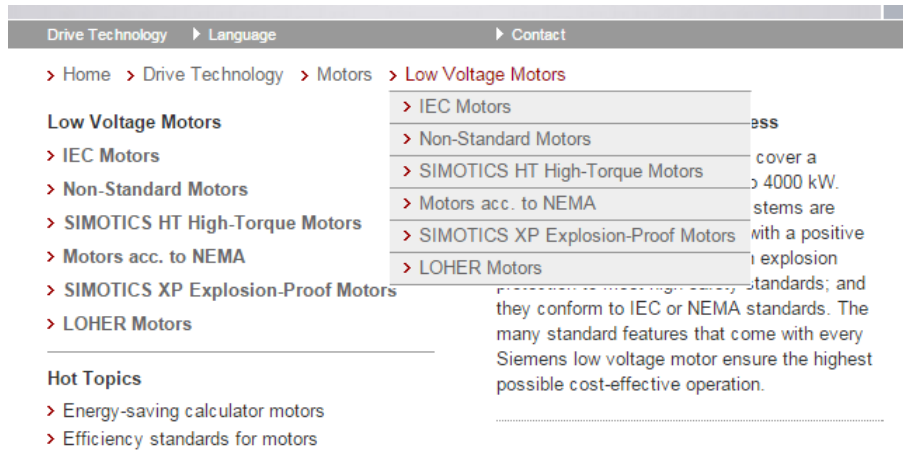


Figure 6-2 Siemens website path

The logical structure of the Siemens website is fairly consistent. Everything fits on the screen but the contents are optimized to the left and not to the center. This might make it less attractive for a user. Current location is indicated with a path below the banner, which did not seem visible enough for the interviewee. The path includes dropdown menus (Figure 6-2), which allow going back or changing the page without having to click through different pages. The interviewee felt that it made the navigation easier to follow.

The navigation works similarly throughout the whole website. The home page includes quick links on the right in a dropdown menu. Other pages, however, have links related to the topic in place of this dropdown menu (Figure 6-3). According to the interviewee the menus are easy to follow as they have short and effective text.

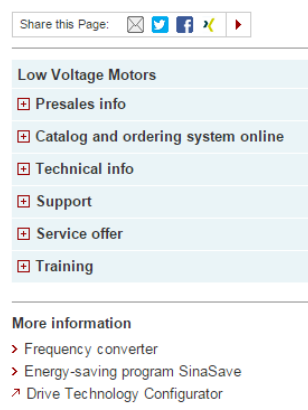


Figure 6-3 Siemens Low Voltage Motors links

	<i>Ease of use of the site</i>	<i>Yes/No</i>	<i>Comments</i>
5	Is the website easy to navigate?	No	The website is somewhat complex for a general user.
6	Is it easy to return to home page?	Yes	Company logo on the upper left corner
7	Are the links obvious? Do they take you to relevant places?	Yes	The links are obvious
8	Is it easy to recognize linked text?	Yes	Linked text is bolded and/or has a brown hover color.

Table 6-2 Siemens Ease of use of the site

The Siemens website is not very easy to navigate for a typical user. The user needs to know a great deal of the Siemens language to be able to find the things that they are looking for. The navigation is also somewhat complex as the user has to navigate through several pages to find the desired pages. However, the interviewee pointed out that the drop down menus on the path make navigation somewhat easier.

Nevertheless, the links are still fairly obvious. It is easy to recognize linked text as it is bolded and/or has a brown hover color. The product pages also have a small picture on the offerings which appear when hovering on the link. The interviewee pointed out that this was a good addition and made recognizing the different product categories easier. It is also easy to return to the home page as the company logo on the upper left corner works as a link and there is a link to the home page in the beginning of the path.

	<i>Search engine</i>	<i>Yes/No</i>	<i>Comments</i>
9	Is the search engine easy to use?	Yes	Insert a keyword into the text box. Click the icon to search.
10	Does the search engine provide accurate and useful results?	Yes	All keywords provided somewhat relevant results.
11	Is there a good description of search engine findings?	Yes	The description provides a part of the text that includes the search word.
12	Are there any search engine errors?	No	No errors were found

Table 6-3 Siemens Search engine

The screenshot shows the Siemens Global Website search interface. At the top, there are navigation links for 'Deutsch' and 'Contact'. Below that, the search bar contains the text 'low voltage motor' and a 'search' button. To the right of the search bar is a 'Help' icon. The search results are displayed in a list format, with the first result being 'Complete range of low-voltage motors from Siemens for ...'. The second result is 'Siemens launches new Simotics FD motor series for still more ...'. The third result is 'AC Motor and Low-Voltage Motors unbeatable in cost ...'. The fourth result is 'Motion Control Motors - Motors - Siemens'. On the right side of the search results, there is a 'Search results filtered by:' section with three filter categories: 'Language' (set to 'English'), 'File type', and 'Region' (set to 'Siemens International'). At the bottom of the filter section, there are two buttons: 'reset all filters' and 'filter'.

Figure 6-4 Siemens Search Engine

The interviewee could not find the search box very easily at first. However, she thought that the search engine is easy to the keyword is inserted into the text box and the search icon is clicked to generate results (Figure 6-4). The search engine will then show the 10 first hits regardless of the type of the result and without putting the results into different categories. The results can still be filtered by language, file type or region. The interviewee pointed out that there are possibly too many search results and that it should be known exactly what is looked after.

All of the used keywords provided somewhat relevant results (see appendix 1). The description of the findings is relevant as it provides a short take from the text where the keyword can be found. Furthermore, no search engine errors were found.

	<i>Navigational necessities</i>	<i>Yes/No</i>	<i>Comments</i>
13	Are there broken links?	No	No broken links were found
14	Are there "under construction" pages?	No	No "under construction" pages were found
15	Are the links clearly noticeable, well labelled and defined?	Yes	The links are easy to recognize
16	Are there any pages in a separate window?	No	No pages in separate windows

Table 6-4 Siemens Website navigational necessities

The navigational necessities of Siemens website work well as there are broken links, pages under construction or pages in separate windows. However, when the user selects a product group from the home page, the group opens as a “separate window” on the window itself (Figure 6-5). This means that the user has to click a link in this window to go further or go back using the “Back to Home” link – meaning that the back button of the browser does not work.

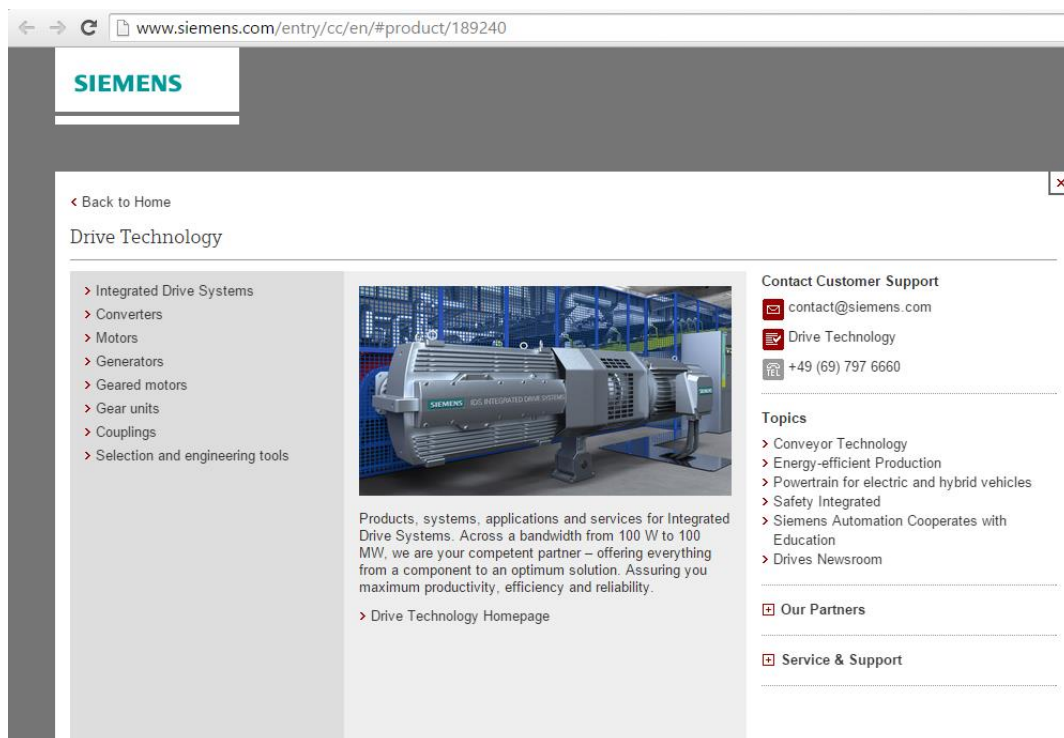


Figure 6-5 Drive Technology

6.1.2 Content

	<i>Product information</i>	<i>Yes/No</i>	<i>Comments</i>
1	Do the motor types have detailed information?	Yes	General description, technical data overview, special features, "your benefits", typical applications
2	Is there any argumentation for the motors?	Yes	There are several arguments for the motors throughout the path.

