

# How To Write A PPRE Thesis

by

Reynold M. Thesismaker

Date and Place of Birth:

21<sup>st</sup> January 1986 in Wondercity / Nowhereland

Master Thesis

in the Postgraduate Programme

RENEWABLE ENERGY

Energy and Semiconductor Research Laboratory

Department of Physics

Faculty of Mathematics & Science

Carl von Ossietzky University

Oldenburg / F.R. Germany

Day of Examination:

19<sup>th</sup> March 2013

1. Examiner:

Dr. H. Frankenstein

2. Examiner:

Prof. J. Mabuse

# **LICENSE**

## **Terms and Conditions for Copying, Distributing, and Modifying**

Items other than copying, distributing, and modifying the Content with which this license was distributed (such as using, etc.) are outside the scope of this license.

1. You may copy and distribute exact replicas of the OpenContent (OC) as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the OC a copy of this License along with the OC. You may at your option charge a fee for the media and/or handling involved in creating a unique copy of the OC for use offline, you may at your option offer instructional support for the OC in exchange for a fee, or you may at your option offer warranty in exchange for a fee. You may not charge a fee for the OC itself. You may not charge a fee for the sole service of providing access to and/or use of the OC via a network (e.g. the Internet), whether it be via the world wide web, FTP, or any other method.

2. You may modify your copy or copies of the OpenContent or any portion of it, thus forming works based on the Content, and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified content to carry prominent notices stating that you changed it, the exact nature and content of the changes, and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the OC or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License, unless otherwise permitted under applicable Fair Use law.

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the OC, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the OC, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it. Exceptions are made to this requirement to release modified works free of charge under this license only in compliance with Fair Use law where applicable.

3. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to copy, distribute or modify the OC. These actions are prohibited by law if you do not accept this License. Therefore, by distributing or translating the OC, or by deriving works herefrom, you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or translating the OC.

## **NO WARRANTY**

4. BECAUSE THE OPENCONTENT (OC) IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE OC, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE OC "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK OF USE OF THE OC IS WITH YOU. SHOULD THE OC PROVE FAULTY, INACCURATE, OR OTHERWISE UNACCEPTABLE YOU ASSUME THE COST OF ALL NECESSARY REPAIR OR CORRECTION.

5. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MIRROR AND/OR REDISTRIBUTE THE OC AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE OC, EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

### **Abstract**

The purpose of this document is to show students of the Postgraduate Programme RENEWABLE ENERGY, *how to write a thesis*. In order to give them some insight into the process of writing and finally completing the written report about their thesis project – hereafter abbreviated as *thesis* – all the steps that lead from the idea to the final version of the booklet will be described in short. Readers should have in mind that thesis projects may differ a lot from each other and therefore a general description of the process will *never* meet all special cases. Please take into account that this is *work in progress* and that feedback is welcome!

There will be a number of questions that have to be answered by your supervisor or by the PPRE staff.

*This work is dedicated to all friends and colleagues, who have given me the strength and the will to do what I had to do in order to successfully complete this piece of work.*

## Declaration

I state and declare that this thesis was prepared by me in accordance with the best practice guidelines for scientific work of the University of Oldenburg<sup>1</sup> and that no means or sources have been used, except those, which I cited and listed in the References section.

Oldenburg, 33<sup>rd</sup> of December 2019

---

---

<sup>1</sup>Please see [10]

# Contents

<b>1</b>	<b>INTRODUCTION</b>	<b>9</b>
<b>2</b>	<b>FINDING THE RIGHT ENVIRONMENT</b>	<b>10</b>
<b>3</b>	<b>DEFINING YOUR THESIS SUBJECT</b>	<b>10</b>
3.1	Main and General research question(s) . . . . .	10
3.2	Main research goal(s) . . . . .	11
3.3	Concise research questions / hypotheses . . . . .	11
3.4	Revision of Goals & Questions . . . . .	11
<b>4</b>	<b>RUNNING YOUR THESIS PROJECT</b>	<b>11</b>
4.1	Adapting to ‘local rules & regulations’ . . . . .	11
4.2	Planning and Time-Keeping . . . . .	11
4.3	Logging Not Only Data — The Project Diary . . . . .	12
4.4	Never Walk Alone . . . . .	12
<b>5</b>	<b>FORMAT OF FINAL COPY OF THESIS</b>	<b>13</b>
5.1	Sectioning of the Thesis Booklet . . . . .	13
5.2	Appearances . . . . .	13
5.3	Figures and Tables . . . . .	14
5.4	References . . . . .	15
	<b>REFERENCES</b>	<b>17</b>
	<b>INDEX</b>	<b>20</b>
	<b>APPENDICES</b>	<b>20</b>

