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NOVIA

Creation of Design Instructions Based on Tacit Knowledge

Sebastian Lågas

Degree Thesis for Bachelor of Engineering

Degree Programme in Mechanical and Production Engineering

Vaasa 2023

BACHELOR'S THESIS

Author:	Sebastian Lågas
Degree Programme:	Mechanical- and Production Engineering
Specialization:	Operational and Maintenance technology
Supervisors:	Eero Tuppi (ABB), Leif Backlund (Novia)

Title: Creation of Design Instructions Based on Tacit Knowledge

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Date: 11.05.2023 Number of pages: 26 Appendices: 1

Abstract

This thesis was made for the research and development department at ABB in Vaasa. The purpose of this thesis was to create a document containing instructions about the design process of components used in electric motors.

The purpose of the document was to have a collection of information based on tacit knowledge, that should help the designer avoid basic errors and describe the functions of various details, by being clarifying and detail-oriented with added illustrations in the form of demonstrative images when applicable. The instructions were limited to be about things that regard the electric motor and its components. There were proposals that employees had made on which the instructions would be based. The proposals could be for example about things that should be considered during the design process and important things to know about certain components.

The theoretical part explains what the technical informant's task is and how to proceed when creating technical documents. Knowledge management is also addressed in the theory and describes what types of knowledge exist within companies and how to use this knowledge.

In the method chapter, the methods that were used for this thesis are described, which were mostly qualitative research in the form of interviews. Each person who had made proposals for instructions was interviewed. During the interviews, we went through relevant information and images that could be used to make the instructions.

The result is a Word document with instructions that are divided into different categories according to the components of the electric motor. In the future, the document can be updated continuously with more information.

Language: English
Key Words: instruction, design, tacit knowledge

EXAMENSARBETE

Författare:	Sebastian Lågas
Utbildning och ort:	Maskin- och produktionsteknik, Vasa
Inriktning:	Drifts- och underhållsteknik
Handledare:	Eero Tuppi (ABB), Leif Backlund (Novia)

Titel: Skapande av designinstruktioner baserade på tyst kunskap

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Datum: 11.05.2023 Sidantal: 26 Bilagor: 1

Abstrakt

Detta examensarbete gjordes för forsknings- och utvecklingsavdelningen vid ABB i Vasa. Syftet med detta examensarbete var att skapa ett dokument som innehåller instruktioner om designprocessen för komponenter som används i elmotorer.

Syftet med dokumentet var att ha en samling med information baserad på tyst kunskap, som skall hjälpa designern undvika grundläggande fel och beskriva detaljers olika funktioner, genom att vara förtydligande och detaljorienterade samt innehålla illustrationer i form av demonstrativa bilder när det är tillämpbart. Instruktionerna begränsades till att handla om saker som rör elmotorn och dess komponenter. Det fanns förslag som anställda hade gjort och instruktionerna skulle vara baserade på dessa. Förslagen handlade till exempel om saker som bör beaktas under designprocessen och viktiga saker att veta om vissa komponenter.

Den teoretiska delen förklarar vad teknikinformatörens uppgift är och hur man går till väga vid skapande av tekniska dokument. Knowledge management tas också upp i teorin och beskriver vilka typer av kunskaper som finns inom företag och hur man utnyttjar dessa kunskaper.

I metodkapitlet beskrivs de metoder som använts för detta examensarbete, vilket mestadels var kvalitativ forskning i form av intervjuer. Varje person som hade gjort förslag till instruktioner intervjuades. Under intervjuerna gick vi igenom relevant information och bilder som kunde används för att skapa instruktionerna.

Resultatet är ett Word-dokument med instruktioner som är indelade i olika kategorier efter elmotorns komponenter. I framtiden kan dokumentet uppdateras kontinuerligt med mer information.

Språk: engelska
Nyckelord: instruktion, design, tyst kunskap

Table of Contents

Abbreviations

IEC	-	International Electrotechnical Commission
LV	-	Low voltage
R&D	-	Research and development
OEM	-	Original equipment manufacturer

1 Introduction

This thesis was made for the R&D department at ABB in Vaasa. The goal was to create instructions related to the design process of components used in electric motors, by using tacit knowledge coming from the employees at the R&D department. A document with proposed instructions had been made by the employees and interviews were held with the proposers to collect more information to be able to create the instructions. When the instructions were done, they were compiled into a document.

1.1 ABB

ABB is a technology leader in electrification and automation with 105 000 employees worldwide and over 130 years of operation, with the main purpose to enable a more resource-efficient and sustainable future. ABB focuses on four business areas, electrification, motion, process automation and robotics. The motion business is globally the largest provider of drives and motors. Providing customers with a complete range of electrical motors, generators, drives and services. ABB general performance induction motors can be used in a wide range of industrial applications and OEM's use them to build pumps and fans and is also used for conveyors, gearboxes, and general machinery. (About ABB, 2023)

1.2 IEC LV Motors Vaasa

ABB's IEC LV Motors division located in Vaasa have around 600 employees and do among other things research and product development of high efficiency motors and manufactures customized IEC low voltage motors for different applications worldwide. The unit at Vaasa is also responsible for the manufacturing and product development of low-voltage motors for demanding applications. (ABB Oy, IEC LV Motors, 2023)

1.3 Project background

The idea for this thesis originated from ABB's Continuous Improvement process where the R&D department wanted to collect tacit knowledge from employees. Tacit knowledge is a personal knowledge that the employees get from the experience, and it is valuable to be

able to share this knowledge and know-how within the company. Employees at the R&D department had made a list containing over 40 proposed ideas for instructions that could be made. They now wanted the proposed ideas to be made into instructions and compiled into a document.

