



Welcome to

EEN-E2002 Combustion Technology

Lecture on 13 Feb 2019
(kick-off of Part II)

Tuomas Paloposki

v. 04 / 12 Feb 2019



Tuomas Paloposki



Mika Järvinen





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School of Engineering

Part two of the course

Today's combustion technologies and combustion regimes in power plants and engines; design and operational considerations. Application of combustion to furnaces and boilers, spark ignition engines, diesel engines, gas engines and gas turbines. Fundamentals of gasification.



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Learning outcomes

After this course, the student should be able to:

- understand the basics of combustion and gasification processes;
- recognize how they influence the design and operation of practical equipment such as boilers and engines.



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Time schedule (tentative)

LECTURES		
Wed	13 Feb	TP
Wed	27 Feb	TP
Fri	01 Mar	TP
Wed	06 Mar	TP
Fri	08 Mar	TP
Wed	13 Mar	TP
Fri	15 Mar	TP
Wed	20 Mar	MJ
Thu	21 Mar	MJ

LEARNING EXERCISES		
Mon	18 Feb	LE 3 in, LE 4 out
Mon	04 Mar	LE 4 in, LE 5 out
Mon	18 Mar	LE 5 in, LE 6 out
Mon	01 Apr	LE 6 in

See the detailed
time schedule
in MyCourses!

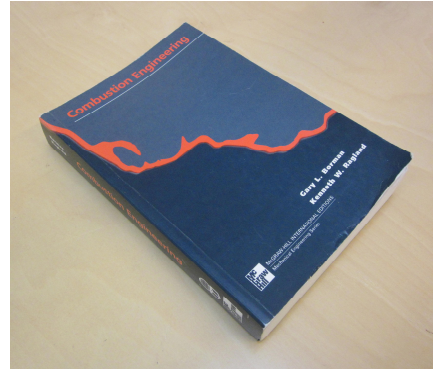


A! Textbooks

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Borman & Ragland: Combustion Engineering

about 20 copies available at the
Library of Energy Engineering
and Environmental Protection
in Building K4.



Higman & van der Burgt: Gasification

E-book / Path: Aalto Finna > gasification



A! Recommended reading

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Singer, J. (ed.), 1981. Combustion fossil power systems, 3rd ed.
Combustion Engineering.

Stultz, S. C. & Kitto, J. B. (eds.), 1992. Steam its generation and
use, 40th ed. Babcock & Wilcox. ISBN 0-9634570-0-4.

Raiko, R., Saastamoinen, J., Hupa, M. & Kurki-Suonio, I. (toim.),
2002. Poltto ja palaminen, 2. päivitetty painos. International Flame
Research Foundation – Suomen kansallinen osasto. 750 s. ISBN
951-666-604-3.

Alvarez, H. 2003. Energiteknik, Del I, 2. upplagan.
Studentlitteratur. 674 s. ISBN 91-44-02894-6.





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Approach from now on



Critical thinking

- Where do we have problems?
- Which problems should be solved?
- Who should solve those problems?

Technology

- How to do things?
- How to make calculations?

Communication

- How to get other people interested?
- How to make them understand?
- How to convince other people?

All three will be practiced in Part II of this course.



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Find your own voice



No parroting, please!

Yellow-headed Amazon (also known as the Yellow-headed Parrot and the Double Yellow-headed Amazon) at Vancouver Aquarium, Canada.

Author: Lizzy Foulkes

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Open and limitless knowledge

You will be expected to know more than what there is in the official textbooks of the course.

It will be up to you to find the information and to evaluate its completeness and trustworthiness as best as you can.

And to prove that you have done the evaluations. ■



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Data searching

It is up to you to decide which sources you want to use.

Google, Wikipedia, etc. are perfectly acceptable as long as you can convincingly show that you are applying reasonable criticism. ■



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Critical evaluation – 1

The three important Cs:

Comparisons: are the different sources telling the same thing?

Completeness: does it seem like there is something missing?

Consistency: can any *internal* contradictions be detected?



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Critical evaluation – 2

An example of completeness and consistency checking:



Joe, William, Jack and Averell Dalton





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Presentation of your results

Explain what you have done.

Explain it in your own words.

Do not copy-paste someone else's text.

That would be *plagiarism*.

From now on, everyone is expected to follow the Aalto University Code of Academic Integrity.

See:

<https://into.aalto.fi/display/ensaannot/Aalto+University+Code+of+Academic+Integrity+and+Handling+Violations+Thereof> ■



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Referencing

All the information that you have taken from elsewhere must be traceable to the original source(s).

Follow the normal conventions of scientific citations.

(see: http://libguides.aalto.fi/citation_guide) ■



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Setting the limits

Do not overstretch yourself.

*When working on open problems,
there will be no obvious limit
as regards to where to stop.*

*You must learn to set
the limit by yourself.*

*Take this course as
an opportunity
for practicing.*



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Practical issues

Workshop(s) for Learning Exercise 4:

Thu 21st Feb at 10–12 in K3/118

Feedback group:

No feedback group

Borman & Ragland book loans:

If you missed the lecture, you will have
a new chance on the next lecture





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Practical issues

Want to learn even more about combustion?

Please check out :

AAE-E3030 - Numerical Modeling of
Multiphase Flows L, 25.02.2019-28.05.2019
<https://mycourses.aalto.fi/course/view.php?id=20124>