## List of Figures

1	Example of a figure: Biogas batch reactor — experimental results (Source: [9])	14
2	Solar Lunch during PPRE Summer Lab (Source: [3]) . . . . .	15

## List of Tables

1	Example of a table (Source: [5]) . . . . .	15
2	Table: Measurement results . . . . .	20



# 1 INTRODUCTION

When PPRE<sup>2</sup> students come to Oldenburg some of the newly arrived have already a firm idea of the subject/field of their thesis project at the end of the programme, although then still an item more than eight months in the future. Well some guys and girls really stick to their first idea, but most often over the time the perception of the options available here in Germany/Europe and especially the impressions from the period of the *External Practical Training*<sup>3</sup> will influence the choice of subject, supervisor and finally the selection of the title of the thesis project.

Then, after all these decisions have been made, there comes the moment, when you might want to plan the whole thing, in order to ensure good night's sleep as well as a successful submission of those famous three copies of *your thesis* before the deadline expires.

Of course there is a lot of tips, tricks and advice on the World Wide Web (see e.g. [1]) about *how to write at thesis*<sup>4</sup> — in the shelves of the university library (see **all 972**) you will find very useful literature on the topic. But after all, you will have to find out about the local PPRE format, the ideas of *your supervisor* and some regulations of this university (see Appendix). The purpose of this short paper, which mocks to be in the correct format of a thesis, is to inform PPRE students about what they have to do, what they can do, and also about *what they should never do*.

In any case it is useful to read more about thesis writing and to have a look at the structure and layout of thesis booklets in the PPRE library.

---

<sup>2</sup>PPRE–Postgraduate Programme RENEWABLE ENERGY at Carl von Ossietzky Universität Oldenburg – <http://www.ppre.de>

<sup>3</sup>*External Practical Training: a period of two months in an institution or company, where a project on Renewable Energy topics is performed*

<sup>4</sup><http://www.google.com> or any other search engine will give you tons of these pages...

## 2 FINDING THE RIGHT ENVIRONMENT

## 3 DEFINING YOUR THESIS SUBJECT

In this section some explanations concerning the *introduction* of a Master Thesis (and principally of every scientific work) is given. The section ‘Introduction’ should consist of three distinctive parts:

1. Definition of then main and general research question(s),
2. Presentation of the main research goal(s),  
and
3. Detailing concise research questions / hypotheses.

In some cases it may be of advantage to add to the introduction a short overview of chapters/sections that follow.

### 3.1 Main and General research question(s)

At the very beginning of every scientific work the *principal problem*, the main and general research question(s) have to be defined. It has to be explained *why* there is a demand / need for such an investigation / research. In most of the cases this has to be motivated from two sides:

Firstly, it exists a demand to solve (or to start to solve) an open problem. This might be an open question within a complex theory (e.g. in physics: the discovery of the black-body form and anisotropy of the cosmic microwave background radiation as part of the theory to understand the origin of the universe; Nobel price 2006); but it can also be a very precisely defined problem emerging from the field (e.g. material deterioration in off-shore wind farms — an unresolved issue).

And secondly, it is to prove – through referring to the latest and most relevant scientific literature – that so far there is no other research paper presenting the same results / solutions to the elaborated question.

In short: There is a *white spot* in science and there is a need / demand to solve a problem. While defining his / her general research question(s), the scientist shows that he / she is familiar with the scientific literature and at the same time he / she is integrating his / her work into a particular area and tradition (scientific methods) of already existing scientific literature. At the end of the ‘Introduction’ section it should be clear: what is the *state of knowledge* in the respective area.

### 3.2 Main research goal(s)

With the second step the main research goal(s) should be defined. This implies a clear limitation of the planned research project. See also some remarks below on time budget and project management (see section 4.2).

### 3.3 Concise research questions / hypotheses

Finally, the concise research questions / hypotheses have to be presented. This should be done very carefully and these paragraphs should be readable / understandable and clear.

### 3.4 Revision of Goals & Questions

This whole introduction part is to be defined (and has to be fixed) at the very beginning of every investigation / research project and thesis. But it has to be revised / reorganised / corrected / adapted during the whole research process. Here the advantage of keeping a daily updated research diary comes into the picture. And this paragraph has to be finalised after the whole research project is closed. In short: This section is situated in the first pages and has to be written at the very beginning, its review accompanies the whole research process and it is the last thing to be finalised.