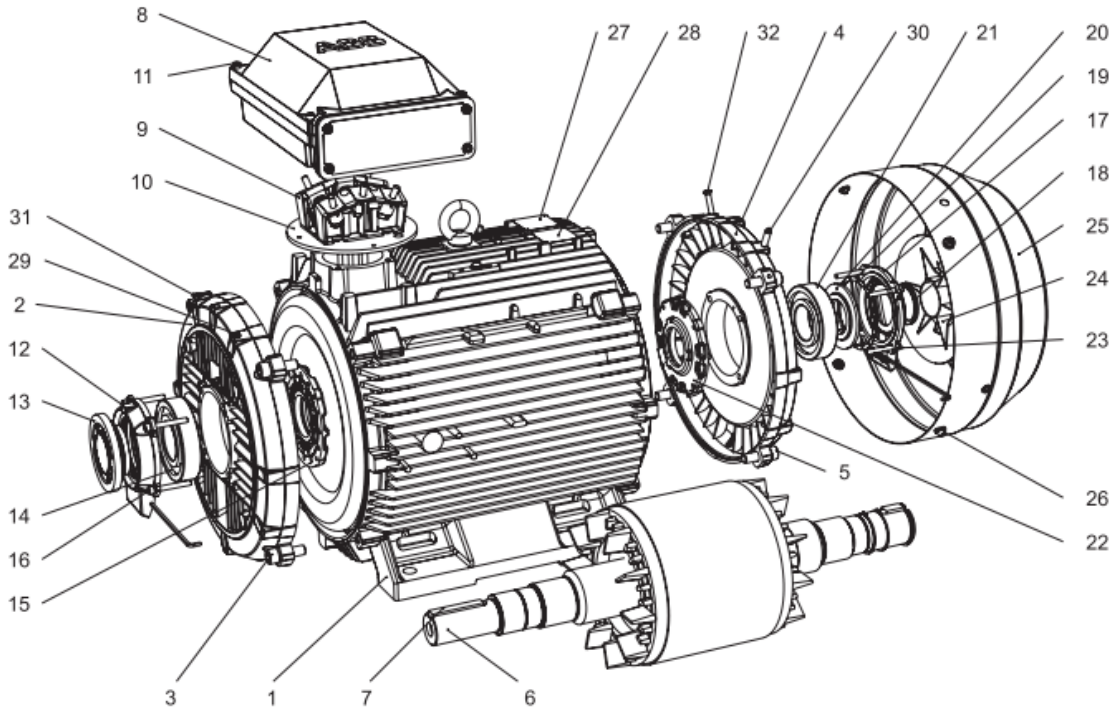
1.4 Purpose

The purpose of this thesis was to create a document containing instructions based on tacit knowledge. The instruction should be related to the design process for components used in electric motors and should contain both text and illustrations. The instructions should also extend the designers knowledge about different features used in the components which purpose they may not have known about. To make the instructions the proposed ideas must be analyzed together with the proposer, which should mainly be done by conducting interviews. When done with the instruction they should be organized into categories within a document.

1.5 Delimitation

The instructions created for this thesis were limited to be about the IEC LV motor and its components but does not contain all of them. The instructions also contain some general information that are related to the overall design process.

Figure 1 shows an exploded view of an ABB IEC LV motor with frame size 315 and includes the names of the different components.



1 Stator frame
2 End shield, D-end
3 Screws for end shield, D-end
4 End shield, N-end
5 Screws for end shield, N-end
6 Rotor with shaft
7 Key, D-end
8 Terminal box
9 Terminal board
10 Intermediate flange
11 Screws for terminal box cover
12 Outer bearing cover, D-end
13 Valve disc with labyrinth seal, D-end; standard in 2-pole motors, V-ring in 4-8 pole motors
14 Bearing, D-end
15 Inner bearing cover, D-end
16 Screws for bearing cover
17 Outer bearing cover, N-end
18 Seal, N-end
19 Wave spring
20 Valve disc, N-end
21 Bearing, N-end
22 Inner bearing cover, N-end
23 Screws for bearing cover
24 Fan
25 Fan cover
26 Screws for fan cover
27 Rating plate
28 Lubrication plate
29 Grease nipple, D-end
30 Grease nipple, N-end
31 SPM nipple, D-end
32 SPM nipple, N-end

Figure 1. ABB IEC LV motor frame size 315. **(ABB library, 2016)**

2 Theory

In this chapter relevant theory for my thesis will be presented, starting with technical communication and technical writing which deals with the process of creating technical documents. Knowledge management is also presented and is about identifying, organizing, and sharing information within an organization.

2.1 Technical communication

Technical communication is a broad field that includes any types of communication that exhibits some of the following characteristics, communication about technical or specialized topics, providing instructions how to do something, or communicating by using technology such as web pages. The purpose of technical communication is to create information that is concise and understandable to aid the user achieve a defined goal. (STC, 2023)

Technical writing is a subcategory of technical communication, and they are in practical terms the same, but with subtle distinctions. Technical communication can be labelled as communication done in the workplace which includes talking to colleagues and creating documents. Technical writing can be labelled as writing done in the workplace, where manuals or other more traditional technical documents are created. (Techwriters, 2023)

2.2 Technical writing

Technical writers are often used in companies because they are the best at creating technical documents, some of the reasons why they are so good at creating technical documents are because they analyze their target audience which allows them to produce the documents according to the audience's needs. They also write user-friendly content with good illustrations and organize the technical document in the best way possible. (Jamal, 2021)

Technical writing is utilized in many different professions for example in, engineering, finance, and computer software creation. While the most common usage for technical writing is for user guides or manuals it can be used for much more, for example:

- Technical reports
- Website content
- Products manuals and specifications
- User guides
- Technical support
- Research reports
- Marketing content

  (Jamal, 2021)

2.2.1 Creating technical instructions

When doing technical writing there are some key elements you should strive for, these are to make them:

- Easy to understand
- Easy to find
- Easy to use

  (Ask, 2012)

To make information that is easy to understand it should be concrete and presented so that the user will understand it immediately. Also utilize writing rules and templates to keep everything looking the same way and make sure to use words and phrases correctly. To make the information easier to find and use, organize the information in a logical way and use visually effective information. For example, headings should be made so the user is able to find what they are looking for just by reading them and the document should have the most important information first to make them more effective. (Ask, 2012)

2.2.2 Plan and prepare

During the creation process for technical writing there are a couple of phases you go through, and these are to, plan, create, test and review. During the planning phase you plan what should be created, illustrated, written, or edited. When preparing for a new project these are the things you should find out:

- The purpose of the information

- Who to cooperate with, who are experts on the subject or process
- Is there existing information that you can use
- Who will examine the information
- What standards and templates to use

  (Ask, 2012)

2.2.3 Templates and design

Usually templates, style guides and standards are followed when doing technical writing. Some industries can use international standards and many companies have made their own templates and style guides which also can include more specific rules that apply only to that company. Style guides will guide the writer and can include for example, general grammar rules, instructions how to name things and guidelines for table of contents. It is common for companies to have style guides that every document must follow, to keep the documents consistent. Templates can be used to format documents so that everything looks and have the same placement. Templates can include headings, headers, warnings, tables, titlepage, and table of contents. The use of templates helps keeping consistency in the structure and appearance of the documents. They also reduce worktime and risks of error. (Ask, 2012)

2.2.4 Analysis of target audience

To be able to produce good technical writing the writer must understand the target audience. The target audience varies depending on the business and client and the writer must know what knowledge the user has from before and what responsibilities they have. (Fiverr, 2022)

To analyze the target audience, it is common to conduct interviews or surveys, or by observing them use the product. Before beginning with the analysis, you should also think about what you need to know, this can be done by asking yourself the following questions:

- Who is going to use the instruction?
- What knowledge do they have about the product?
- What task does the user want to solve?