Table 6-5 Siemens Website product information

SIMOTICS SD Severe Duty Motors

Overview

- ✓ General description
- ✓ Technical data overview
- ✓ Special features converter-optimized motors
- ✓ Your benefits
- ✓ Typical applications

General description

The Severe Duty motors with gray cast iron frames are especially rugged. This makes them the first choice for applications in the toughest of environmental conditions. They master dust or vibration in crushers and mixers as well as the aggressive atmospheres that prevail in the petrochemical and process industries.

Figure 6-6 Siemens motor overview

The motors types have quite detailed information on the pages. As seen in Figure 6-6 the overview for a motor type includes a general description, technical data overview, special features, typical applications as well as “your benefits”, where Siemens have listed the assumed benefits for the prospective buyer.

In addition to the listed benefits, there are several arguments for the motors throughout the path to a product page. The following statement can be found from the Low Voltage Motors page:

“Don't compromise when selecting your low voltage motor. Choose a Siemens AC motor right from the start. We are the leading drive technology manufacturer for industrial applications. As your partner, we offer you the best AC motor systems — at a convincing price/performance ratio and backed by our global support network for production, sales, and service.”

	<i>Segments/Industries/Applications</i>	<i>Yes/No</i>	<i>Comments</i>
3	Is there any general segmentation?	Yes	Market Specific Solutions menu
4	Is there a marine segment?	Yes	Marine / Naval & Commercial Vessels page
5	Does the marine segment have any specific information about the motors?	No	Nothing specific - Drive Technology link
6	Is there a mining segment?	Yes	Mining and Cement page
7	Does the mining segment have any specific information about the motors?	No	Nothing specific - Motors link
8	Is there a food and beverage segment?	Yes	Food and Beverages page
9	Does the food and beverage segment have any specific information about the motors?	No	Low voltage motors can be found from the products but the link takes the user back to the Low Voltage Motors page.

Table 6-6 Siemens Website Segments/Industries/Applications

Products & Solutions

Product Groups	Product Search & Index	Market-specific Solutions
<ul style="list-style-type: none"> > Automotive > Chemicals > Cities > Data Centers > Food and Beverages > Glass and Solar 	<ul style="list-style-type: none"> > Healthcare > Machine Building > Marine > Metals > Mining and Cement > Municipalities and DSOs 	<ul style="list-style-type: none"> > Oil and Gas > Pharmaceuticals > Pulp and Paper > Transportation and Logistics > Water and Wastewater > Wind Equipment

Figure 6-7 Market-Specific Solutions menu

The segmentation for Siemens products can be found from the Market-specific Solutions menu on the home page (Figure 6-7). Pages for marine, mining as well as food and beverage are provided, but there is very little information about motors.

Related Links

- [↗ Onshore Power Supply](#)
 - [↗ Drive Technology](#)
 - [↗ Siemens PLM Software](#)
 - [↗ Service / LCM \(life cycle management\)](#)
 - [↗ Siemens Marine Solutions, Norway](#)
 - [↗ Siemens Marine Solutions, USA](#)
 - [↗ FLENDER gear units for ships](#)
-

Figure 6-8 Marine page – Related links

[> Home](#) [> Mining Industry](#) [> Beneficiation](#)

Beneficiation

- [> Grinding](#)
- [> Pump Systems](#)

Beneficiation - solutions for the mining industry

SIMINE solutions for the mining industry focus on process optimization, boosting output while decreasing costs for operating preparation plants. Regardless gearless drive or conventional drive solutions, Siemens has it all and designs solutions to span the entire beneficiation process, integrating mechanics, electrical engineering, automation and drive technology.

Share this Page: [✉](#) [🐦](#) [f](#) [x](#) [▶](#)

More Info

- [↗ Converters](#)
- [↗ Flender](#)
- [↗ TIA](#)
- [↗ Motors](#)
- [↗ TIP](#)

Figure 6-9 Mining page - More info for Beneficiation

[> Home](#) [> Food & Beverage](#) [> Dairy Industry](#) [> Products](#)

Ideally suited to dairies and cheese makers

Below are just some of the systems and products Siemens offers that are based on our Totally Integrated Automation concept, and are designed to support end-to-end automation of your dairy operations.

- [↗ Facility management](#)
- [↗ Factory sensors](#)
- [↗ Geared motors](#)
- [↗ Identification systems SIMATIC Ident](#)
- [↗ IT solutions](#)
- [↗ Low-voltage motors](#)

Figure 6-10 Food and Beverages - Dairy Industry products

All of the three industry pages have a similar situation regarding the products. The user has click through several pages to end up in a specific industry page to find what kind of products are used in that specific industry. Then, as seen in the figures 6-8, 6-9 and 6-10, the user can find their way to the general motors pages. This means that there is no specific information regarding the products used in the industry; only very general information is provided. The interviewee felt that this information is misleading, as not all of the motors can be sold for all of these industries.

	<i>Regions</i>	<i>Yes/No</i>	<i>Comments</i>
10	Does the motor information differ in Germany?	No	The pages are in full in English and in German.
11	Does the motor information differ in China?	No	The Chinese website in English is practically the same as the global website.
12	Does the motor information differ in Mexico?	No	The motor information is the same

Table 6-7 Siemens Website regions

The global Siemens website is provided in full in English and in German, meaning that the motor information is arranged in the same way in both languages. The information on the Chinese website does not differ either as the motor pages are in practice the same as the global website. The Mexican website provides the same information about the motors as well, even though some parts of the website are provided in Spanish.

6.2 Sales tools

The online sales tool for Siemens is the Industry Mall, which is a “Product catalogue and online ordering system for the Industry Automation and Drive Technology”. Industry Mall can be found from the address <https://mall.industry.siemens.com>.

The values used in this study are the following:

- Region: Europe
- Line: Cast Iron Basic Line
- Efficiency class: IE3
- Portfolio: Severe Duty
- Frequency: 50 Hz
- Voltage: 400V
- Speed: 1500 r/min
- Output: 160 kW

	<i>Using the sales tool</i>	<i>Yes/No</i>	<i>Comments</i>
1	Is the sales tool easy to find from the website?	No	Industry Mall is on the right in the navigation links, but the right configurator has to be found through a long path
2	Does the sales tool look attractive?	Yes	The required fields are in different color
3	Does the use of the sales tool require downloading?	No	No need to download
4	Does the use of the sales tool require registration?	No	No need to register
5	Is there a manual for the sales tool?	No	There is no manual.
6	Can the language be changed?	Yes	English or German can be chosen as the language
7	Is the sales tool easy to learn and to use?	Yes	As the user goes on with the sales tool less values are given as possibilities

Table 6-8 Siemens Using the sales tool

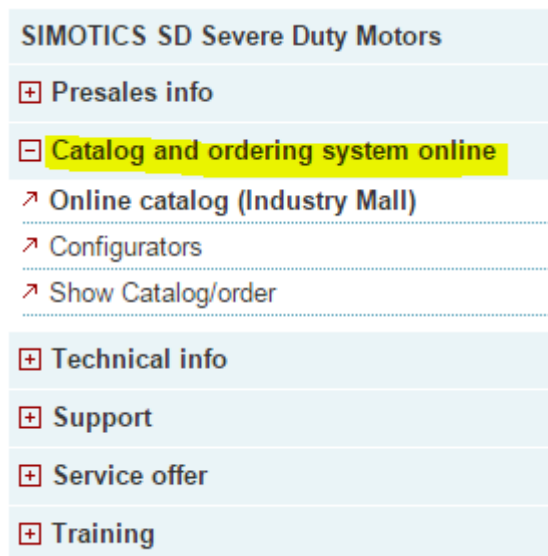


Figure 6-11 Navigation links - Industry Mall

The Industry Mall is easy to find as it is on the right in the navigation links (Figure 6-11).



Figure 6-12 Drive Technology Configurator

In order to find the right configurator, the user has to go down the path to choose the products that are configured. To configure motors the user first chooses the Drives Technology Configurator (Figure 6-12) which is “an easy and fast way to order mechanical components, inverters and motors.” The interviewee felt that the path to the right configurator is too long.