There is no restriction concerning its length. But within a max. 6 months time span to finalise PPPE Master Thesis as a rule of thumb a minimum of two and a maximum of 8 pages for the whole introduction should do the job.

## 4 RUNNING YOUR THESIS PROJECT

### 4.1 Adapting to ‘local rules & regulations’

### 4.2 Planning and Time-Keeping

Running a project requires a few things that should be inspected before you speed up into high gear and run into the danger of getting lost in time and space. A person involved in PPPE since its beginning tries to put it the following way:

*Time is a non-renewable resource. Some people in our programme try hard to find out about this basic fact...[3]*

So, thinking about this, you will find that *time* in the case of the PPPE thesis project is one of *most limiting factors* for your work – i.e. if you had more time, you would achieve more.

Thus it seems to be wise,

1. to begin your work with an *exposé*, which lays down ideas, goals, methods, resources and a schedule of work,
2. to economise on the use of time,
3. in order to do so, keep track of the use of time, and
4. compare the progress of your work with a schedule, which you have made in the beginning and which has to be updated continuously.<sup>5</sup>

It must not be *critical-path software*, it can be just pen and paper or a simple calendar, in order to keep track of your time.

### 4.3 Logging Not Only Data — The Project Diary

A *private diary* (in whatever form –e.g. file, notebook, audio-recorder) helps a lot to become organised and to *remain* organised in periods of stress and doubt. When you keep your daily log (like a ship's master) you will find it much easier to steer a keen course without going in circles.

Again we want to stress the fact, that investing time in this activity of keeping a diary will pay off by winning time in situations, where otherwise (without diary notes) you would spend hours and hours on retrieving notes or rethinking undocumented decisions.

### 4.4 Never Walk Alone

In a time of concentration on your special topic you might run into periods of *isolation* – therefore it is advisable to talk not only with your supervisor(s) or your co-workers (in an external institution/company) but to have a good and intensive communication with friends. Talking helps to find solutions, even when the other party cannot give specific advice ...

---

<sup>5</sup>Well, some people try to save time by saving the time for planning and scheduling. In the authors' opinion this is the inroad to nervous break-down.

## 5 FORMAT OF FINAL COPY OF THESIS

The three bound copies you will have to submit have to obey a flexible but fixed standard<sup>6</sup>, which will be explained in this section *step by step*.

### 5.1 Sectioning of the Thesis Booklet

The exact way of making the sectioning of your thesis is a subject between you and your supervisor and will of course depend on the topic/field of the thesis project. Some items should *not* be missing:

- *Titlepage* – have look in last years' theses in the PPRE library<sup>7</sup>
- *Table of Contents* – (see the table of contents of this document on page 7)
- *Abstract* – less than one page (the very last thing to write, but the first in the text)
- *Introduction* – second last thing to re-write (before abstract – see also page 10)
- *Chapters/Sections, Subsections* – as agreed with your supervisor
- *Do not forget Conclusions, Summary, Outlook*
- *References* – either alphabetical with respect to the name of the first author, or just numbered with respect to occurrence of citation in the text.
- *Acknowledgements* – which some people also place together with a dedication after the titlepage (all this is optional)
- *Bio-Data (CV)* – this can be a short version: mainly educational and professional experience (max. one page)
- *Appendices* – there you place all data, tables, graphs that are useful but not *absolutely necessary* are distracting in the body of your text.

*Details have to be discussed with your supervisor.*

### 5.2 Appearances

The *thesis booklet* will be in A4 format, two-sided printing is possible. Margins should be (at minimum):

- Left margin (inner side – next to binding): 3.5cm

---

<sup>6</sup>In order to see examples glimpse and browse last years' theses in the PPRE library

<sup>7</sup>If individual agreement is achieved the titlepage with all relevant Data can be obtained from the staff – as PDF or printed ready for binding