  (Ask, 2012)

2.2.5 Fact gathering

By having prepared and knowing what you will need and having a solid structure in place makes gathering facts easier and faster. Facts can be obtained from example, surveys, interviews, drawings, pictures, and already existing information. After collecting facts, a common mistake is to include all the information you have found, but you should not be afraid to remove irrelevant information that the user will not need solve the task. (Ask, 2012)

2.2.6 Interviews

Becoming skilled at interviewing experts is crucial for technical writers and there are certain things that one can do to get the most out of the interviews. For instance, preparing beforehand by studying existing documentation and if feasible, testing the product. During the interview don't be afraid to ask questions that may be considered simple and obvious to allow you to gather more information. When you have gathered the information you have to make sure it is correct and this can be done by testing the information directly on the product or let a colleague test it, also let the experts validate the information after you have finished the writing. (Ask, 2012)

2.2.7 Examples and illustrations

Usually, it is easier for users to understand something that is concrete rather than just being abstract, that is why you should try to include concrete examples and scenarios when doing technical writing. The most useful and common way to be concrete is to have examples, but make sure the user will be able to understand them. Often the users that have little experience will find the examples most useful. (Ask, 2012)

Illustrations such as images, graphic elements and drawings are used to facilitate the understanding of complicated information. These often draws the attention of the user, the text will serve as support, therefore you should try to determine from the start what illustrations are needed. Illustrations should also be able to stand on their own and include items like arrows and measurements to improve their clarity. A caption that explains what is shown in the illustration should also be included for each illustration. (Ask, 2012)

2.2.8 Technical examination

When the technical writing is done it must be examined by a person often determined by the company, this could be, the project manager, technician, engineers, or other personnel that have been involved in the project. (Ask, 2012)

2.3 Knowledge management

Knowledge management is the process of identifying, organizing, storing, and sharing information within an organization. The purpose is to make knowledge easily accessible withing the organization and reduce valuable time wasted searching for information. It is also used to help employee onboarding where a lot of information is required very quickly. (IBM, 2023)

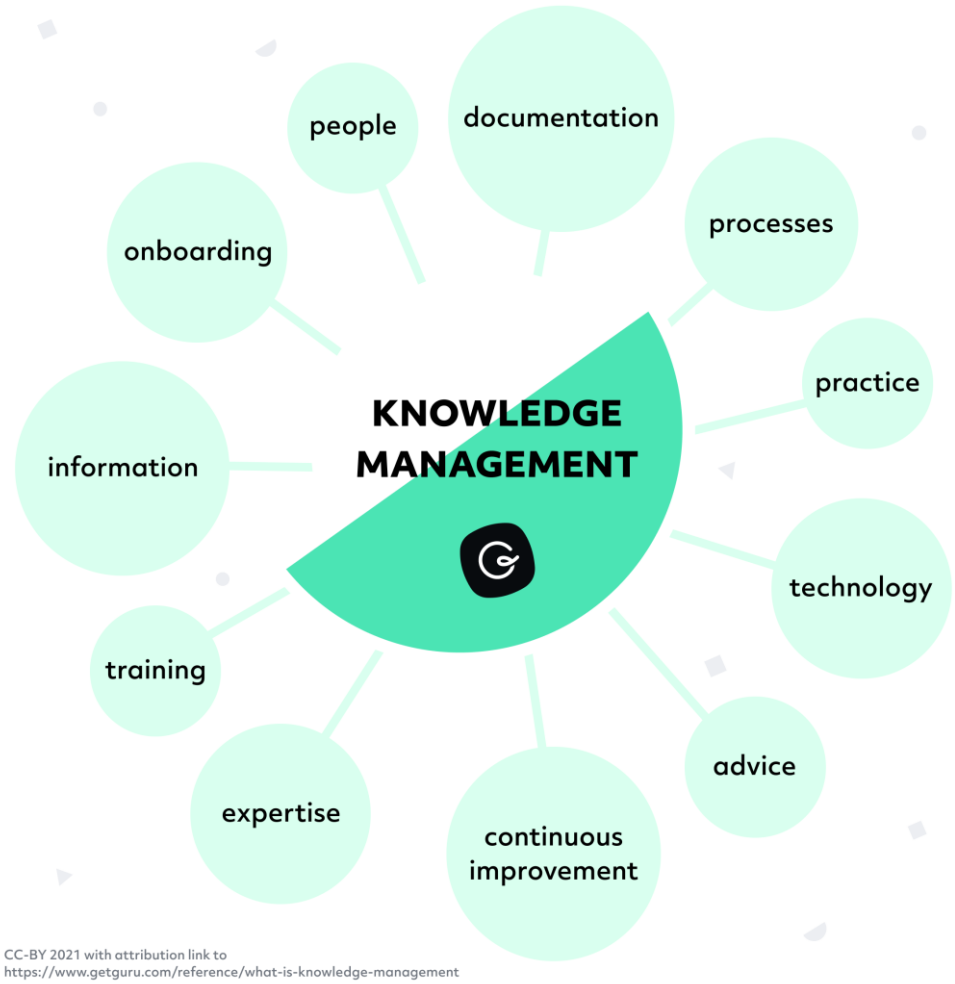


Figure 2. Knowledge management use cases. **(Guru, 2023)**

The use of knowledge management within and organization can have many benefits, with some examples being:

- Increases efficiency and productivity, by using a knowledge management system you create a single reliable source where everybody can look for information
- Enables informed decision-taking, when knowledge is transparent across the entire organization it ensures that everybody is working towards the same goal with the same information.
- Reduces duplicate or outdated information, if company information is shared across multiple systems, it can be hard to tell if it is the most recent information and you run the risk of referencing information that isn't accurate.
- Prevent company silos, information silos are when only one person or a team knows specific information that could lead to another department not being able to effectively collaborate.

  (Guru, 2023)

2.3.1 Types of knowledge

Knowledge can be divided into different categories with the most common ones being, explicit, implicit, and tacit knowledge.

