



*Date: 25-04-2017*

*Place: Aalborg University*

# Knowledge FOR Resilient soCiEty

## PhD education at DTU-BYG

*Technical University of Denmark (DTU)*

*Department of Civil Engineering (DTU-BYG)*

*The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained*



**DTU Civil Engineering**  
Department of Civil Engineering


Co-funded by the  
Erasmus+ Programme  
of the European Union



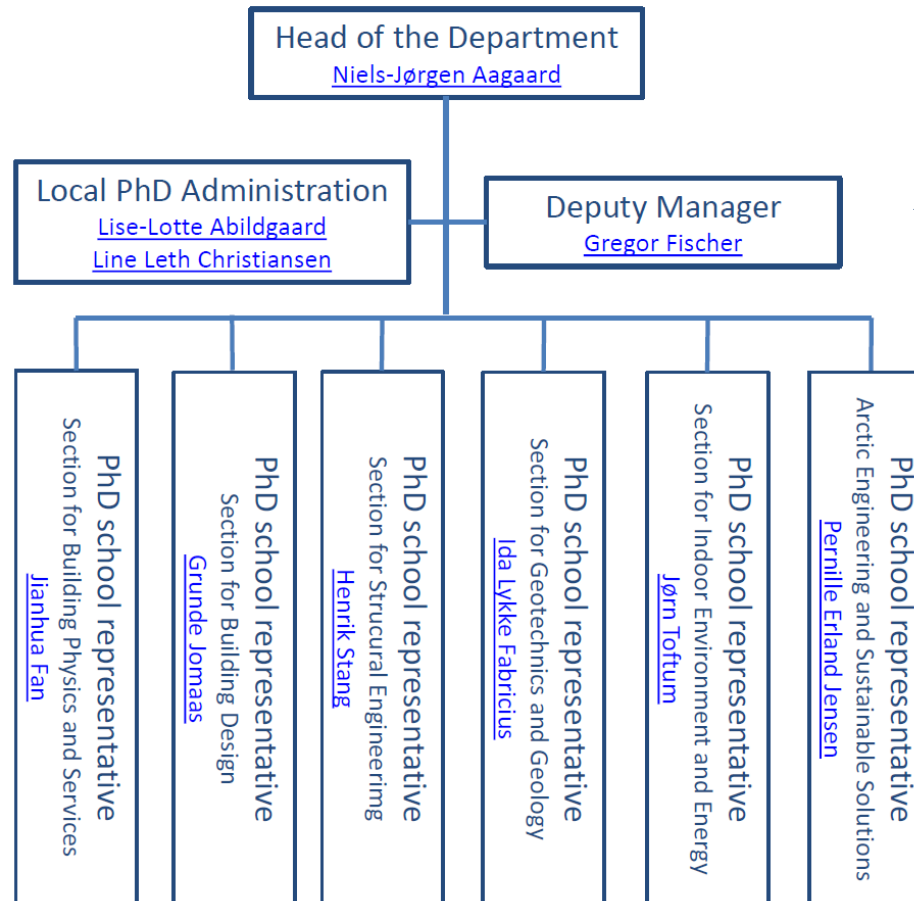


- *PhD SCHOOL AT DTU-BYG: structure, admission, milestones*
- *PhD projects: focus on fire-related projects and lab facilities*
- *FIRE GROUP: shortly about us*



 *PhD SCHOOL AT DTU-BYG: structure, admission, milestones*

# Organizational structure at DTU-BYG



- *strategic management*
- *approval or rejection of:*
  - *study plan*
  - *progress report*
  - *final approval*
  - *evt. extension request*

- *review PhD study plans and progress reports*
- *identify award candidates*
- *Chair PhD defenses*



## Summary of the PHD process

### FUNDS

- *Fully funded by research grants or partly funded (30% ministry, 30% DTU)*
- *Industrial PhD*

### SELECTION

- *Publication of the call*
- *Pre-selection of good candidates*
- *Interviews with selected candidates at DTU*

### ADMISSION

- *Preparation and approval of the study plan*

### PHD WORK

- *Half-year reports*
- *Submission of the thesis and examination*

<http://www.dtu.dk/english/education/phd>

## *Requirements for admission*

### **ADMISSION**

- *Danish MSc or international equivalent*
- *Thesis grade equal or higher to 10 in the Danish 7-point scale (84%)*
- *Average MSc grade equal or higher to 8 (73%).*