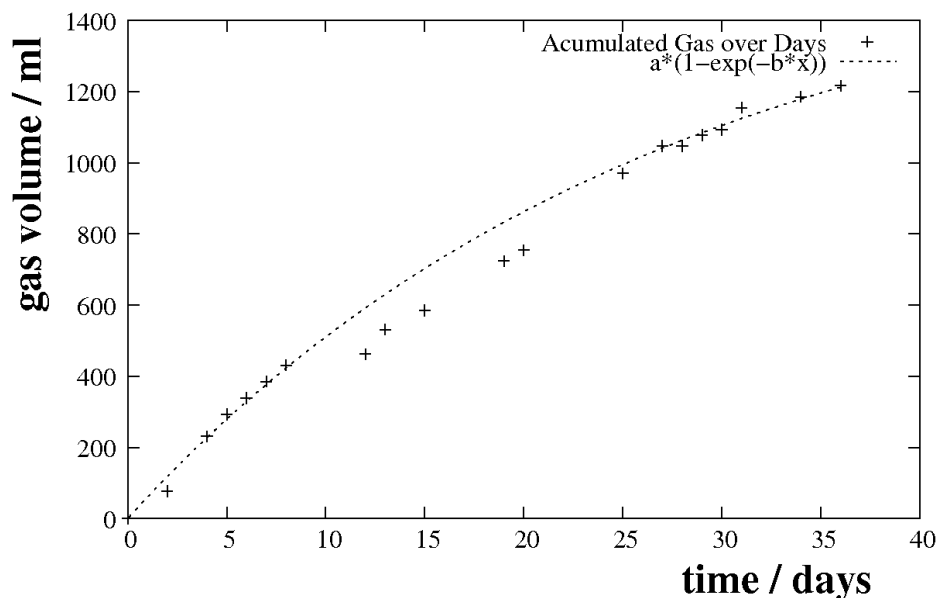


Figure 1: Example of a figure: Biogas batch reactor — experimental results (Source: [9])

- Right margin (outer side – away from binding): 2.5 cm
- Top and bottom margins: 2.5 cm

The standard typeface should be *Times Roman*, 12pt. Sections, subsections are in **bold** and at moderately increased size – take this document as an example.

There are several ways to put *page numbers on the page* – the most common one is to have the numbers in the centre of the foot of the page. In this document (with headings), you find the page number on the outside edge of the page heading. *Page numbers are indispensable!!*

And you might find it good to start a new section or chapter on a fresh page (not subsections, of course!). It is your choice if you indicate the beginning of a new paragraph by indenting the first line a few centimetres – or by leaving a parskip (like in this document).

### 5.3 Figures and Tables

Some students find it very difficult to put graphical or table material into their thesis. But if you obey some simple rules, things will work out easily. It is required to number figures (see fig. 1) and make cross-references by using the number of the figure. In contrast to this short document, it may be advisable in a real thesis, to number figure section-wise: Figure 3.1, e.g. would be the first figure in Section 3.

A list of figures is a desirable thing and should appear after the table of contents.

A table should bear its caption on top (a figure on bottom) and has to be numbered like the figures – see an example in tab. 1. Again a list of tables is a desirable feature.

Captions have to be self-explaining: they should be readable/understandable and help to find the right figure or table if you browsing the thesis document.



Figure 2: Solar Lunch during PPRE Summer Lab (Source: [3])

## 5.4 References

There are numerous ways and styles for citing literature. For the thesis work in PPRE two styles seem to work out nicely. One way is as done in this paper (just have look at the REFERENCES at the end and the citations like [5] in the body of this text). The disadvantage of this enumerated citation style is that you have lot of work, if your word processor system does not provide automatic sorting and referencing<sup>8</sup>.

A very good alternative to this way is the alphabetical sorting. You may keep all your references in a separate file like this:

1. Blum, K. (1991), *personal communication*.
2. Comer, D.E. (2003) <http://www.cs.purdue.edu/homes/dec/essay.dissertation.html>
3. Shoaff, W.D. (2002), *How to Write a Master's Thesis*,  
<http://www.cs.fit.edu/wds/guides/howto/>,

Now, in the body of your text a citation can look like [BLUM (1991)] or [SHOAFF (2002)].

The advantage of this citation method (with manual operation) is its ease of maintenance as sorting within the alphabet is no difficult thing. Also the entering of entries in the last minute

---

<sup>8</sup>Well the system used to produce THIS PAPER does.

Table 1: Example of a table (Source: [5])

REGION	No.	%
Asia	85	36
Africa	66	30
Latin Am.	33	14
Germany	30	13
Europe w/o G.	14	6
Other	3	1

makes no real trouble – this contrasts sharply to the enumerated system, where last minute entries will bring headache and/or unpleasant numbering sequences.

So your decision should be based on practical and not on aesthetic considerations.