Explicit knowledge is information that is easy to document and share with others and is mostly related to processes, techniques, and facts etc. This makes it easy to write, store and share and this is done in for example manuals, research reports and data sheets, which are all examples of explicit company knowledge.

Explicit knowledge has the following attributes:

- Easy to document and share
- Logical, objective, and structured
- Accessed and stored through manuals, reports, and handbooks

  (Wills, 2022)

Tacit knowledge is information that a person gains over time through personal experiences and is difficult to express and communicate. The biggest difference between tacit and explicit knowledge is accessibility, as tacit knowledge requires in-depth explanation, time, and first-hand experience to grasp.

Tacit knowledge has the following attributes:

- Gained from personal experience
- Is subjective and difficult to document
- Challenging to capture and comprehend
- Can be gained through in-person interactions or research

(Wills, 2022)

Implicit knowledge is easily transferred through conversations and does therefore not need to be documented, for example it can be referred to information about business processes and tasks that can easily be explained verbally.

Implicit knowledge has the following attributes:

- Not documented
- Easily explained verbally

(Wills, 2022)

2.3.2 Capturing knowledge

Capturing explicit knowledge can be done by first analyzing existing documents and discuss with employees about areas where knowledge gaps might exist, to figure out what content could benefit the workforce. To get unique knowledge from the employees they should be motivated to collaborate, this will get you the most relevant and updated explicit knowledge across the different teams. To help the employees keep consistency and avoid having varying styles and formats there are content creation framework templates that can be used. (Wills, 2022)

Capturing tacit knowledge can be done by using an internal knowledge base where employees can continuously share and access knowledge. A knowledge base that can be accessed across devices is convenient and allows the employees to share their insights, experiences, and observations, it also allows them to regularly update it to keep it relevant and up to date. Teams across departments can give feedback and suggestions which creates a workplace culture centered across continuous learning. Another way to improve

tacit knowledge transfer in the workplace is to encourage collaborations and socializations between employees and departments, this will create an environment where employees can communicate insights and share experiences which also helps avoid workplace silos. (Wills, 2022)

Implicit knowledge comes from personal experience and companies often have subject matter experts who have a lot of implicit knowledge about a particular subject, this makes them a go-to person when information is needed about a specific subject. Situations where it is easiest to talk to the subject matter expert will always be there but there are situations where the information can be preserved and shared. To help document implicit knowledge a Q&A platform can be used, where employees can ask question and get answers from experts across the company. When a complex knowledge needs to be communicated videos can be used and they can also be incorporated into training materials. Another way to share implicit knowledge is to have a mentorship program for newer employees where they learn by observing the expert. (Jacobson, 2021)

3 Method

In this chapter I will go through the process of creating the instructions. Qualitative research was mostly used to gather in-depth information and insights into a problem or to generate new ideas. This involved collecting and analyzing, opinions, experiences, or concepts. The main method of collecting information was done by conducting interviews and communicating by e-mail.

3.1 Preparation

I started by reading through and translating the document with the proposed points from Finnish to English. Then I prepared for the interviews by analyzing the proposals and familiarizing myself more with the subject. I also made some notes ahead of the meeting about questions I could ask. When I had prepared for the interviews, I arranged Teams meetings with every proposer by sending out emails.

3.2 Interviews

During the interviews I tried to get a clear picture about what exactly the instruction should be about and what should be included. First, I let the proposers explain in more detail about proposed idea. Afterwards I would ask for more information if there was something I did not fully understand or if I thought the instruction needed more. I also asked for illustrations that could be used to supplement the text. When asking questions, I tried to think as someone that has no prior or very little experience about the subject, and by doing so I would be able to get more details which an expert may not have thought about telling otherwise. During the interviews I wrote down as much information as possible to have enough material when compiling it into instructions and to not forget any details.

3.3 Creating instructions

The goal for the instructions was to make them simple and easy to understand. I compiled the information I had gathered during the interviews. When creating the instructions, I left out unnecessary details that did not add any valuable information and formulated the text so that it would be easy to read. When deciding what information to include in the instruction I assumed that the users have a fair amount of experience of the design process

and about electrical motors, by doing so it was possible to leave out some basic information.

The illustration I created consisted mostly of snapshots taken from drawings and 3D-models in Siemens NX. When I wanted to highlight a specific detail, I added arrows or circles with bright colors to make them easy to spot.

To keep organization of the instructions I made separate documents for each proposer. Once the instructions were complete, they were transferred to the main document. To keep track of the instruction, I added the proposers' initials and a number after each one of them. This was useful when I had to go back and get more information as I could quickly identify the proposer.

3.4 Main document

The main document was created with ABB's own template named ABB technical standard document, found in the Templafy app. Initially, I created main headings and subheadings based on the components found in the IEC LV motor. Then, I started to move the instructions to an appropriate heading. As I moved the instructions to the main document, I added or removed headings until each instruction had a suitable one. After having moved all the instructions to the main document, I asked my supervisor at ABB to examine it and provide suggestions for improvement. He suggested adding illustrations, providing more detailed information, and modifying headings to make the document easier to navigate. After making the suggested changes the document was examined again and got approved.

4 Results

In this chapter, the result of this thesis will be presented which is a document containing instructions based on tacit knowledge. The document is divided into categories for different components of the electric motor and other subjects like machining and casting. The complete document can be viewed in the non-confidential version of this thesis, in Appendix 1. The table of contents from the finished document is shown in Figure 3.

Contents

Figure 3. Table of contents of the main document.

4.1 Purpose and basic description

The document begins with explaining its purpose and how the instructions can assist designer in making informed decision to create effective and efficient designs.

4.2 General

The general chapter contains instructions that refers to a collection of broad on non-specific details and insight of the design process of components used in electrical motors without focusing on any individual component.

4.2.1 Design

The design section includes instructions about the overall appearance of ABB's electric motors, as shown in Figure 4, as well as instructions about painting accessibility on component. For example, the component must be designed in a way that allows the painter to easily achieve good paint coverage on all surfaces.

Figure 4. ABB IEC LV motors.

4.2.2 Machining

The machining section provides instructions about machined surfaces. For example, as shown in Figure 5 the machined area should not be visible after assembly to avoid rust and improve appearance.

