**Title of the Master’s Thesis**

**Master’s Thesis**

**by**

**<first name> <second name>, <title>**

**Firma**



**Submitted to the Master’s Degree program**

**Engineering and Production Management**

**FH JOANNEUM Gesellschaft mbH Graz**

**University of Applied Sciences**

 Head of degree program: <first name> <second name>, <title>

 Academic advisor: <first name> <second name>, <title>

 Professional supervisor: <first name> <second name>, <title>

<place>, <date>

Acknowledgements

Thank everyone you love!

Abstract

An abstract allows readers to gain insight about the most essential parts of a thesis or paper without having to read the full-length text. Abstracts are different than summaries in that they are used for scientific or academic papers in order to highlight certain parts of the given work. They focus on the work itself and not, for instance, how a thesis is divided (e.g. into a theoretical and practical part). Because the abstract provides the highlights of the paper, it should be written after the first draft of the paper is complete.

The length of the abstract should range between two-thirds to three-fourth of a page. It is to be written as one continuous paragraph. If the abstract exceeds one page this suggested length, be sure that not too much space was devoted to background information on the topic.

The legal name of the company should be included in the abstract, ideally towards the beginning. If the name of the company is long, a shortened version of the name should be used and placed in brackets upon subsequent mentioning. Alternatively, the word “company” can also be used instead of the name.

The sciences typically use informative abstracts covering the following areas:

* Background
* Aims
* Methods
* Results
* Conclusion

Keywords: at least three significant keywords plus the company name
(Keywords should be related to elements that are specific to the thesis, so avoid using general terms such as common nouns and verbs.)

Kurzfassung (German)

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# Introduction

The introduction briefly describes the content of the work on a high level and presents the most important aspects of the thesis. It is advisable to use the same terminology from the introduction throughout the whole document.

1. The Introduction presents the research questions following by a short description on the methods used to solve the problem.
2. There should be one paragraph for every chapter that describes the content of each of the chapters very briefly. Cross-references to each chapter should be included to guide the reader through the work.
3. A brief description of the company is also necessary to define the industry for which the thesis is written.

# State of the art review

This very important part of the document defines the theoretical baseline from where the thesis work proceeds. It reflects the systematic research on the existing theories in the field of the thesis. There should be a clear focus only on relevant theories used in the later empirical part of the work to answer the research questions.

The state of the art ensures that the student is capable of abstracting a problem and subdividing into relevant theoretical core elements that describe the problem. This chapter further builds up the specific knowledge that helps the reader to understand the theoretical basics of the empirical work.

## Acronyms

If you use Acronyms like FEM or CFD, please use the functionalities included in Word to create a list of acronyms. Use [Alt]+[Shift]+[x] or “Referenzen” 🡪 “Eintrag markieren” to mark the acronym. Use “Referenzen” 🡪 “Index einfügen” to place the list of acronyms.

# Methods

Here, the methods used to answer the research questions are described briefly. While the state of the art places its focus on theoretical aspects, the research methods define how the theories are applied to solve the problem presented by the thesis. In principal there are three methods to solve a theoretical problem:

* analytical methods (e.g. mathematical equations)
* empirical methods (e.g. tests, surveys)
* numerical methods (e.g. simulations, optimizations)

# Experimental part

The previously described theories are applied to the specific problem of the thesis and solved by the research methods. This chapter reflects the actual work of the students at the partner company and will be of utmost importance for the company. All the specific data, information and processes that feed the used methods are documented according to Standards of Good Scientific Practice such as reproducibility, transparency, honesty and responsibility.

The results are captured and validated but not evaluated and reflected. This is done in the chapter “Results”.

# Results

This chapter presents the valid results, such as images, graphs and data in a consistent, complete and high-quality manner. Here the results are evaluated and reflected upon.

The research questions must also be answered in this chapter.

# Summary and outlook

This chapter starts with a brief summary of the main outcomes, followed by a description of possible further work

* to enhance the quality of the results,
* to use the results as a baseline for further research and/or
* to use the results and methods for the solution of similar problems.

List of references

[1] Bosch Rexroth AG, Ed., “Axialkolben-Konstantmotor A2FM: Baureihe 6,” Betriebsanleitung RD 91001-01-B/08.2011, Aug. 2008.

[2] Bosch Rexroth AG, Ed., “Axialkolben-Konstantmotor: A2FM Baureihe 6x,” RD 91001/2019-09-17, Jun. 2012.

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List of acronyms

CFD *Computational Fluid Dynamics*

FEM *Finite Elemente Methode*

List of Symbols

*Symbol Name SI-unit*

$V\_{g}$ hydraulic volume m³

###### This is the first chapter of the appendix

A hydraulic motor, also known as Hydromotor, converts hydraulic energy into mechanical work. A schematic cross-section of an axial piston hydraulic motor is illustrated in Figure 1.



Figure 1: Schematic cross-section of an axial piston hydraulic motor based on the model A2FM of Bosch Rexroth AG [1, p. 16].

„Über die Anschlussplatte (5) und die Steuerplatte (4) wird den Volumenstrom und umgekehrt proportional dem Schluckvolumen des Hydraulikmotors.“ [1, p. 17]

Table 1: Nominal sizes of axial piston hydraulic motor types based on the model A2FM of Bosch Rexroth AG [2, p. 4].

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Nominal size | 5 | 10 | 12 | 16 | 23 | 28 |
| Hydraulic volume, per rotation | $$V\_{g}$$ | / cm³ | 4.93 | 10.3 | 12 | 16 | 22.9 | 28.1 |
| Nominal pressure | $$p\_{nom}$$ | / bar | 315 | 400 | 400 | 400 | 400 | 400 |
| Maximal pressure | $$p\_{max}$$ | / bar | 350 | 450 | 450 | 45 | 450 | 450 |

The power $P $of any hydraulic motor, given in (1) is a function of the hydraulic volume $V\_{g}$, the rotational speed $n$, the pressure drop $Δp$, the volumetric efficiency $η\_{vol}$ and the mechanic-hydraulic efficiency $η\_{mech}$.

|  |  |  |
| --- | --- | --- |
|  | $$P =V\_{g} ⋅n ⋅Δp⋅η\_{vol}⋅η\_{mech}$$ | (1) |

See Appendix A for more details.

###### This is the second chapter of the appendix

Nach dem letzten Anhang-Kapitel folgt ein Abschnittswechsel (Nächste Seite)

Statutory Declaration

I hereby confirm and declare that the present Master’s thesis was composed by myself without any help from others and that the work contained herein is my own and that I have only used the specified sources and aids. The uploaded version is identical to any printed version submitted.

I also confirm that I have prepared this thesis in compliance with the principles of the FH JOANNEUM Guideline for Good Scientific Practice and Prevention of Research Misconduct.

I declare in particular that I have marked all content taken verbatim or in substance from third party works or my own works according to the rules of good scientific practice and that I have included clear references to all sources.

The present original thesis has not been submitted to another university in Austria or abroad for the award of an academic degree in this form.

I understand that the provision of incorrect information in this signed declaration may have legal consequences.