Figure 6-13 Guided Motor Selection

The configuration process starts with Guided Motor Selection (Figure 6-13). At this stage the user chooses the values which are marked in blue. After this the user can continue and use the motor configurator with these pre-set values.

After these settings are done, the process goes onto the actual configurator. The values chosen in the previous stage are now set into this configurator and cannot be changed anymore.

Figure 6-14 Siemens configurator for Severe Duty Motors

The sales tool looks attractive to the user as it fits well on the screen and it carries the same shades of grey as the website (Figure 6-14). The interviewee mentioned that the sales tool looks clear even though there are a great deal of choices. The language can be changed to German.

The use of the sales tool does not require downloading or registration. There is no manual for the tool although some additional information is provided to guide the user to choose the right values. This information can be seen by taking the mouse arrow on the information symbols next to the filters.

The sales tool is fairly easy to use and to learn as all the required fields are colored in blue. As the user goes further in the selection fewer values are offered in the next filter. However, it was noted by the interviewee that in order to use the tool it is vital to know the language and what it actually looked for.

	<i>Options</i>	<i>Yes/No</i>	<i>Comments</i>
8	Is there any segmentation?	No	There is no segmentation
9	Are there any region specific products?	Yes	The user has to specify a region when starting the configuration.
10	Are there MEPS specific products?	No	There are no MEPS specific products. Instead there are region specific products.
11	Can the values be changed in the process?	Yes/No	Pre-set values cannot be changed
12	Can other options or variants be added for the product?	Yes	Two option pages with several additional options for the product/order.

Table 6-9 Siemens Sales tool options

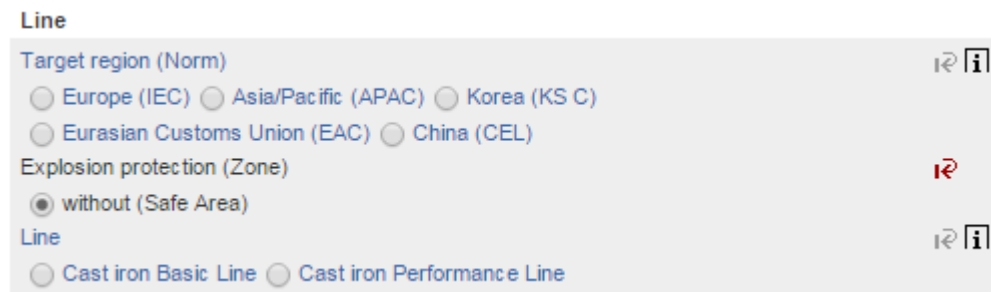


Figure 6-15 Siemens Target regions

There is no segmentation available for the products. The only thing that could help the user is choosing the environmental conditions if they are known. In order to proceed the configuration the user must define a target region for the product according to where the product is eventually delivered to (Figure 6-15). This means that the user can be located for example in Finland and regardless of that order a product that is delivered to a customer in Korea.

The screenshot displays the Siemens configurator filters interface, organized into several sections:

- Line:** Target region (Norm) with radio buttons for Europe (IEC), Asia/Pacific (APAC), Korea (KS C), Eurasian Customs Union (EAC), and China (CEL). Explosion protection (Zone) is set to 'without (Safe Area)'. The selected line is 'Cast iron Basic Line'.
- Environmental conditions:** A table of parameters:

Used as Temperature class	155(F) utilized 130(B)
Site altitude	up to 1000m
Coolant temperature maximum	40 °C
Coolant temperature minimum	-20 °C
- Electrical parameter:** Duty type: S1 (standard). Efficiency class: IE3. Frequency: 50 Hz. Voltage: 400 V. Winding selection: (34) 400 VΔ / 690 VY 50Hz, 460 VΔ 60Hz. Synchronous speed: 1500 1/min. Power demand: 0.07 ≤ 150.00 ≤ 250.00 kW. Increased power: No. Frame size: 315 L. Motor protection: (A) without (Standard). Additional motor protection: without.
- Mechanical Parameter:** Type of cooling: IC411 - self ventilated, surface cooled. Terminal box position: (4) at the top. Type of construction: (A) IM B3 / IM1001. Type of flange: without. Flange size: -/. Options for (H00) Canopy and (H01) Bolted on mounting feet are present but unchecked.

At the bottom, a table summarizes the electrical parameters:

Voltage	Power	Current	Efficiency class
400 V	160.00 kW	275.00 A	IE3
690 V	160.00 kW	162.00 A	IE3
460 V	184.00 kW	275.00 A	IE3

Figure 6-16 Siemens configurator filters

The user can change or reset values that have a brown arrow next to them (Figure 6-16). The other values with the grey arrow have either been pre-set during the Guided Motor Selection (such as Frequency, Voltage, Synchronous speed and Power demand) or they have been computed according to the values chosen at this stage (such as Cast Iron Basic Line). If the user wants to change the values set in the Guided Motor Selection, they will have to go back and start the process again. The interviewee felt that having to go back to the pre-set values makes using the tool somewhat complex.

SIMOTICS GP/SD/XP - 1LE1/1MB1 Language

Motor type: 1LE1503-3AB43-4AA4
 Recommended retail price : on request Additional actions

The configuration is complete. You can order this product.

Input Options 1 **Options 2** Startup calculation CAD 1.364

Electrical connection / terminal box

Direction cable entry: from the right (Standard) iP

Cable gland: Standard iP

Connection type: Terminal box - cable entry integrated and drilled iP

Connection parts: iP

Connected for dispatch: like voltage definition iP

(R50) Next largest terminal box

(R60) Cast Iron auxiliary terminal box (small)

(R62) Cast Iron auxiliary terminal box (small)

(H08) Terminal box at the NDE iP

(R74) Silicone-free version

(R76) Terminal board with 6 pins

(R30) Reduction element for M gland according to the British Standard, mounted for both cable entries

(Y61) Non-standard threaded through hole (NPT or G thread)

Encoder, brake, backstop

Backstop: without iP

Encoders: without (standard) iP

(G43) Mechanical protection for encoder

(F01) Mounting a brake

(F50) Mechanical manual brake release with lever (cannot be locked)

(Y81) External fan with non-standard voltage and/or frequency

Paint finish

Paint finish: Standard version iP

RAL color: RAL 7030 - grey (Standard) iP

(S05) Motor painted on the inside

(S06) Polyurethane top coat in RAL 7030

Marine motors

(B10) Individual acceptance by marine classification society

(B83) Type test with heat run for horizontal motors, with acceptance

(E11) With type test certificate according to GL (Germanischer Lloyd), Germany, CT 45 °C, temperature class 155 (F), used according to 155 (F)

(E21) With type test certificate according to LR (Lloyds Register), Great Britain, CT 45 °C, temperature class 155 (F), used according to 155 (F)

(E31) With type test certificate according to BV (Bureau Veritas), France, CT 45 °C, temperature class 155 (F), used according to 155 (F)

(E41) With type test certificate according to Registro Italiano Navale (RINA), CT 45 °C, temperature class 155 (F) used acc. to 155 (F)

(E46) With type test certificate according to RS (Russian Maritime Register of Shipping), CT 45 °C, temperature class 155 (F), used according to 155 (F)

(E51) With type test certificate according to DNV (Det Norske Veritas), Norway, CT 45 °C, temperature class 155 (F), used according to 155 (F)

(E52) With type test certificate according to ABS (American Bureau of shipping), CT 50 °C, temperature class 155 (F), used according to 155 (F)

(E54) With type test certificate according to Korean Register of shipping (KR), CT 45 °C, temperature class 155 (F), used according to 155 (F)

Mechanical versions

Degree of protection: IP55 (standard) iP

Condensation drain holes: Yes (standard) iP

Vibration-proof version: Yes (standard) iP

External grounding: Yes (standard) iP

(H70) Second grounding

(H07) Stainless steel screws and bolts (outside the motor)

(H10) Enclosure that can be bolted on

Additional regulations

Special design for zone 2: without iP

(D30) Electrical design according to NEMA MG1-12

(D31) Version according to UL with

(D33) For Korea, certified according to KS C IEC 60034-2-1

(D34) China Energy Efficiency Label

(D37) IECEX-certification

(D40) Canadian regulations CSA

(D01) CCC China Compulsory Certification

(C02) VIK version

(D22) Motor without CE character for export outside the EEA (see EU regulation 640/2009)

(D23) Motors exclusively to EVPG 51 from 27.02.08 for use in transport systems for both persons and freight

(D47) TR CU product safety certificate EAC for the Eurasian Customs Union

(D35) Ex certificate EAC for the Eurasian Customs Union

Winding and motor protection

Anti-condensation heating: without iP

Environmental requirements

Increased air humidity/temperature: Standard iP

Figure 6-17 Siemens configuration Options 1

There are two different tabs for options. The first option includes (Figure 6-17) Electrical connection/terminal box; Encoder, brake, backstop; Paint finish, Marine motors, Mechanical versions, Additional regulations, Winding and motor protection and Environmental requirements. The second option includes Documentation, Fan, Shaft and Rotor, Miscellaneous, Signage and Bearing. These options can be added but are not required for the standard motor that has just been configured to get an orderable end product.