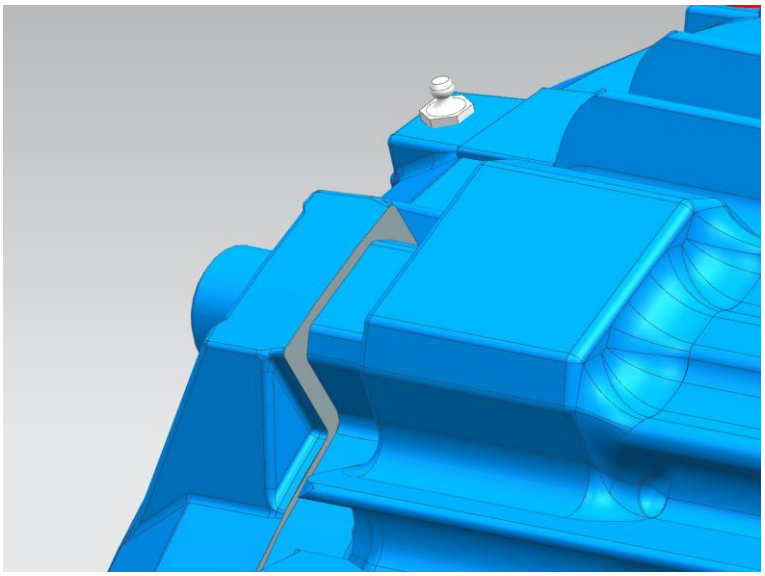


Figure 5. Machined surface that is visible after assembly.

Other instruction included are about surface roughness, such as what to consider when selection the appropriate surface finish for different components. This involves choosing between surface roughness values such as Ra 1,6 and Ra 3,2.

4.2.3 Casting

The casting section includes instructions on drafting angles that are used when designing cast parts, which may vary depending on the foundry used. It also covers weight fluctuations and casting tolerances which follow ISO 8062 standards. Additionally, there are instructions on designing cast components to prevent water from collecting in certain areas as shown in Figure 6 and allowing for drainage with gravity only.

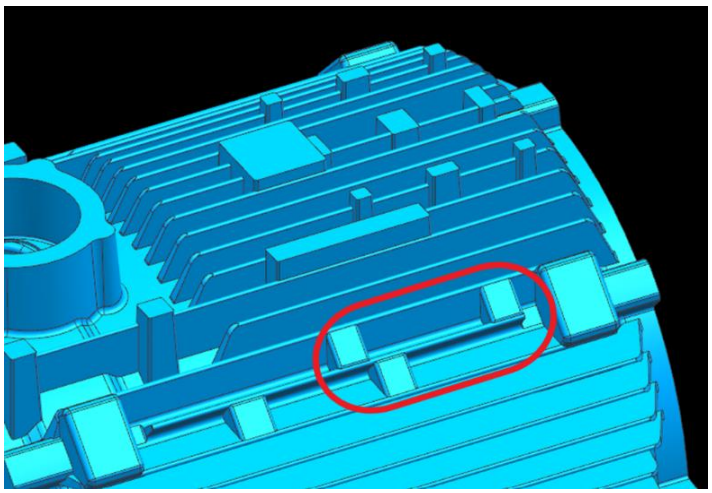


Figure 6. Location where water cannot drain.

4.2.4 Materials

The materials section provides information on various materials, including the different types of materials that can be used for bolts and nuts. Additionally, it explains the distinctions between different grades of materials, such as GJL 150 or GJL 250, which are used in cast parts. It also highlights the cost differences between them, as sometimes a high-grade material may be cheaper if it is produced in larger quantities, offsetting the cost savings that would have been achieved by using a lower grade material.

4.3 Motor components

The motor components chapter contains more specific instructions related to individual components found in electric motors, such as the stator frame, end shield and fan cover.

4.3.1 Stator frame

The stator frame section contains specific information regarding the stator frame, such as general things to consider, low frame motors, and fixing points.

During the design stage, it is important to consider high stress areas which can be seen in Figure 7 for stator frames**.** These often occur at sharp edges and around holes.

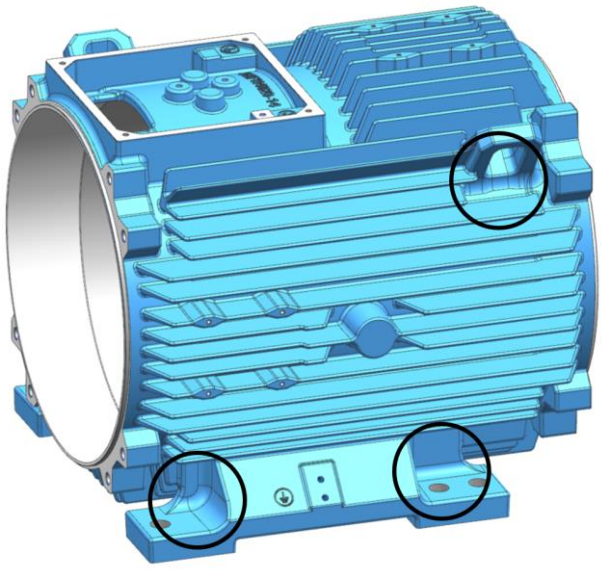


Figure 7. High stress areas on stator frame.

Another thing to consider is the design of the stator frame legs, as there are different designs that can be used, which can be seen in Figure 8. For low frame motors that sit close to the ground, the cooling ribs, fan cover, and end shield must have a special design.

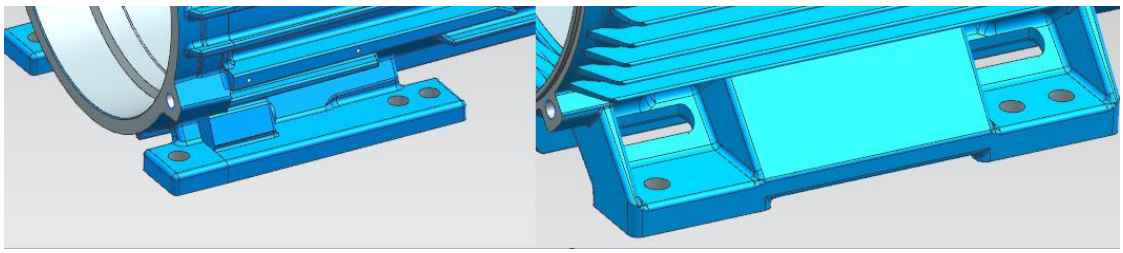


Figure 8. Different design for frame legs.

Illustrations were created to show where various fixing points and features are located on components, an example of this can be seen in Figure 9, which shows a stator frame. The image includes circles surrounding the different features, along with short descriptions of their purposes. Theses illustrations were created to help the designer understand the placement of specific features and their uses. One example when the placement for fixing points is crucial is during machining, as by having the correct placement the machining process will be faster and easier.