*Students with an average between 6 and 8 (60-73%) can be admitted if aptitude for research has been demonstrated through publication of scientific papers)*

- *Agreement with DTU principal supervisor (asc. prof., senior researcher, full prof.)*
- *Academic and financial approval of the application by the head of the PhD school*

### **APPLICATION:**

- *description of the intended study programme, agreed with the main supervisor*
- *financial planning*
- *background information on the applicant (CV)*
- *short CV for the main supervisor and any co-supervisor (at least one, normally two or more)*
- *degree certificate (indicating the weighted grade point average)*



## PhD milestone

### STUDY PLAN

- *To be submitted within two months from the commencement and approved within 3*
- *Include external stay, participation in conferences, publication plan etc*
- *Ensure quality of the PhD project*
- *It is used by the PhD evaluation committee to assess the outcomes*

### HALF YEAR REPORTS

- *Must be submitted every six months*
- *Ensure that the project is proceeding satisfactorily*
- *Upon rejection, a three month extension is granted - but only once!*

### THESIS

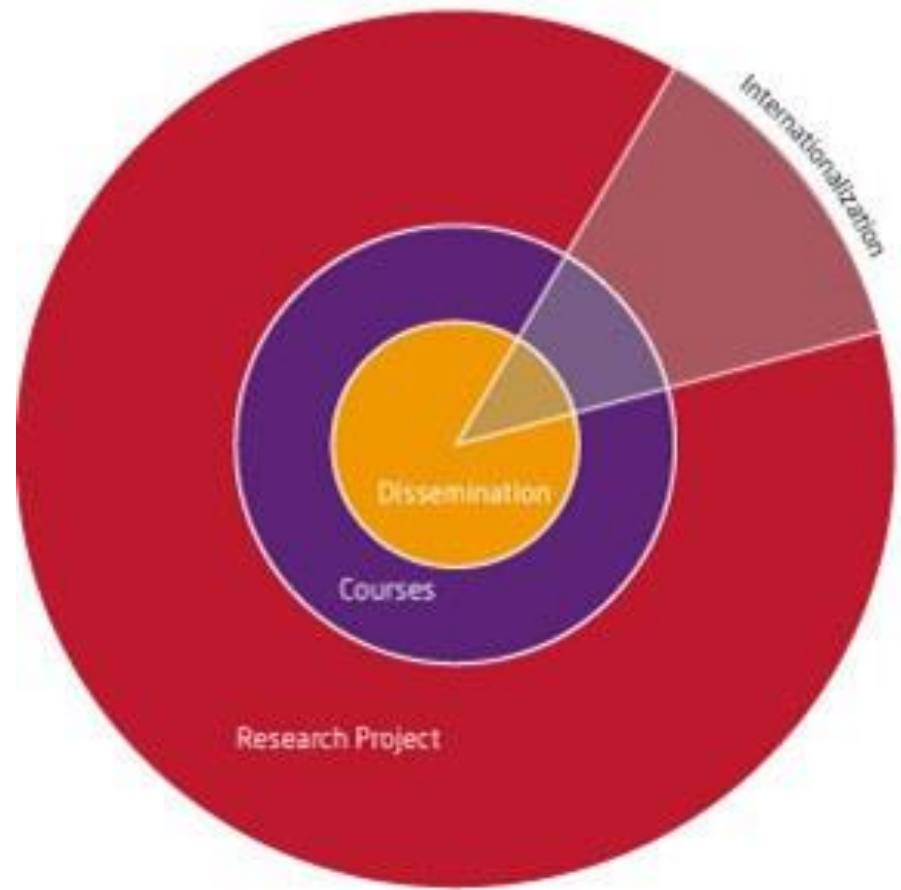
- *Paper-based (recommended) or monologue*
- *Internal opponent (also chair of the evaluation committee)*
- *Three members in the evaluation committee, of which at least two external and one from abroad*

## Repartition of the PhD work

Courses	30 ECTS
Dissemination	15-30 ECTS
Internationalization	15-60 ECTS
Research Project	60-120 ECTS
<b>Total</b>	<b>180 ECTS</b>