	<i>Finishing configuration</i>	<i>Yes/No</i>	<i>Comments</i>
13	Does the sales tool provide a product code for a finished product?	Yes	The user ends up with a product code that can be ordered if the user has registered to the website.
14	Does the sales tool allow ordering?	Yes	At this stage registration is needed. The user has to sign up for a newsletter and get an account.

Table 6-10 Siemens Sales tool - Finishing configuration

Motor type: 1LE1503-3AB43-4AA4-Z B60+R62
Recommended retail price : on request
 The configuration is complete. You can order this product.

Figure 6-18 Siemens motortype

Using the sales tool generates a product on the upper left corner of the sales tool (Figure 6-18). The product code shows the motor type and the chosen additional options. However, according to the interviewee the product code was not easy to find and they mentioned that it should be more visible on the page. The user can order this product if they have registered on the Siemens website or have ordered a newsletter. However, ordering a newsletter does not work with an ABB email address.

<i>Are the following documents provided</i>	<i>Yes/No</i>	<i>Comments</i>
Datasheet	Yes	PDF and RTF
Dimension drawing	Yes	2D, PDF and DXF
3D CAD	Yes	PDF and STEP
Certificates	No	can be ordered
Test reports	No	can be ordered
Brochures	No	
Catalogues	No	
Connection diagrams	Yes	
Manuals	No	link to operating instructions

Table 6-11 Siemens sales tool documents

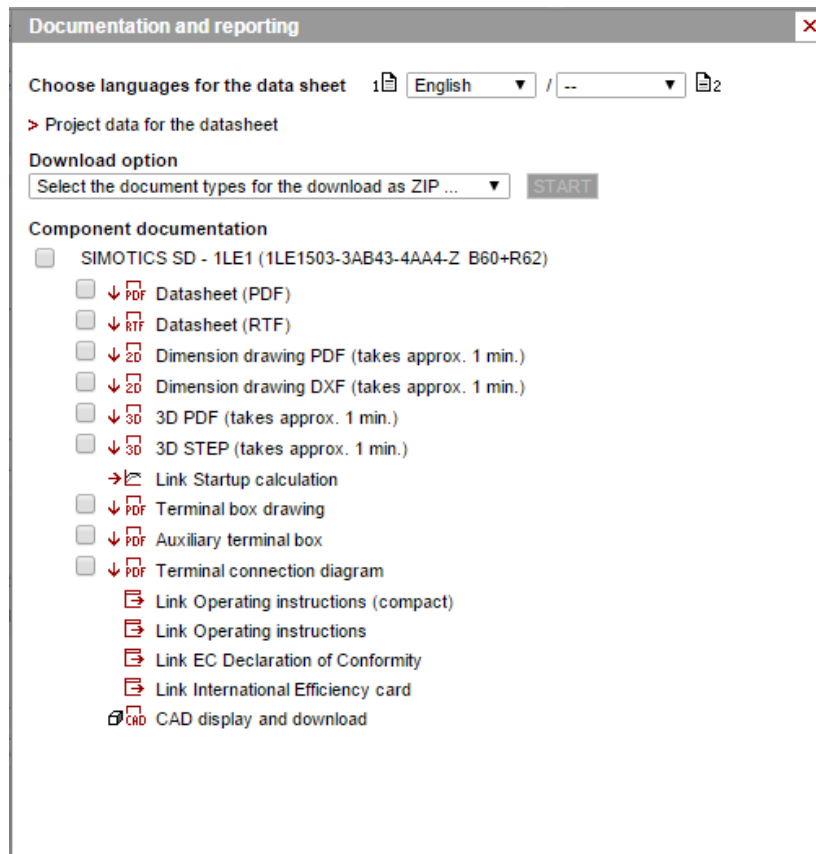


Figure 6-19 Siemens sales tool documents

The sales tool provides quite many documents in different forms (Figure 6-19). Datasheet, Dimension drawings, 3D CAD and Connection diagram are provided. To get certificates or test reports the user has to add them to the order so that they are delivered with the motor. A manual is not provided as such but there is a link to operating instructions.

7. WEG

7.1 Website

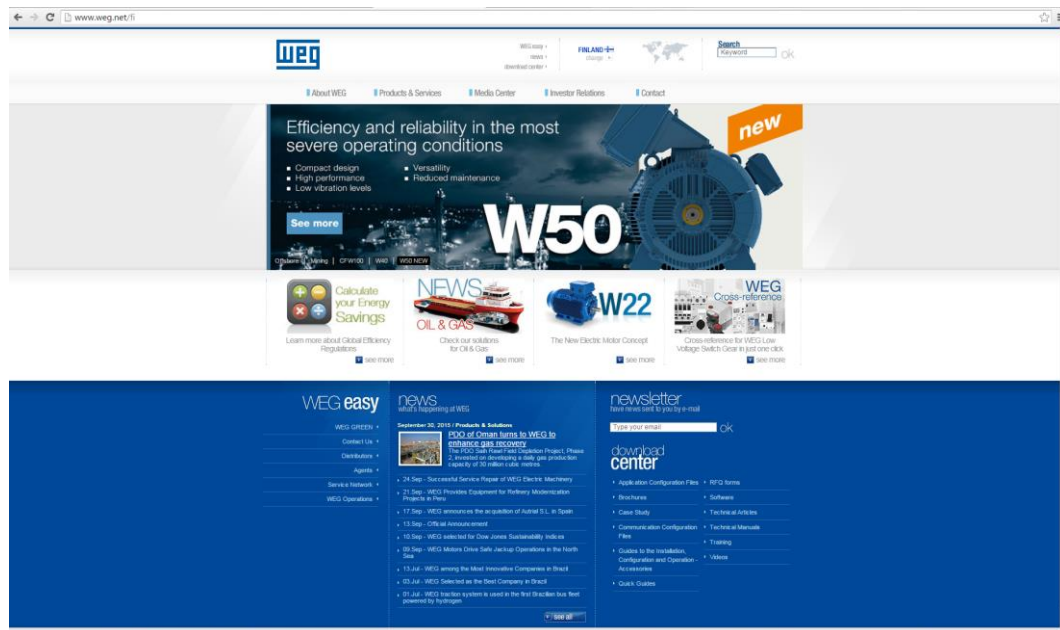


Figure 7-1 WEG website

In this section the navigation and the contents on the WEG website are evaluated. The WEG website used in this study is <http://www.weg.net/fi>, the version that is intended for the user located in Finland. The websites can be found at www.weg.net but there is no global website. Instead the user has to define a location in the beginning of the browsing.

7.1.1 Navigation

	<i>Logical Structure</i>	<i>Yes/No</i>	<i>Comments</i>
1	Is the current location indicated clearly?	Yes	The path is shown below the menu
2	Is the content designed rationally?	Yes	Almost all of the content fits on the screen.
3	Are the menus understandable and straightforward?	Yes	The menus are consistent
4	Is the navigation consistent throughout the whole website?	Yes	Everything can be found from the menu. Quick links and news on the bottom.

Table 7-1 WEG Website logical structure

The logical structure on the WEG website is consistent and almost all of the content fits on the screen. The website is optimized to the center of the screen which makes it attractive for the user. The path is shown below the navigation menu (Figure 7-2), but the interviewee thought that it does not stand out from the page very well. The content is rational as all the needed information can be found from the menu on top of the page. The menus are also consistent and easy to understand. In addition, the navigation stays consistent throughout the whole website as everything can be found from the menu on the top. Quick links and news are on the bottom of the page.