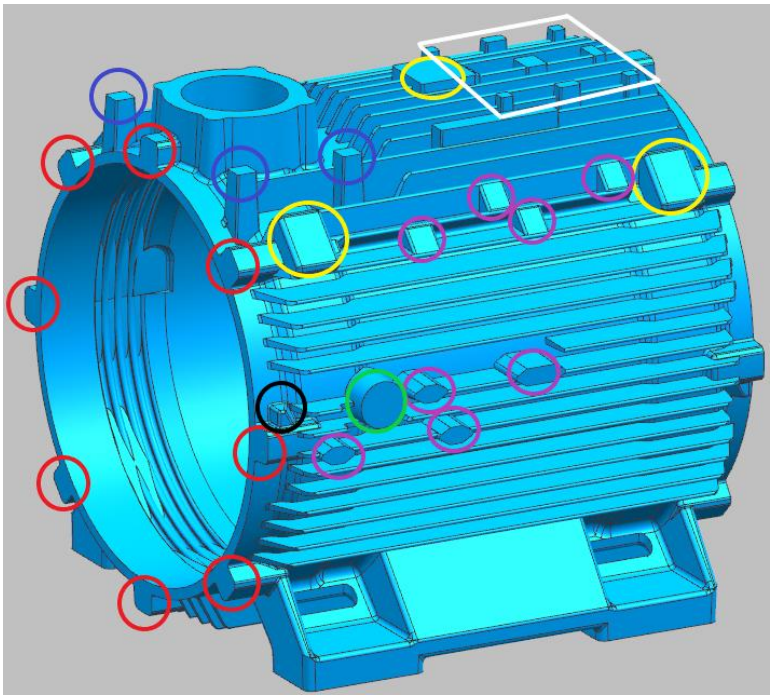


Figure 9. Features on a stator frame.

4.3.2 End shield

The end shield sections start by showing the high stress areas, as seen Figure 10.

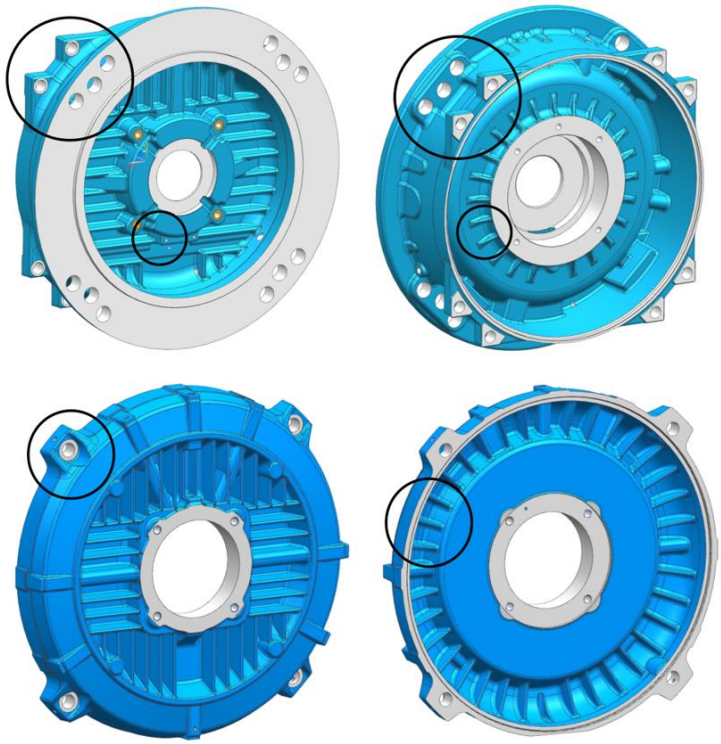


Figure 10. End shield high stress areas.

Another example is the instruction about the clearance between end shield and stator winding. This must be considered during the design stage as there is a specified minimum gap that is allowed. To achieve this there must be a compromise between the design of both the components.

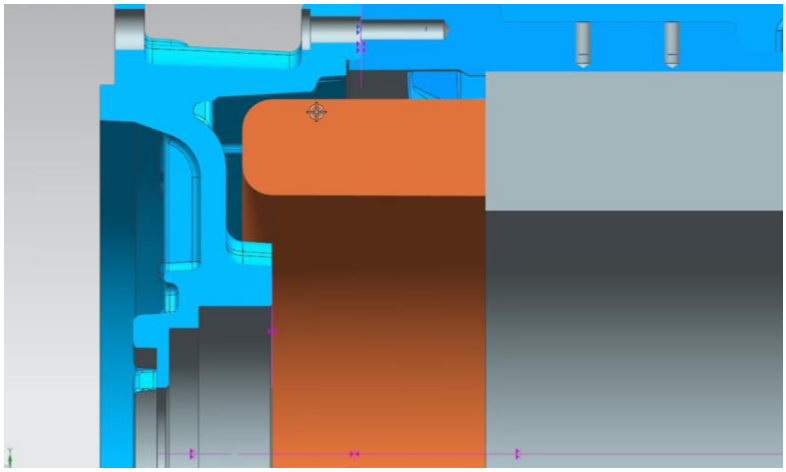


Figure 11. Gap between stator winding (brown) and end shield.

Another example is the illustration Figure 12, which shows the fixing points and other features on the end shields. The red circles show the fixing points used during machining and the yellow circles show the features used for the vibration sensor and grease inlets.

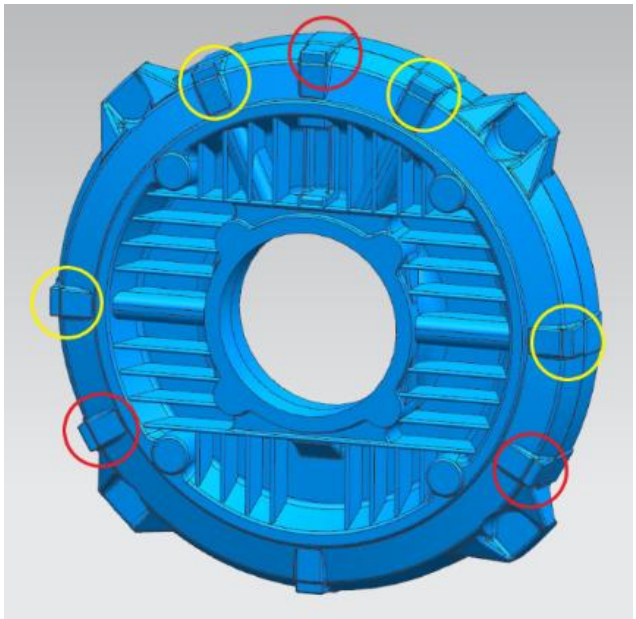


Figure 12. End shield fixing points.