**(corresponding to 3 full years\*)**

*\*Extensions up to 3 months (+6 in special cases) can be granted upon submission of a motivated applications. The PhD salary during the extension is not covered by DTU.*







## PhD courses

**Professional identity courses:** Courses which deals with the subject's basis and creating a common professional identity of school

11617 Mechanical Modeling of Materials in Civil

11618 Introduction to Constitutive Theory and Continuum Physics with Numerical Applications using FEM

**Academically focused courses:** Courses with a narrower focus on an academic topic

11619 Chalk Physics

11626 Process and Data Modeling for he Built Environment

11627 Numerical Methods for Building Energy Technology

11628 Heat storage for solar heating systems

**Service courses (skills):** Courses designed to provide the student with a particular professional skill that typically lie outside the student's own field of study.

11620 Engineering Risk and Decision Analysis

**General service courses (generic skills):** Courses are typically not naturally anchored at DTU PhD schools and offered by or in cooperation with central units and external providers.

11621 How to Write and Publish a Scientific Paper



## *Employment after a PhD programme at DTU*

- *94 % are employed, 1 % is self-employed, the rest is enrolled in full-time education or unemployed*
- *50% working in the private sector and more than 30% a university or research institution*
- *predominance of employment in large companies (more than 1000 employees) and in Denmark*
- *predominance of jobs with research assignment*
- *research visits abroad collaboration with industry during the PhD are positively evaluated by recruiting companies*

*Source: PhD Graduation Report - [http://www.dtu.dk/english/education/phd/graduation\\_report](http://www.dtu.dk/english/education/phd/graduation_report)*



- *PhD SCHOOL AT DTU-BYG: structure, admission, milestones*
- *PhD projects: focus on fire-related projects and lab facilities*



---

## *PhD projects on fire safety or disaster management*

---

### *FIRE SAFETY*

- *Fire Performance of Assemblies Incorporating Insulation Products*
- *In-situ burning of crude oil in the Arctic*
- *Evacuation of children*
- *Evacuation of people with visual impairments*

### *DISASTER MANAGEMENT*

- *Hierarchical modelling of flood risk for engineering decision analysis*
- *Real time decision support in the face of evolving natural hazards*
- *Climate change and impact on lifetime and maintenance of buildings*

**See the full list of PhD projects at DTU BYG at:**

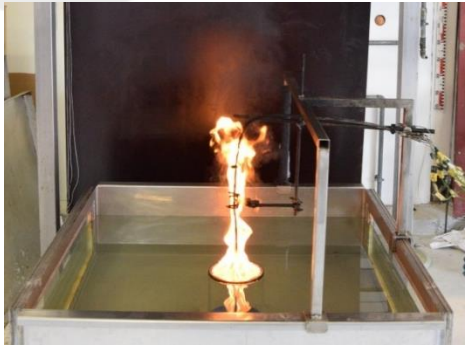
[http://www.byg.dtu.dk/Forskning/Byg\\_Phdskole/Igangvaerende-projekter](http://www.byg.dtu.dk/Forskning/Byg_Phdskole/Igangvaerende-projekter)





# In-situ burning of crude oil in the Arctic

## 1. BURNING BEHAVIOR OF OIL ON WATER



## 2. IGNITION STUDIES OF CRUDE OIL

## 3. INTERMEDIATE SCALE FIELD TESTS

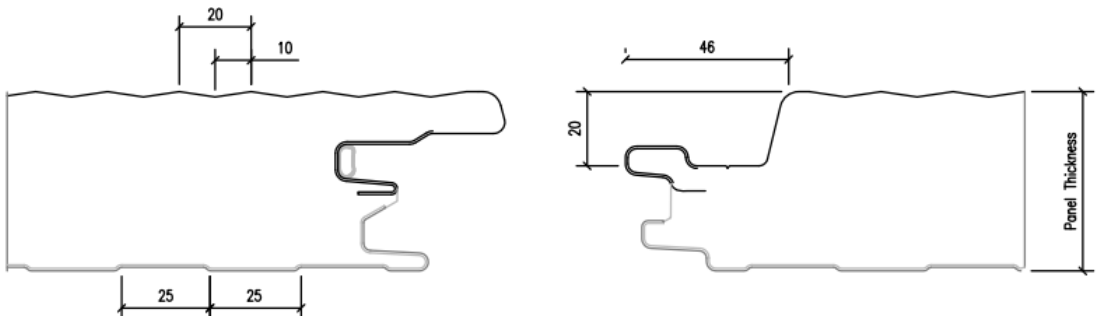
*A 'herder' surfactant is applied to thicken the oil prior to ignition*