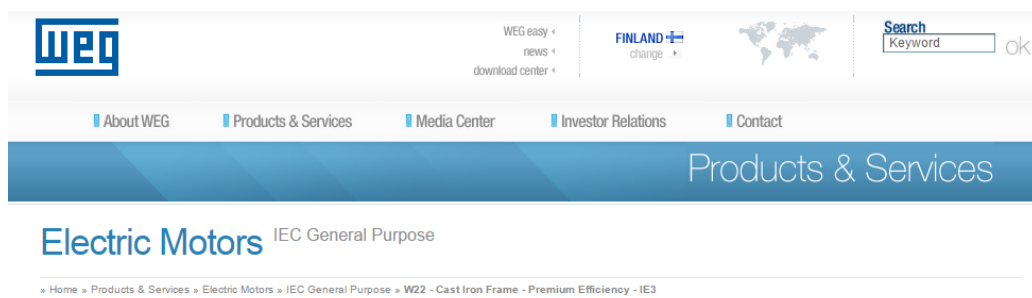


Figure 7-2 WEG website path

	<i>Ease of use of the site</i>	<i>Yes/No</i>	<i>Comments</i>
5	Is the website easy to navigate?	Yes	The navigation is consistent
6	Is it easy to return to home page?	Yes	Company logo on the upper left corner
7	Are the links obvious? Do they take you to relevant places?	Yes	The links are obvious
8	Is it easy to recognize linked text?	Yes	Linked text is either underlined, bolded or in a different color.

Table 7-2 WEG Ease of use of the site

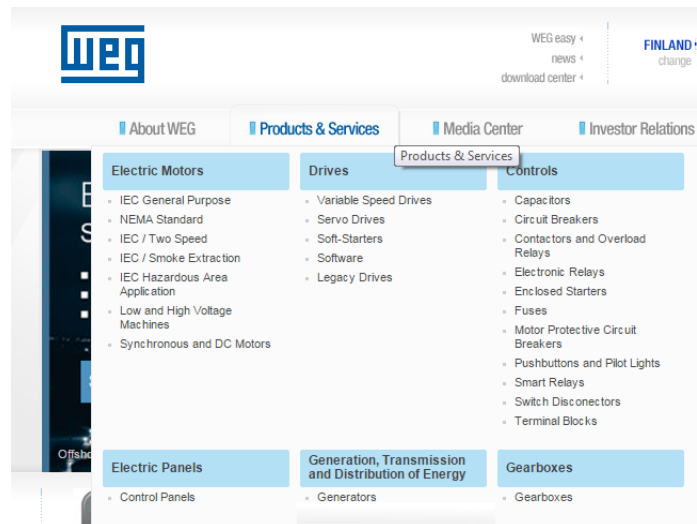


Figure 7-3 WEG navigation menu

The simple layout and the menus make it fairly easy to learn how to use and navigate this website. The navigation is very consistent and there are no functions that differ from the norm of the website. As can be seen in Figure 7-3 the product menu shows all product categories with different product groups. The interviewee found this feature very appealing as it makes it easy to see all of the links and offerings without having to click any of the links.

The home page can be found easily as the company logo on the upper left corner works as a link to the home page (Figure 7-3). The links are obvious as well and take the user to places as described in the link. Linked text is easy to recognize as it differs from normal text with underlining, bolding or different color. On the product offering pages also pictures work as links.

	<i>Search engine</i>	<i>Yes/No</i>	<i>Comments</i>
9	Is the search engine easy to use?	Yes	Insert a keyword into the text box. Four different categories for results
10	Does the search engine provide accurate and useful results?	No	Only two keywords out of 10 gave accurate and useful results.
11	Is there a good description of search engine findings?	No	Only the header is provided. In news articles the first row of the news item is given as description.
12	Are there any search engine errors?	Yes	The words low voltage motor are given in a product page but this still is not given in results.

Table 7-3 WEG Search engine

The interviewee noted that this search engine was easy to find and easy to use as well. The search box can be found from the upper right corner and the key word is inserted into the box and the search icon is clicked to generate the search. After the search four different categories for results are shown: pages, products, news and download (Figure 7-4).

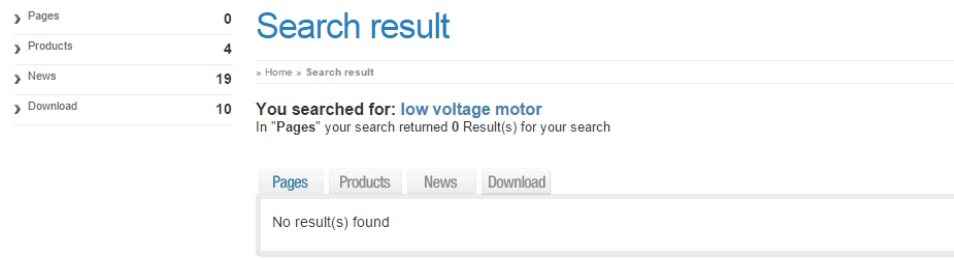


Figure 7-4 WEG Search engine

However the search engine has its problems as it does not provide very accurate results with the provided keywords. Only two keywords out of ten gave accurate and useful results. One keyword gave a somewhat useful result (a brochure). Four keywords gave very inaccurate results. Three keywords gave no results. (see Appendix 1)

The interviewee noted that the description is fairly weak as only the header of the page is provided. Nonetheless in news articles the first row of the news item is given as description. Also search engine errors can be noticed. For example the words “low voltage motor” can be found when browsing the website but these pages containing those words are not given in the search results.

	<i>Navigational necessities</i>	<i>Yes/No</i>	<i>Comments</i>
13	Are there broken links?	No	No broken links were found
14	Are there "under construction" pages?	No	No "under construction" pages were found
15	Are the links clearly noticeable, well labelled and defined?	Yes	The links are easy to recognize
16	Are there any pages in a separate window?	No	No pages in separate windows

Table 7-4 WEG Website navigational necessities


The navigational necessities of the website work well as there are no issues regarding the navigation because no broken links or “under construction” pages or pages in separate windows were found during the study. Links are also recognizable and well defined and the title page indicates clearly what page the user is on.

7.1.2 Contents

	<i>Product information</i>	<i>Yes/No</i>	<i>Comments</i>
1	Do the motor types have detailed information?	Yes	Typical applications, standard features and available options are listed.
2	Is there any argumentation for the motors?	No	No arguments; only technical facts are provided

Table 7-5 WEG Website product information

The interviewee noted that everything that is relevant to the motors is listed, with typical applications, standard features and available options (Figure 7-5). Related documents such as brochures, manuals and guides can be found from the left hand side as well. WEG does not provide any argumentation on the motor pages; instead there are only technical facts about the motors.



W22 - Cast Iron Frame - Premium Efficiency - IE3

Premium efficiency cast iron frame IP55 motor complying with IE3 efficiency levels according to IEC60034-30.

Technical support
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[Service Network](#)

› Data & Drawings

click on image to enlarge

› **General information**
 › Data & Drawings
 › CAD Library - 2D / 3D drawings

Download Center
 › Brochures (26)
 › Case Study (10)
 › Quick Guides (1)
 › Technical Articles (2)
 › Technical Manuals (8)

Typical Applications

- Pumps
- Fans
- Crushers
- Conveyor belts
- Mills
- Centrifugal machines
- Presses
- Elevators
- Packaging equipment
- Grinders and others

Standard Features

- Three-phase, multivoltage, IP55, TEFC
- Premium efficiency - complying with IE3 efficiency levels according to IEC60034-30
- Output: 0.12 up to 500kW
- Number of Poles: 2, 4, 6 and 8
- Frames: 63 up to 355A/B
- Mounting: B3T
- Voltage: 220-240/380-415V / 380-415/660V
- Class "F" insulation ($\Delta T = 80K$)
- Continuous duty: S1
- Design N
- WISE® (WEG Insulation System Evolution) insulation system -Suitable for inverter duty applications*
- Thermistors (1 per phase) for frames 160M to 355A/B
- Ambient temperature: 40 °C, at 1000 m.a.s.l
- Squirrel cage rotor / Aluminium die cast
- V'Ring seal for frames 63 to 200L and for frames 225S/M to 355A/B
- Stainless steel nameplate
- Fan Covers: steel made for frames 63 to 132M/L and cast iron made for frames 160M to 355A/B

Figure 7-5 WEG product page

	<i>Segments/Industries/Applications</i>	<i>Yes/No</i>	<i>Comments</i>
3	Is there any general segmentation?	Yes	Segments can be found from brochures. Brochures offer different solutions for different segments.
4	Is there a marine segment?	Yes	"Solutions for Marine Industry"
5	Does the marine segment have any specific information about the motors?	Yes	Description of motors used in marine
6	Is there a mining segment?	Yes	"Solutions for Mining"
7	Does the mining segment have any specific information about the motors?	Yes	Description of motors used in different processes in mining
8	Is there a food and beverage segment?	No	
9	Does the food and beverage segment have any specific information about the motors?	N/A	

Table 7-6 WEG Website Segments/Industries/Applications

WEG offers different solutions for different segments. There are no pages for marine or mining, but the solutions are presented in brochures. The solutions cannot be found by navigating the website. Instead when searching for “solutions”, different brochures can be found for oil & gas, mining, steel industry, energy, nuclear market, pump industry, marine, sugar & ethanol, pulp and paper as well as power generation.

