Project families
- An example on group supervision

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Setting the scene

*FROM* student projects broadly distributed on topics related to current issues in the research team. Individual supervision and with monthly “experience exchange meetings”

*TO* project families with closely related topics. Group supervision in lab, focused and targeted bi-weekly meetings and individual supervision
Setting the scene

ZeroWaste Byg
Redesigning construction materials towards zero waste society
Setting the scene

Redesigning construction materials towards zero waste society

- We place the built environment at the center of a sustainable material-cycle society
- We focus our research and innovation on replacing natural raw materials with secondary resources
- We develop technologies for upgrading hazardous waste to secondary resources
- We rethink building technology and redesign materials for current and future requirements
- We do not compromise on the quality of construction materials
- We do not compromise on environmental issues

ZeroWaste Byg is an interdisciplinary research team at Department of Civil Engineering, Technical University of Denmark. We have joined forces from all our department sections and adopt innovative and untraditional approaches for redesigning structures and construction materials towards a zero-waste society.

For more information please visit www.zerowaste.byg.dtu.dk or contact Lisbeth M. Ottosen, project manager (lo@byg.dtu.dk)
Many open questions....

.... and an invaluable resource - students
Systematically filling in knowledge gaps through student work
A dilemma?

- Individual projects
- Students as project leaders
- Work with open problems

- Systematic approach between projects
- Answer specific questions
How?

Part 1
Standard tests and comparison with standard materials

Part 2
Re-design of materials with new properties

Graph: Compressive strength (MPa) vs. time (days) - Ref. and 10%
Link between the two project parts

- Standard tests and comparison with standard materials
- Poster presentation
- Re-design of materials with new properties
Purpose of poster presentations

- Mid-term conclusions
- Choose direction for the project – finishing problem formulation

- Students as project leaders
- Learn to communicate the language
- Communication strategy and focused aim
WIN-WIN-win-win

- Students *WIN* interesting projects and are part of a large academic community

- Supervisors *WIN* a comprehensive amount of experimental results

- Supervisors *win* time through group supervision on background knowledge and standard procedures

- Students *win* time for in-depth individual supervision on scientific matters
Group supervision

- Bi-weekly scheduled meetings
- Other meetings when needed
- For some meetings the focus have been decided on beforehand
  - Lab work – what, why and how (in brief)
  - The projects in a larger perspective
  - How to write the thesis
- The students (and supervisor) sets the scene for the remaining meetings

Underline necessity for:
- Open-minded students
- It is not a competition
- Leadership from students (seeking knowledge)
Project families in this way supports CDIO

Part 1. Technical knowledge and reasoning
- Experimental work
  - Standard tests
- Literature

Part 2. Personal and professional skills & attributes
- Engineering reasoning and problem solving
- Experimentation
- Initiative and willingness to take risks
- Creative and critical thinking
- Time and resource management

Interpersonal skills: Teamwork and communication
- Technical teaming
- Written communication
- Graphical communication
- Oral presentation and interpersonal communication
- English
The projects build on each other

- First semester one group – for planning and systemizing part 1

- Different focus from semester to semester under “Alternative ashes in concrete”
  - Sewage sludge ash, MSWI ash – strength development
  - Co-combustion bio ashes – strength development
  - Sewage sludge ash – corrosion
  - Sewage sludge ash – workability
Recapitulation

○ Win-win
  ○ *The students* write fantastic reports and give fantastic presentations. They are happy about the system (several new groups have sign in after recommendation from the previous)
  ○ The *supervisors* collect important and systemized knowledge. More fun in supervision with time for deeper scientific level.

Thank you for your attention