4.3.3 Terminal box

The terminal box section contains information about the placement of the terminal box. Depending on the application, the placement can change and might interfere with other things if not considered. To avoid interference the terminal box can be rotated in different directions to change the cable entry side. Alternatively, a collar can be used to lift the terminal box up, or an adapter can move the terminal box to the side of the motor, as seen in Figure 13.

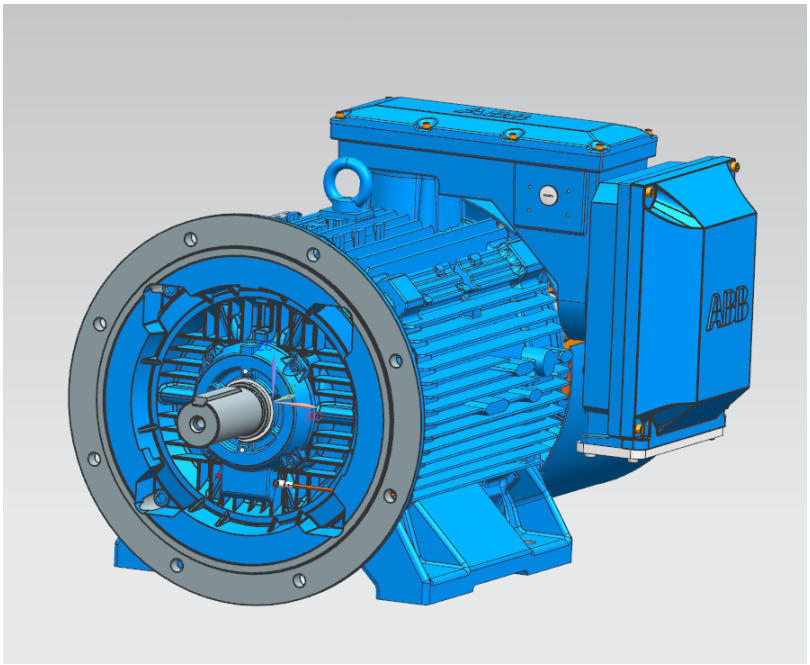


Figure 13 Terminal box with adapter

4.3.4 Brake

The brake section contains information about how to install a brake to a motor. For example, to install a brake the end shield must be machined, and extra holes added, as seen in Figure 14.

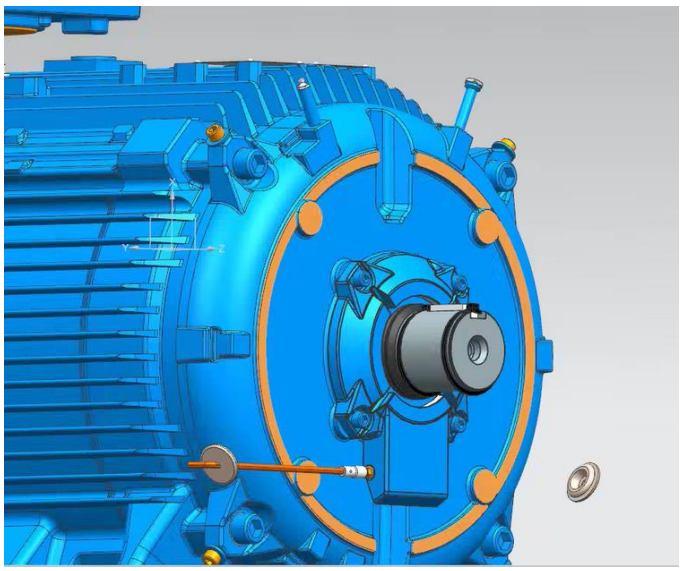


Figure 14. Surface in orange must be machined when a brake is used.

4.3.5 Shaft

The shaft section contains instructions on how to design a pressing relief which purpose is to make it easier to press the shaft on to the rotor during assembly. The shaft core pressing relief is a tapered section on the shaft that should have a length same as the red arrow shown in Figure 15. To be able to determine the length of the pressing relief, several other dimensions must also be considered.

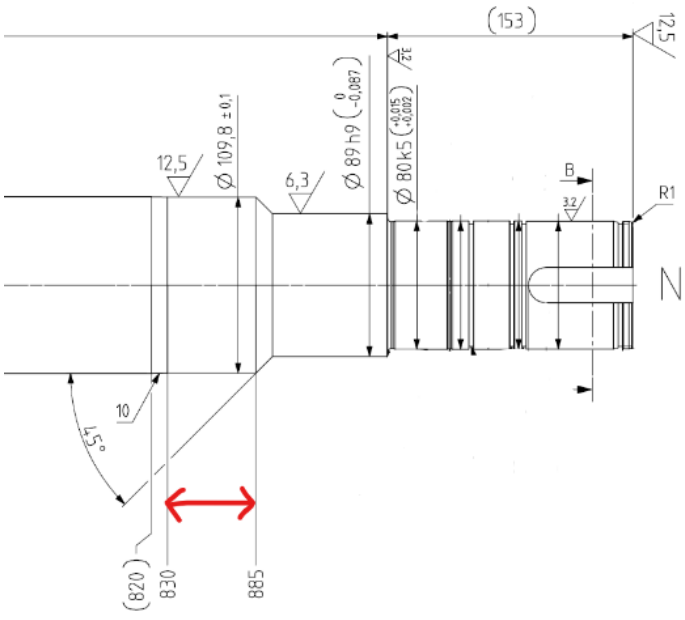


Figure 15. Rotor shaft.

4.3.6 Fan cover

The fan cover section contains information about the safety test used to check the size of gaps in the fan covers. This test is called the IEC finger test and is part of the IEC 60034-5 standard. The purpose of this test is to ensure that the gaps in covers that are used for rotating parts are not too big, for example you should not be able to put your finger through a gap. The IEC test finger and its dimensions can be seen in Figure 16.

