Education in Sustainable Architecture for the future – For a joint climate action!

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In my presentation, I will focus on:

1. Why it is important to make sustainable buildings.

2. A short presentation of the M. Sc. in Engineering with a specialization in Architecture and the Integrated Design Process (IDP) used at the specialization.

3. Give a more detailed example of a final project dealing with Environmental Sustainable Architecture.
Why is it important to make sustainable buildings?

- The global environment is in a poor state.
- Global warming is a problem.
- To bring down the CO2 level.
- 40% of the energy used goes to heat, light, cool and ventilate buildings.
- To bring down the CO2 level.
- From 2010 – 2015 building legislation in Denmark will require energy reduction used in buildings, to be reduced by up to 50%.
- Developing new integrated building concepts is therefore necessary.
“Since 1998, floods in Europe have caused some 700 deaths, the displacement of about half a million people and at least 25 billion Euro in ensured economic losses”.

(From Press Release of the European Parliament April 2007)
The great challenge!

The building and construction industry is today facing great Challenges:

• energy consumption will have to be reduced in the next few years
• to ensure that no further damage is done to the global environment.

It means:

• the industry is facing major changes in terms of public regulation and in the way building and construction is carried out in practice
• whereby “old habits” seen in relation to an energy optimisation of the building will have to give way to new and better methods, tool e.g.

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The conventional way!

- The conventional way of building in Denmark is that the architect shares or hands the project over to the engineer when they are nearly finished the schematic design of the building.

- New approaches has not yet obtained a foothold in the industry because it requires a methodical, as well as, possibly an organizational change and inter-disciplinary collaboration.

- In projects at other stages in the process than in the current methodology applied by the majority of the business.

- The building industry today know integrated design, but they understand it in many different ways.
M. Sc. in Engineering with a specialization in Architecture from Aalborg University

**Architecture master programme**

1.1. Main Project: Project Work 23 ECTS /7 ECTS Project unit courses. Mini Project 7/2 ECTS.

1.2. Main Project: Project Work 23 ECTS /7 ECTS Project unit courses/2. Mini Project 5/1 ECTS.

2.1. Main Project: Project Work 25 ECTS /3 ECTS Project unit courses. Mini Project 5/2 ECTS.

Plus optional study activities: courses and study trips

2.2. Master Thesis 30 ECTS.
The idea behind the IDP method development

“The Integrated Design Process (IDP) at A&D are using the professional knowledge and design method from architecture and parameters from Engineering in an integrated process.” [Knudstrup 2004]

“The architect’s artistic approach to the creation of ideas as well as he or her ability to see new solutions and work strategically and Inter-disciplinary in interaction with engineering parameters is very important.” [Knudstrup 2004]
Problem formulation / project idea / aim

Analysis phase
Analysis of site, urban development plans, company profile, functional diagram, energy and indoor environment principles as well as principles of construction. (ideas to the main concept)
Aim & program

Sketching phase
Through the sketching process, architectural ideas are produced and linked to principles of construction, energy consumption and indoor environment. As well as the functional demands to the new building. In this phase, the main concept usually emerges.

Synthesis phase
Architectural & functional qualities, the construction and demands of energy consumption and indoor environment flow together, and more qualities may have been added.
A new building has been created

Presentation phase
The final project is presented in a report, drawings, cardboard model and via IT visualisation.

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Barriers and the challenges appear when you cross the borderland between architecture and engineering

• It is important to combine knowledge from engineering and architecture from the beginning of the process.

• By making an inter-disciplinary approach between design solutions of the architects and the technical parameters of the engineers you avoid running into conflicts at later stage.

• So it’s a good idea to take the technical parameters into consideration early on in the architectural design process and to include technical calculations already in the sketching process.

Thank you for your attention!