## References

- [1] Comer, D.E., (2003), *How to write a dissertation*, Computer Science Department, Purdue University, West Lafayette, Indiana  
<http://www.cs.purdue.edu/homes/dec/essay.dissertation.html>  
 (last visited on 2010/07/09) 1
- [2] Shoaff, W.D., (2003), *How to Write a Master's Thesis*, Department of Computer Sciences, Florida Institute of Technology, Melbourne, Florida  
<http://www.cs.fit.edu/~wds/guides/howto/> (last visited on 2010/07/09)
- [3] Blum, K., (2000), *personal communication*, (document), 4.2, 2
- [4] Ravindranath N. H. (1993), *Biomass Gasification: Environmentally Sound Technology for Decentralized Power Generation: A Case Study from India*, Biomass and Bioenergy, 4(1)49-60.
- [5] Blum, K., Golba, M., Knagge, E. and Schumacher, J., (2003), *Fifteen Years Postgraduate Programme 'Renewable Energy'*, Proceedings of the 9th International Symposium on Renewable Energy Education (ISREE-9), Gothenburg 14-15th June 2003, to be published. (document), 5.4, 1
- [6] Woods, J. and Hall, D. O (1994), *Bioenergy for Development - Technical and Environmental Dimensions*, FAO Environment and Energy Paper 13, Rome, Italy 1990.
- [7] UNEP (1993), *UNEP Greenhouse Gas Abatement Costing Studies: Analysis of Abatement Costing Issues and Preparation of a Methodology to Undertake National Greenhouse Gas Abatement Costing Studies* (Phase Two, Part 2, Country Summaries), Report, UNEP Collaborating Centre on Energy and Environment, Risø National Laboratory for Sustainable Energy, Technical University of Denmark, Roskilde, Denmark, 1993.
- [8] Shuhua, G., Daxiong, Q. and Xiliang, Z., (1997), *Evaluation of the biogas and improved cookstove programme in China*, in: the Proceedings of the International Conference on Biomass Energy Systems - Eds. Ramana P. V and Srinivas S. N, TERI, New Delhi.
- [9] Kulschewski, U., (2010), Lab experiments on Biogas, *personal communication* (document), 1
- [10] [http://www.forschung.uni-oldenburg.de/download/gute\\_wiss.\\_praxis\\_web.pdf](http://www.forschung.uni-oldenburg.de/download/gute_wiss._praxis_web.pdf)  
 1

# Index

advantage, 15  
aesthetic considerations, 16  
alphabetical sorting, 15  
alternative, 15  
  
calendar, 12  
caption, 14  
citation method, 15  
concise research questions, 10  
correct format, 9  
  
danger, 11  
deadline, 9  
decisions, 9  
desirable feature, 14  
disadvantage, 15  
  
enumerated citation style, 15  
enumerated system, 16  
example of a figure, 14  
example of a table, 15  
  
figure, 14  
foot of the page, 14  
  
general research question, 10  
getting lost, 11  
graphical material, 14  
  
headache, 16  
headings, 14  
  
impressions, 9  
indenting, 14  
investigation, 10  
  
last minute, 15  
literature, 9, 15  
  
main research goal, 10  
manual operation, 15  
  
non-renewable resource, 11  
numbering section-wise, 14  
  
page numbers, 14  
  
paragraph, 14  
parskip, 14  
path, 12  
perception, 9  
period, 9  
person, 11  
personal communication, 15  
planned project, 11  
Planning, 11  
PPRE, 11  
Practical Training, 9  
private diary, 12  
programme, 9  
progress, 12  
project, 9, 11  
  
references, 15  
research questions, 10  
Revision, 11  
  
schedule, 12  
scientific literature, 10  
sections, 14  
simple rules, 14  
sleep, 9  
software, 12  
standard typeface, 14  
styles, 15  
subject, 9  
submission, 9  
subsections, 14  
supervisor, 9  
  
table material, 14  
thesis, 9, 14  
three copies, 9  
Times Roman, 14  
track, 12  
  
university library, 9  
unresolved problem, 10  
use of time, 12  
  
white spot, 10

word processor system, 15

## Appendix A — Measurements

Constants				Discharge Measurements					Calculated R <sub>i</sub>	
Djet		0.81	+/- 0.02	cm	V [m3/s]	t [s]	Q		c1	
PCD		12.9	+/- 0.5	cm		0.01	6.68		Phead	
p		6.5		bar		0.01	6.78		Pjet	
Q		0		m3/s		0.01	6.82		qnozzle	
p		1000		kg/m3		0.01	7			
						0.01	6.66			