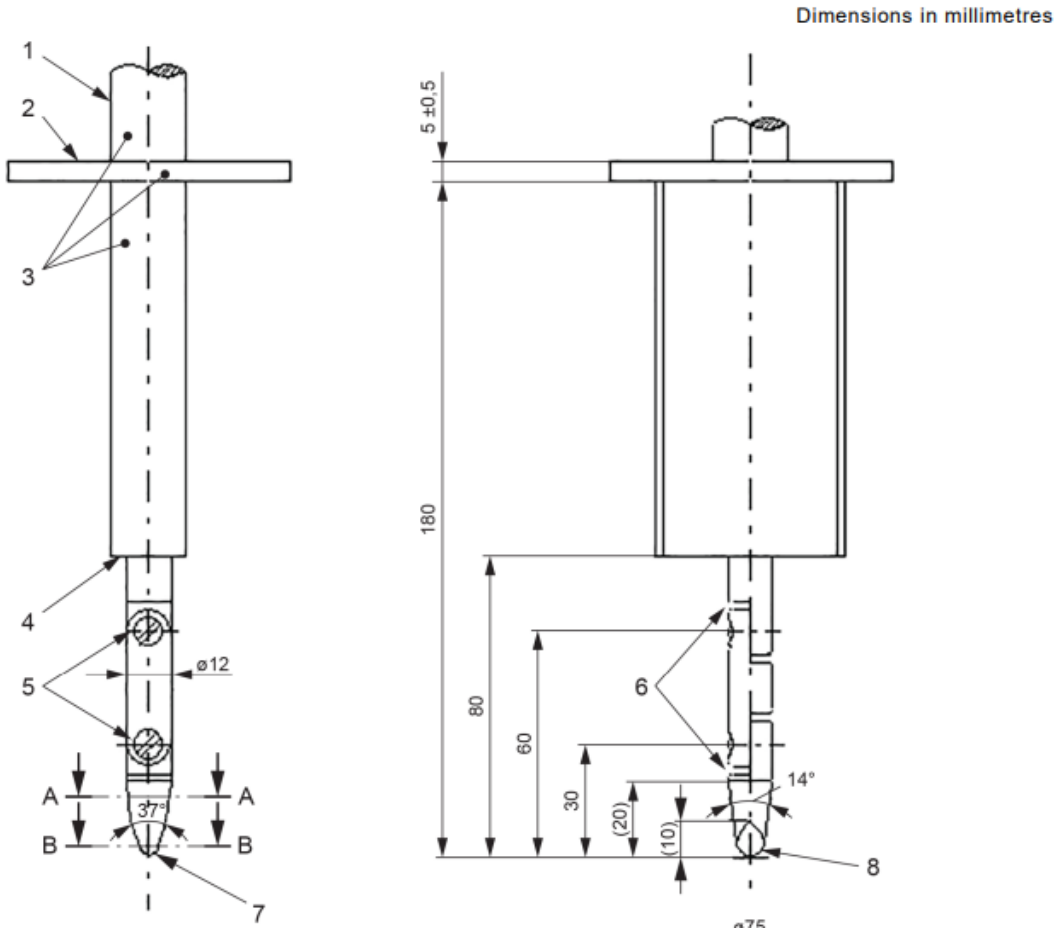


Figure 16. IEC test finger.

4.3.7 Fan

The fan section contains information about the different ways a fan can be mounted to the rotor shaft. The different ways of mounting a fan be, by using a slot and a key or a press fit can be used for small motors. The instructions include illustrations of the various mounting styles.

4.4 Other instructions

The remainder of the document contains information about various things such as grease and sensor fittings and high-speed motors. In the grease and sensors fitting section there are information about where and how the sensors are mounted, as shown in Figure 17. The sensors include a vibration sensor that monitors the condition of the bearing and Pt100 sensor that measures temperatures.

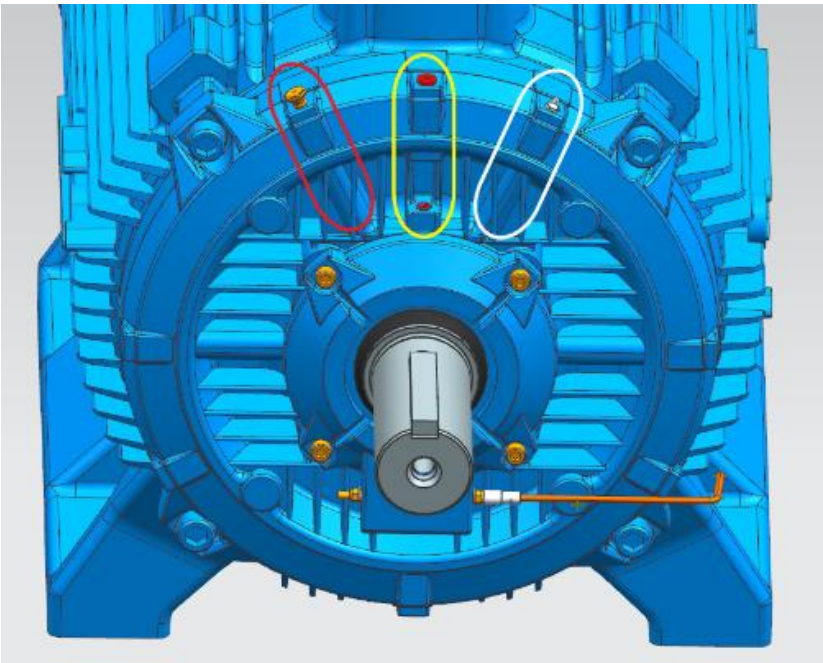


Figure 17. Vibration sensor (red), Pt100 (yellow), grease fitting (white).

5 Discussion

The results from the work done in this thesis achieved its original goal of gathering instructions from employees' knowledge about the design process and put into a document. And serves as a source of information that can be used when needing specific details or wanting to know more about a certain design. By using what I had learned from the theory found in this thesis and by following the steps used by technical writers I was able to create document with technical instructions that was easy to understand and navigate.

5.1 Challenges

When making the instructions, a challenge was deciding what to include or what to leave out. I had to balance making the instructions clear without making them too long and complicated. Since the users have good background knowledge about the subjects, I did not have to include detailed information about everything.

Another challenge was making the document as easy to navigate as possible so the users quickly can find what they are looking for. To achieve this, I divided the document into different categories with subheadings and when adding the instructions, I tried to put them under the most relevant headings.

5.2 Continued work

The document that was created for this thesis have much potential for further updated. A way to keep the document relevant and up to date would be to continuously update the document with tacit knowledge, by adding and edit instructions. Meetings could be held with the employees where they can suggest new ideas or allow them to add ideas directly to the document.

Another way to get more information would be to share the document with other departments. knowledge from different departments could add valuable information and help understand what must be considered in the designs. Additionally, the document could be shared to other R&D departments located in other countries, which would make it so that all employees have the same information regardless of where they are located.

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Appendices

Appendix 1.

Classified.