

EEN-E3001, Fundamentals of Industrial Energy Engineering

Introduction to design assignment, Spring 2019

Structure of the assignment

1. Mass balance calculations of the mill
2. Steam and electricity consumptions of the mill
3. Power plant calculations
4. Prizing the energy

About the report

The report should include the following subjects

- Introduction
- Methods (i.e. calculation principles)
- Results
- Conclusions or summary
- List of references

References, tables and figures are marked in a normal way in the text.

You can write the report either in English or in Finnish. English is recommended but the language choice does not have any influence on the final grade.

Preliminary dates for guidance workshops in lecture hall 215

February, 26

March, 5

March, 12

March, 19

March, 26

Other dates can also be discussed if necessary.

Dead line for the submission of the report is 7th of April at 23.59.

There is a file on MyCourses on the course page where the final report will be submitted.

Grading the assignment

Grading of the assignment is based on the following criterion (preliminary plan)

- Content, i.e. how well have you solved design tasks 60p
- Methods, i.e. how well you have formulated you calculation principles 20p
- Language, look and layout 20p

Grading scale: 0-5

If your report is not accepted, you have a chance to make corrections to improve the report. In this case, you don't have a chance to get highest grades (3 - 5).

If I get two (or more) identical final reports, I will pick up one name and this student gets the grade and the others will fail the course.

Course material

Additional material about the course topics can be found from the KnowPulp- and KnowPap-learning environments. The environments are accessed via the following links:

<http://www.knowpulp.com>

<http://www.knowpap.com>

You have to login into learning environments using the following username and password

Username: eneopis_hut

Password: pas3001s

Slides will be uploaded on MyCourses, too.

Some instructions

- Loss or rejection tells the material loss of the unit process from the input flow.
- ADT or ADt (Air dry ton) means that the dry solids content of the pulp is 90 % (i.e. moisture content is 10%).
- Draw a flow sheet of the whole process with all necessary unit processes in the beginning if it helps you to understand what flows go in and out.
- All unit processes are black boxes. Basically, you don't have to understand what occurs inside the box. What goes in comes out.
- Specific steam consumptions are given in unit kg/unit (e.g. kg/Adt, kg/t_{ds}). The unit is given in the assignment document. Be careful that you use a correct unit.

Some instructions

- Use a suitable software to define calculation tasks. Excell is probably the best software in this assignment but you can use any software to solve the calculation tasks.
- Start to solve calculation tasks already in February. At least, try to finish mass balance calculations in February.
- Don't start to solve tasks in the end of March.