The marine brochure offers a description of motors used in the marine industry: WGM motors, master line motors, water cooled motors, three phase induction motors and electrical motors for special applications. The mining brochure provides only a little description of motors used in different processes in mining: low speed synchronous motors, high voltage motors and induction motors. The interviewee pointed out that this is a good solution because now it is known what kind of motors are used in the industries.

	<i>Regions</i>	<i>Yes/No</i>	<i>Comments</i>
10	Does the motor information differ in Germany?	No	Same information as on the Finnish website
11	Does the motor information differ in China?	Yes	Some market specific motors, less selection than on the European website
12	Does the motor information differ in Mexico?	Yes	There are different product lines

Table 7-7 WEG Website regions

The German website offers same motors and same motor information as on the Finnish website. The Chinese website offers some market specific motors but there is less selection than on the European website. For example, the W22 which is a common product line in Europe, is completely nonexistent on the Chinese website. The Mexican website offers some additional information about the motors in Spanish. There are also some completely different product lines which do not exist for the European market.

7.2 Sales tools

WEG Electric Motor Selection

Product line: IEC General Purpose > W22 - Cast Iron Frame - Premium Efficiency - IE3

Standard	Frequency	Voltage	Poles	Output kW	Frame	Locked rotor current (IEC)	Locked rotor torque	Breakdown torque	Moment of inertia	Locked rotor time	Approximate weight	Noise level	Service Factor	Full load speed	Efficiency		
IEC	50 Hz	220-240/380-415/460V	2	0.12	63	Standard Frame	5.4	310%	330%	0.00113 kgm ²	30 s	6.2 kg	52 (dB(A))	1.00	2829 rpm	58.0%	60.8
IEC	50 Hz	220-240/380-415/460V	2	0.12	63	Standard Frame	5.4	310%	330%	0.00113 kgm ²	30 s	6.2 kg	52 (dB(A))	1.00	2829 rpm	58.0%	60.8
IEC	50 Hz	220-240/380-415/460V	2	0.12	63	Standard Frame	5.4	310%	330%	0.00113 kgm ²	30 s	6.2 kg	52 (dB(A))	1.00	2829 rpm	58.0%	60.8
IEC	60 Hz	220/380V	2	0.12	63	Standard Frame	6.3	330%	320%	0.00113 kgm ²	30 s	5.7 kg	56 (dB(A))	1.25	3410 rpm	54.0%	61.0
IEC	50 Hz	220/380V	2	0.12	63	Standard Frame	5.4	310%	330%	0.00113 kgm ²	30 s	6.2 kg	52 (dB(A))	1.00	2829 rpm	58.0%	60.8
IEC	50 Hz	220/380V	2	0.12	63	Standard Frame	5.4	310%	330%	0.00113 kgm ²	30 s	6.2 kg	52 (dB(A))	1.00	2829 rpm	58.0%	60.8
IEC	60 Hz	220/380V	2	0.12	63	Standard Frame	6.3	330%	320%	0.00113 kgm ²	30 s	5.7 kg	56 (dB(A))	1.25	3410 rpm	54.0%	61.0
IEC	60 Hz	220/380V	2	0.12	63	Standard Frame	6.3	330%	320%	0.00113 kgm ²	30 s	5.7 kg	56 (dB(A))	1.25	3410 rpm	54.0%	61.0
IEC	60 Hz	230/400V	2	0.12	63	Standard Frame	6.3	330%	320%	0.00113 kgm ²	30 s	5.7 kg	56 (dB(A))	1.25	3410 rpm	54.0%	61.0

Export Electrical Data | Export Mechanical Data

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Figure 7-6 Electric Motor Selection

The WEG sales tool is Electric Motor Selection which can be found from the address http://catalog.weg.net/tec_cat/tech_motor_sel_web.asp.

The values used in this study are the following:


- Region: Europe
- Product line: IEC General Purpose > W22 – Cast Iron Frame – Premium Efficiency – IE3
- Frequency: 50 Hz
- Voltage: 400V
- Speed: 4 poles
- Output: 150 kW

	<i>Using the sales tool</i>	<i>Yes/No</i>	<i>Comments</i>
1	Is the sales tool easy to find from the website?	No	The tool can be found from the product page
2	Does the sales tool look attractive?	Yes	It can be easily recognized as a WEG tool as it carries the same shades of blue
3	Does the use of the sales tool require downloading?	No	No need to download
4	Does the use of the sales tool require registration?	No	No need to register
5	Is there a manual for the sales tool?	No	There is no manual
6	Can the language be changed?	Yes	English, Portuguese, Spanish, Russian or Chinese can be chosen as the language.
7	Is the sales tool easy to learn and to use?	Yes	The user puts in values as filters and gets more specific results the more filters are used. All filters on the left.

Table 7-8 WEG Using the sales tool

Electric Motors IEC General Purpose

» Home » Products & Services » Electric Motors » IEC General Purpose » W22 - Cast Iron Frame - Premium Efficiency - IE3



click on image to enlarge

W22 - Cast Iron Frame - Premium Efficiency - IE3

Premium efficiency cast iron frame IP55 motor complying with IE3 efficiency levels according to IEC60034-30.

» Data & Drawings

Technical support

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» **Data & Drawings**

» CAD Library - 2D / 3D drawings

Download Center

» Brochures (26)

» Case Study (10)

» Quick Guides (1)

» Technical Articles (2)

» Technical Manuals (8)

Typical Applications

- Pumps
- Fans
- Crushers
- Conveyor belts
- Mills
- Centrifugal machines
- Presses
- Elevators
- Packaging equipment
- Grinders and others

Standard Features

Figure 7-7 Data & Drawings on a WEG product page

The sales tool can be found from a product page behind the link Data & Drawings (Figure 7-7). The name of the tool is Electric Motor Selection but it cannot be found with that search word. The interviewee noted that this way of displaying the sales tool is not very logical. Nevertheless, the sales tool looks attractive as it carries the same shades of blue as the WEG website in general. The interviewee noted that it would look more attractive with drop down menus. The sales tool does not require downloading or registration.

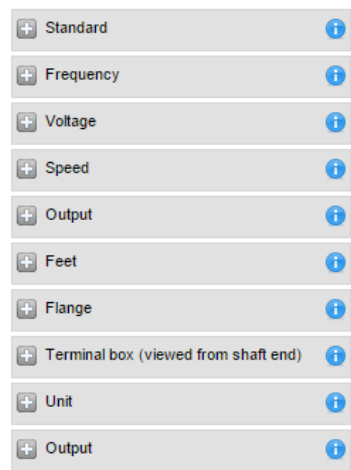


Figure 7-8 Electric Motor Selection filters

There is no manual available but all of the filters have an info logo on them (Figure 7-8) which provides some information for the user. The sales tool is also fairly easy to learn and to use as all the filters are on the left. The user puts in values as filters and more specific results are provided the more filters are used. However, the interviewee noted that it is not possible to reset the values or search for a product with a product code.

The Electric Motor Selection tool is provided in several languages with English being the main language. In addition, the user can choose Portuguese or Spanish. However these two languages are region specific, meaning that the tool is only provided in Portuguese for the Brazilian users and not for the users in Portugal. In the same way the Spanish versions are for Mexico and Latin America. Other provided languages are Chinese for China and Russian for Russia.

	<i>Options</i>	<i>Yes/No</i>	<i>Comments</i>
8	Is there any segmentation?	No	There is no segmentation
9	Are there any region specific products?	Yes	The user has to specify a region when starting the configuration.
10	Are there MEPS specific products?	No	There are no MEPS specific products. Instead there are region specific products.
11	Can the values be changed in the process?	Yes	The user can change the values in the process
12	Can other options or variants be added for the product?	No	No options can be added

Table 7-9 WEG Sales tool options

There is no segmentation provided for the selection of the products. There are different product lines especially for different regions but not for different MEPS. The regions are Europe, Africa, Asia, Japan, Australasia, Brazil, Latin America, United States/Canada, Mexico, Russia and China. The region has to be selected in the beginning of the configuration.

