DANIEL JAKOB

HYBRID HEAT PUMP ANALYSIS

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THE OPTIMISATION OF A HEAT PUMP–GAS BOILER COMBINATION IN A RESIDENTIAL HOME

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ABSTRACT

Short summary of the contents in English... a great guide by Kent Beck how to write good abstracts can be found here:

https://plg.uwaterloo.ca/~migod/research/beckOOPSLA.html

Keywords: Hybrid heat pumps.

[30th September 2022 at 14:57 – v0.1]

DECLARATION

I hereby certify that the submitted work is my own work, was completed while registered as a candidate for the degree stated on the Title Page, and I have not obtained a degree elsewhere on the basis of the research presented in this submitted work.

Belfield, Dublin 4, October 2021

Daniel Jakob

We have seen that computer programming is an art,
because it applies accumulated knowledge to the world,
because it requires skill and ingenuity, and especially
because it produces objects of beauty.

— Donald E. Knuth [14]

ACKNOWLEDGMENTS

Put your acknowledgments here.

Many thanks to everybody who already sent me a postcard!

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Regarding LYX: The LYX port was intially done by *Nicholas Mariette* in March 2009 and continued by *Ivo Pletikosić* in 2011. Thank you very much for your work and for the contributions to the original style.

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1 Members of GuIT (Gruppo Italiano Utilizzatori di TEX e LATEX)

Ohana means family.
Family means nobody gets left behind, or forgotten.

— Lilo & Stitch

Dedicated to the loving memory of Rudolf Miede.

1939 − 2005

NOMENCLATURE

Physics Constants

c	Speed of light in a vacuum	$299\,792\,458\,\text{m}\,\text{s}^{-1}$
G	Gravitational constant	$6.674\,30{\times}10^{-11}\,\text{m}^3\,\text{kg}^{-1}\,\text{s}^{-2}$
h	Planck constant	$6.626\,070\,15{\times}10^{-34}\,\text{J}\,\text{Hz}^{-1}$

Number Sets

$\mathbb{C}$	Complex numbers
$\mathbb{H}$	Quaternions
$\mathbb{R}$	Real numbers

Other Symbols

ρ	Friction index
V	Constant volume

INTRODUCTION

Illo principalmente su nos. Non message *occidental* angloromanic da. Debitas effortio simplificate sia se, auxiliar summarios da que, se avantiate publicationes via. Pan in terra summarios, capital interlingua se que. Al via multo esser specimen, campo responder que da. Le usate medical addresses pro, europa origine sanctificate nos se.

2

LITERATURE REVIEW

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todo: find applicable and inciteful papers on the topic.

Hybrid heat pump can also refer to a dual energy input heat up. Find way to exclude this from search term. On google scholar, -"blahblah" can be used. Not sure if the same is true on OneSearch.

3

THE MODEL

Write about the model and how it was built. 3D model of house was provided... Used software `Modelica`...

4

VALIDATION OF THE MODEL

Demonstate how model (acturately) predicts how the residential home behaves in real life to certain degree... Compare simulation to real life restults... Explain inaccuracies... which assumptions lead to these...

5

SCENARIO (A)

Use model to predict how scenario A play out. Is this the optimal interval (e.g., 3–6 or whatever...)

SCENARIO (B)

Use model to predict how scenario B plays out. Is this the optimal interval (e.g., 4–7 or whatever...). How does it compare to Scenario A... better?

7

CONCLUSIONS

Did the models bring any thing of value? Intervals... Improvements...

Part I

APPENDIX

A

APPENDIX TEST

Lorem ipsum at nusquam appellantur his, ut eos erant homero concludaturque. Albucius appellantur deterruisset id eam, vivendum partiendo dissentiet ei ius. Vis melius facilisis ea, sea id convenire referrentur, takimata adolescens ex duo. Ei harum argumentum per. Eam vidit exerci appetere ad, ut vel zzril intellegam interpretaris.

More dummy text.

A.1 APPENDIX SECTION TEST

Test: Tbl. A.1 (This reference should have a lowercase, small caps A if the option `floatperchapter` is activated, just as in the table itself → however, this does not work at the moment.)

Table A.1: Autem usu id.

LABITUR BONORUM PRI NO	QUE VISTA	HUMAN
fastidii ea ius	germano	demonstratea
suscipit instructior	titulo	personas
quaestio philosophia	facto	demonstrated

$$V = \frac{4}{3}\pi r^3 \tag{A.1}$$

$$= \eta_{\text{s, turbine}} \tag{A.2}$$

$$\text{ch}(f_! \mathcal{F}^\bullet)\,\text{td}(Y) = f_*(\text{ch}(\mathcal{F}^\bullet)\,\text{td}(X)) \tag{A.3}$$

Eq. A.1 Eqs. A.1 to A.3 Eqs. A.1 and A.3

A.2   ANOTHER APPENDIX SECTION TEST

Equidem detraxit cu nam, vix eu delenit periculis. Eos ut vero constituto, no vidit propriae complectitur sea. Diceret nonummy in has, no qui eligendi recteque consetetur. Mel eu dictas suscipiantur, et sed placerat oporteat. At ipsum electram mei, ad aeque atomorum mea. There is also a useless Pascal listing below: List. A.1.

Listing A.1: A floating example (listings manual)

```
1  for i:=maxint downto 0 do
2  begin
3  { do nothing }
4  end;
```

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