RPM [RPM]	Uload [V]	Iload [A]	Imult [A]	Umult [A]	Pload [W]	Pmult [W]	u [m/s]	k	n (combined)
1850	10.51	21	21.1	10.72	221	226	12.50	0.44	0.37
2050	10.51	21.9	22.1	10.72	230	237	13.85	0.48	0.38
2200	10.51	22.4	22.3	10.72	235	239	14.86	0.52	0.39
2300	10.51	22.7	22.9	10.72	239	245	15.54	0.54	0.40
2400	10.51	22.8	22.9	10.72	240	245	16.21	0.57	0.40
2550	10.51	22.9	23	10.72	241	247	17.22	0.60	0.40
2700	10.51	22.7	22.8	10.72	239	244	18.24	0.64	0.40
2800	10.51	22.4	22.6	10.72	235	242	18.91	0.66	0.39
2900	10.51	22.3	22.4	10.72	234	240	19.59	0.68	0.39
3100	10.51	21.9	22	10.72	230	236	20.94	0.73	0.38
3200	10.51	21.2	21.3	10.72	223	228	20.94	0.73	0.38
3300	10.51	20.2	20.3	10.72	212	218	21.61	0.76	0.37
3400	10.51	18.9	19.1	10.72	199	205	22.29	0.78	0.33
3500	10.51	17.9	18	10.72	188	193	22.97	0.80	0.31
3600	10.51	16.4	16.6	10.72	172	178	23.64	0.83	0.29
3700	10.51	15.5	15.6	10.72	163	167	24.32	0.85	0.27
50		0.5	0.3						

Table 2: Table: Measurement results

## **Appendix B — *Excerpt from PPRE Exam Regulations***

### **§21 Master Thesis**

(1) The Master Thesis is to show that the student is able to independently solve a problem related to the field of Renewable Energy Systems applying scientific methods within a prescribed period. Topic and setting of tasks of the Master Thesis must correspond with the purpose of examination and with the working time according to article 5. The kind and setting of tasks must have been determined upon announcement of the topic.

(2) The Master Thesis can be performed as a group work (by up to three persons). The individual student's contribution which is to be assessed as an examination performance has to be clearly distinguishable and assessable as an individual examination performance owing to statements of sections, page numbers or other objective criteria and to meet the requirements according to article 1.

(3) The topic of the Master Thesis can be determined by any member of the university teachers' group of the Faculties involved in teaching in the Master course of Renewable Energy. If the examining board agrees, the topic can also be determined by a member of the university teachers' group who is not a member of the involved Faculties. It can also be determined by other authorised examiners according to § 6 article 1; in that case, the second examiner must be a member of the university teachers' group in the Faculties involved in teaching in the Master course of Renewable Energy.

(4) The first examiner determines the topic after hearing the student. On the application of the student the examining board is responsible for seeing that the student is given a topic in time. The topic is announced by the chairperson of the examining board; the announcement is to be placed on record. Upon announcement of the topic the examiner who has determined the topic (first examiner) and the second examiner are appointed. On the application of the first examiner the examining board can agree upon exceptions from this rule. While preparing the Master Thesis the student is supervised by the first examiner.

(5) The maximum time period from the announcement of the topic until the presentation of the Master Thesis is six months. The topic can be cancelled once only and only within the first two months of the working time according to sentence 1. In individual cases the examining board can exceptionally extend the working time by one month upon well-founded application.

(6) Upon presentation of the Master Thesis the student has to assure in writing that she/he has written the paper – in case of a group work the distinguishable individual contribution – independently and without using sources and resources other than those stated.

(7) The Master Thesis has to be submitted to the Academic Examining Authority within the period prescribed; the date of submission is to be placed on record.

(8) The work is to be assessed by both examiners within four weeks after its submission.

## **§22 Final oral colloquium (disputation) — i.e. *Thesis defense***

- (1) In the final oral colloquium (disputation) the student has to prove on the basis of the Master Thesis that she/he is able to independently and scientifically deal with interdisciplinary and problem-oriented questions related to the field of Renewable Energy and to present them.
- (2) The final colloquium (*Thesis defense*) has to take place within two weeks following the final assessment of the Master Thesis by the examiners.
- (3) The final colloquium is performed in the form of a disputation jointly by at least two authorised examiners, at least one of them having supervised the Master Thesis. One of the authorised examiners must be a member of the teaching staff of one of the involved Faculties. The examining board can appoint up to two further authorised examiners. As a rule, the final oral colloquium takes 30 minutes per student, of which about 15 minutes are reserved for a free lecture to be given by the student about questions and results of the Master Thesis; the remaining time is to be used for a scientific discussion on relevant questions related to the subject of the Master Thesis.