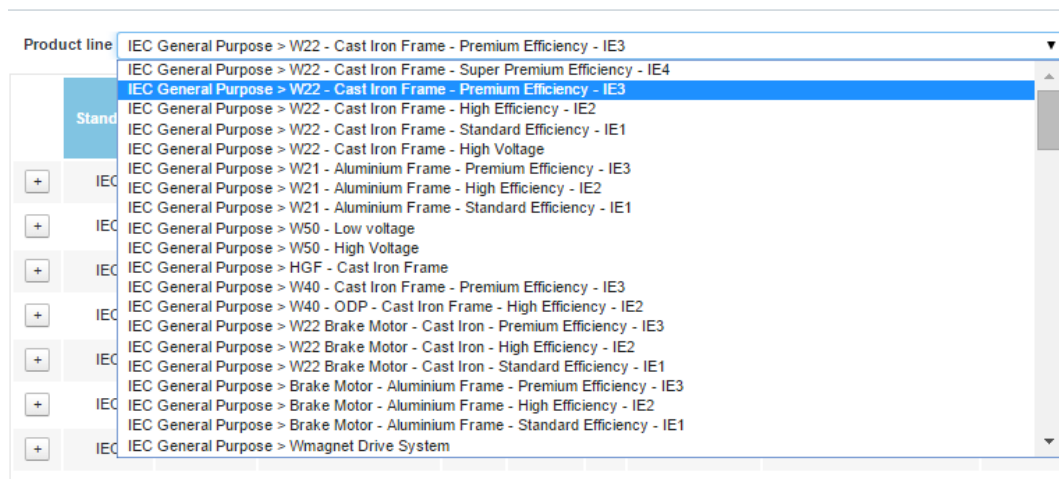


Figure 7-9 Product lines for Europe



Figure 7-10 Product lines for China

The product line for Europe (Figure 7-9) offers a large variety of motors. This is however somewhat complex for a user as they have to know WEG language to be able to choose the right product line. When comparing China to Europe, there is a smaller variety in products (Figure 7-10). For example the W22 motors are not offered for China at all.

The user can change the values any time during the process and adding in more values is possible. This means that there will be more results when more values are added. For example several different output options can be chosen. The motors provided by the tool are standard motors and no other options or variants can be added using the Electric Motor Selection.

	<i>Finishing configuration</i>	<i>Yes/No</i>	<i>Comments</i>
13	Does the sales tool provide a product code for a finished product?	No	The configurator gives out all the electrical data for a motor but not a product code.
14	Does the sales tool allow ordering?	No	The user can send a request for quotation with a separate PDF form.

Table 7-10 WEG Sales tool - Finishing configuration

The sales tool does not provide any product code for a finished product. It does give out all the electrical data for a motor but the user does not get any information on what the actual product code will look like. The sales tool does not allow ordering

either but it does let the user find specific values which can be used to send a request for quotation with a separate PDF form.

	Standard	Frequency	Voltage	Poles	Output kW	Frame		Locked rotor current (lfln)	Locked rotor torque	Breakdown torque	Moment of inertia	Locked rotor time
+	IEC	50 Hz	400/690V	4	150.00	315S/M	Standard Frame	7.8	270%	270%	3.77478 kgm ²	27 s
+	IEC	50 Hz	400/690V	4	160.00	315S/M	Standard Frame	7.7	260%	270%	3.98762 kgm ²	28 s

Figure 7-11 Electric Motor Selection results

The user gets different results based on their choices (Figure 7-11). The results show all the electrical data for the motors. By clicking + in the beginning of the row the user can choose a certain motor and find related documents.

<i>Are the following documents provided</i>	<i>Yes/No</i>	<i>Comments</i>
Datasheet	Yes	A PDF file can be generated
Dimension drawing	Yes	A PDF file can be generated
3D CAD	No	CAD library
Certificates	No	
Test reports	No	
Brochures	No	
Catalogues	No	
Connection diagrams	No	
Manuals	No	

Table 7-11 WEG Sales tool documents



The screenshot displays the 'Motor Selection' tool interface. It features a 'Characteristics' section on the left with a list of technical specifications such as Frame (315 S/M), Output (150 kW), Frequency (50 Hz), Poles (4), Full load speed (1480 rpm), and Locked rotor current (2070/1200 A). Below this, there are two tables: 'Efficiency (%)' and 'Power Factor'. The efficiency table shows values of 95.4, 95.8, and 95.9 for different load conditions. The power factor table shows values of 0.71, 0.81, and 0.85. A 3D model of a blue motor is shown on the right. At the top right, there are buttons for 'Generate PDF file' and 'Create technical proposal'. The page title is 'W22 - Cast Iron Frame - Premium Efficiency - IE3'.

Figure 7-12 Electric Motor Selection documentation

As can be seen in table 7-11, the sales tool does not provide many documents for the user. To get the datasheet a PDF file is generated from the technical data (Figure 7-12) that has been given. In order to get a 3D CAD the user is directed to CAD library where they will have to find the document.

8. COMPARING AND ANALYZING RESULTS

8.1 Website navigation

	Navigation	ABB	Siemens	WEG
	<i>Logical Structure</i>	<i>Yes/No</i>	<i>Yes/No</i>	<i>Yes/No</i>
1	Is the current location indicated clearly?	Yes	Yes	Yes
2	Is the content designed rationally?	No	Yes	Yes
3	Are the menus understandable and straightforward?	Yes	No	Yes
4	Is the navigation consistent throughout the whole website?	Yes	Yes	Yes
	<i>Ease of use of the site</i>	<i>Yes/No</i>	<i>Yes/No</i>	<i>Yes/No</i>
5	Is the website easy to navigate?	No	No	Yes
6	Is it easy to return to home page?	Yes	Yes	Yes
7	Are the links obvious? Do they take you to relevant places?	Yes	Yes	Yes
8	Is it easy to recognize linked text?	Yes	Yes	Yes
	<i>Search engine</i>	<i>Yes/No</i>	<i>Yes/No</i>	<i>Yes/No</i>
9	Is the search engine easy to use?	Yes	Yes	Yes
10	Does the search engine provide accurate and useful results?	Yes	Yes	No
11	Is there a good description of search engine findings?	Yes	Yes	No
12	Are there any search engine errors?	No	No	Yes
	<i>Navigational necessities</i>	<i>Yes/No</i>	<i>Yes/No</i>	<i>Yes/No</i>
13	Are there broken links?	Yes	No	No
14	Are there "under construction" pages?	No	No	No
15	Are the links clearly noticeable, well labelled and defined?	Yes	Yes	Yes
16	Are there any pages in a separate window?	No	No	No

Table 8-1 Website navigation results

It is evident that the WEG website is more attractive and easier to use for a typical user. However, this is likely due to the company having a much smaller product portfolio than that of ABB and Siemens. As ABB and Siemens have a large portfolio, it is more difficult to make a website that takes into account every user in every industry and in every country.

Having a simple website is also a problem for WEG as it can be seen that the company has not invested much in their search engine. As easy as the navigation may be, the user has to browse through the whole website to find what they are looking for. Of course, this is a problem for all of the companies. All of them have their own language which the user can only learn by browsing through the websites.

What is easily noticeable is that ABB have invested in their website a great deal of money. The website is very visual with a big header picture and link boxes that often come with a picture as well. However this makes the use of the website

slightly inconvenient for the users as they will have to scroll down the page to see all the content. Having links in big visual boxes makes them easy to see – but because all of the links have been made like this, it takes away the effect and makes them less valuable.

8.2 Website content

	Content	ABB	Siemens	WEG
	<i>Product information</i>	<i>Yes/No</i>	<i>Yes/No</i>	<i>Yes/No</i>
1	Do the motor types have detailed information?	No	Yes	Yes
2	Is there any argumentation for the motors?	Yes	Yes	No
	<i>Segments/Industries/Applications</i>	<i>Yes/No</i>	<i>Yes/No</i>	<i>Yes/No</i>
3	Is there any general segmentation?	Yes	Yes	Yes
4	Is there a marine segment?	Yes	Yes	Yes
5	Does the marine segment have any specific information about the motors?	No	No	Yes
6	Is there a mining segment?	Yes	Yes	Yes
7	Does the mining segment have any specific information about the motors?	No	No	Yes
8	Is there a food and beverage segment?	Yes	Yes	No
9	Does the food and beverage segment have any specific information about the motors?	No	No	N/A
	<i>Regions</i>	<i>Yes/No</i>	<i>Yes/No</i>	<i>Yes/No</i>
10	Does the motor information differ in Germany?	No	No	No
11	Does the motor information differ in China?	No	No	Yes
12	Does the motor information differ in Mexico?	Yes	No	Yes

Table 8-2 Website content results

Having a simple website enables WEG to have detailed information about their motors. However, there is no argumentation for the motors which would appeal for new customers. This is where Siemens stands out as they have information that is detailed enough and statements, such as the benefits for the prospective buyer, that make the customer want to buy their product. Also ABB does have arguments, but having technical information in big PDF files is somewhat inconvenient for the user.

Both Siemens and ABB have segmentation and all of the segments studied in this research were included. However the information about the motors provided for these industries is very scarce. Both of the companies state that there are motors available for these industries, but they lack any real information on what the products are and what they are like. Interestingly enough WEG, the company that does

not have any segmentation, offers more information about the products in its solutions than the other two.

When analyzing the way the contents are shown for different regions, it is clear that none of the companies have found one precise way to present the information. It can be seen that the website as such differs when using different regions, but the information on the motors is not organized according to these regions. This is the case especially with ABB and Siemens, as using the low voltage motors pages from a region perspective takes the user directly to the LV motor pages on the global website.

8.3 Sales tools

	Sales tools	ABB	Siemens	WEG
	<i>Using the sales tool</i>	<i>Yes/No</i>	<i>Yes/No</i>	<i>Yes/No</i>
1	Is the sales tool easy to find from the website?	Yes	Yes	No
2	Does the sales tool look attractive?	Yes	Yes	Yes
3	Does the use of the sales tool require downloading?	No	No	No
4	Does the use of the sales tool require registration?	No	No	No
5	Is there a manual for the sales tool?	Yes	No	No
6	Can the language be changed?	Yes	Yes	Yes
7	Is the sales tool easy to learn and to use?	Yes	Yes	Yes
	<i>Options</i>	<i>Yes/No</i>	<i>Yes/No</i>	<i>Yes/No</i>
8	Is there any segmentation?	No	No	No
9	Are there any region specific products?	No	Yes	Yes
10	Are there MEPS specific products?	Yes	No	No
11	Can the values be changed in the process?	Yes	Yes	Yes
12	Can other options or variants be added for the product?	No	Yes	No
	<i>Finishing configuration</i>	<i>Yes/No</i>	<i>Yes/No</i>	<i>Yes/No</i>
13	Does the sales tool provide a product code for a finished product?	No	Yes	No
14	Does the sales tool allow ordering?	No	Yes	No
15	<i>Are the following documents provided?</i>	<i>Yes/No</i>	<i>Yes/No</i>	<i>Yes/No</i>
	Datasheet	Yes	Yes	Yes
	Dimension drawing	Yes	Yes	Yes
	3D CAD	No	Yes	No
	Certificates	Yes	No	No
	Test reports	Yes	No	No
	Brochures	Yes	No	No
	Catalogues	Yes	No	No
	Connection diagrams	Yes	Yes	No
	Manuals	Yes	No	No

Table 8-3 Sales tools results

It is easy to see that the sales tools of ABB and WEG are aimed at the same markets. They look very similar, even the color scheme is the same. The only real difference is the distribution of documents. Optimizer, the ABB sales tool, takes the documents straight from the document library, while the Electric Motor Selection generates documents from the selected values.

The only thing that differs considerably between the three companies is the Siemens sales tool, which is much more advanced than the others. A sales tool that allows ordering attracts more customers as they need less face time with different sales units. If the user is less established he or she can still contact the company if further information is needed. All in all, this makes it easier for frequent users to order what they need without delays, much like in general online stores.

9. CONCLUSIONS

The purpose of this study was to analyze and compare websites and sales tools of ABB and its biggest competitors on the low voltage motor market, WEG and Siemens. This was done with benchmarking, which enabled comparing the company's own practices to those of their competitors and trying to find the best possible solution.

As was mentioned in the theoretical part of this thesis, websites have a significant role for a company. They should function as a channel for information and communication between organizations and their customers. Also sales tools have an important role in the buying process. As most of the buying process is performed online, sales teams have less time to interact directly with the customers. Therefore, to be able to perform well in today's economy, an effective set of sales tools is needed.

Moreover, benchmarking is the search for the best industry practices which will lead to exceptional performance through the implementation of these best practices. There are several methods of benchmarking, of which only one was used in this research.

There were four objectives to this study, including finding out what kind of information can be found from the websites and how easy is it to navigate and use the websites. In addition, it was to be found out how easy the sales tools are to use and what kind of content they offer to the customer.

The low voltage motors pages and the related sales tools of the organizations were evaluated with a series of research questions. These research questions were presented to an interviewee who gave their views and opinions on the subject. These results were then compared and analyzed as well as used as a basis for suggestions on how ABB could improve such tools.

What stood out in this research the most, was the Siemens sales tool. It allowed a user to create an orderable end product which was also customizable with a set of different options.

It was noted in this research that none of the companies stand out with a perfect solution for a website. WEG had a simpler and more attractive website than the other two companies due to having a smaller product portfolio. The company, as all the others as well, had their own technical language which makes the use more difficult for a user.

ABB as the case company stood out only with its search engine that provided very accurate results. If it had failed to find results with attempted keywords, the search engine would have suggested something else.

9.1 Recommendations

First of all, to be able to improve, it is vital to admit that others might do things better and that some previous solutions have not been the best. What makes ABB lose to its competitors is its attempt to be visual. The saying less is more applies well in this situation.

ABB clearly has a better search engine, very much due to it being powered by Google. Still, this is currently the only area that makes either of the company's tools stand out.

The most important thing that ABB could learn from WEG is simplicity. ABB should make the website simpler and reduce the excess of detail. This could be done by adding more technical data on the product pages so that the user does not have to open heavy PDF files to get enough information. It is a good idea to include the catalogues but they should not be forced on the user.

Even though the Siemens website navigation is somewhat complex, it is still simpler for a typical user as a whole. What could be learned here is that pictures should be added where they are actually needed. A well distinguishable feature on the Siemens product pages is also the list of possible benefits for the user, meaning that the pages should include more facts and less trivial arguments.

As was mentioned before, the Siemens configurator stands out massively. To become even comparable to Siemens, ABB should develop a sales tool that allows the user to add more variation to the product. Furthermore, the sales tool should enable

the user to create an actual end product for their needs which is also orderable. It could be the ABB policy to not allow this, but it should be reconsidered, even if this feature is only for selected customer groups. Having orderable products would require less face time and give the user more information on offerings. It is likely that the user will contact the ones that give most useful data because this way they will have more information on what they want.

ABB should also learn from its and the competitors' mistakes. Firstly, ABB could clean up their websites, starting from the broken links and the plethora of outdated documents. Moreover, the language should be developed to be "less ABB", meaning that the language on the websites and the sales tools should be simplified so that a user that is not too familiar with the industry can read or learn to read it.

9.2 Suggestions for future research

Future research on websites should include the aspect on how to build a website that includes relevant information on all aspects without taking the user to general pages, as this was what happened in this research with the segments and segment specific products. Another similar issue that could be researched is how to build a website that is integrated throughout the organization, meaning that the information and the contents are laid out similarly for every user in every industry and in every country.

After doing research on the matter it was seen that there is no way to evaluate a specific sales tool or a configurator, only a way to analyze types of configurators. Developing a template for such evaluation would have significance as these tools are becoming more common due to customers wanting customer specific products instead of mass customized ones.

As was also proven, none of these companies have a real "best practice" of presenting their websites or sales tools. This is why different methods could be used to research the matter. Instead of benchmarking it could be wise to survey existing customers or potential customers on what they want instead of trying to find out what the others are doing.

With the use of mobile phones and tablets becoming more common it would be useful to study how the websites and/or sales tools work on such devices. As it is likely that sales tools will be made into applications, like ABB already has done with Optimizer, studying them would be useful as well.

Any future research on this subject could include more focus on technical data and language. As this study focused more on the outlook and the usability, little attention was left to the technical information. This could broaden the views on the differences.

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SEARCH RESULTS USING THE SEARCH ENGINES ON COMPANY WEBSITES

Key word	ABB		Siemens		WEG	
	Yes/No	Comments	Yes/No	Comments	Yes/No	Comments
motor selection tool	Yes	Optimizer first in search results	Yes/No	different tools, no tools for motor selection	No	no results were found
dimensioning tool	Yes	DriveSize/MotSize	Yes/No	different tools for different industries	No	no results were found
configurator	Yes/No	Results are for different industries	Yes/No	different tools for different industries	No	no results were found
ac induction motor	Yes	product page	Yes/No	gave results but nothing useful	Yes	takes to another company site
ac induction motors	Yes	same results as previous	Yes/No	same results as previous	Yes	same results as previous
low voltage motor	Yes	product page	Yes	complete range of low voltage motors	No	inaccurate results
low voltage motors	Yes	same results as previous	Yes	same results as previous	No	inaccurate results /different results than in previous
marine	Yes	marine web page	Yes/No	news article comes up first - no industry page within 10 first results	No	inaccurate results
mining	Yes	mining web page	Yes	mining related pages, no industry page	No	no products, a couple brochures
food and beverage	Yes	food and beverage page	Yes	food and beverage related pages	No	inaccurate results