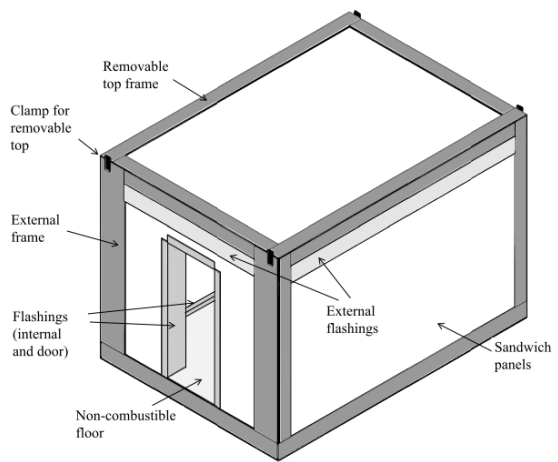


# Assemblies Incorporating Insulation Products

- Stone wool (SW)



- Polyisocyanurate (PIR)





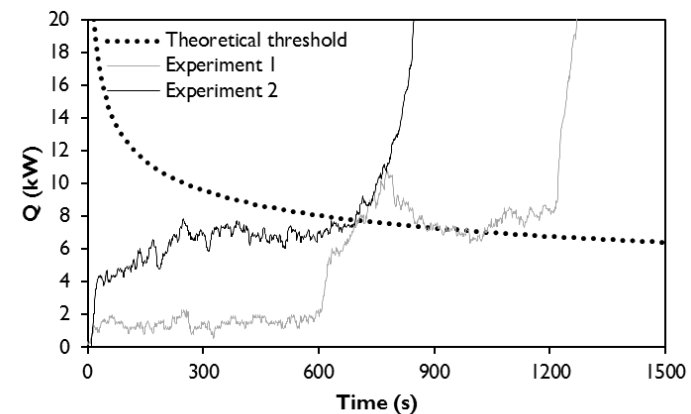
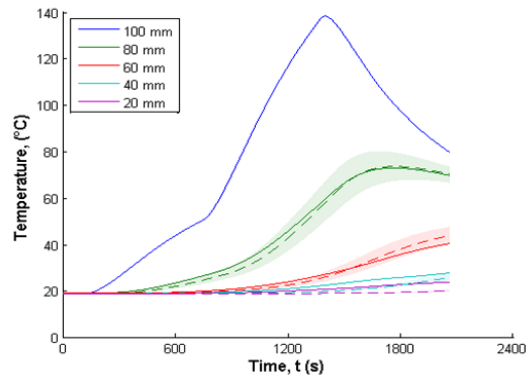


## Assemblies Incorporating Insulation Products

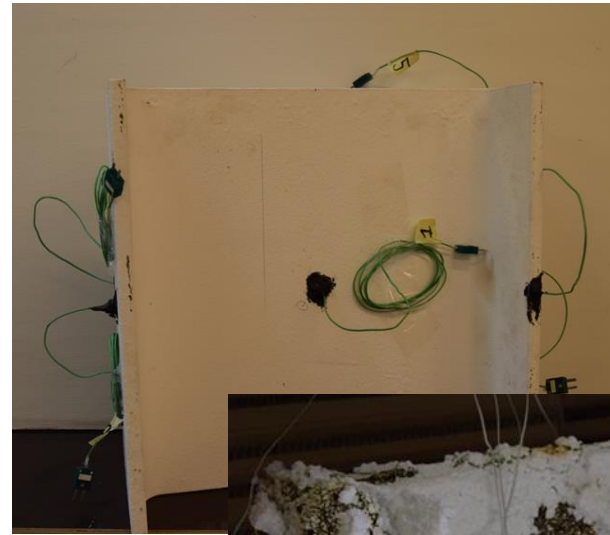
- Experimental study: compartment fire test



- Numerical study: heat transfer model
- Failure criteria: heat release rate



## Fire Lab at DTU-BYG





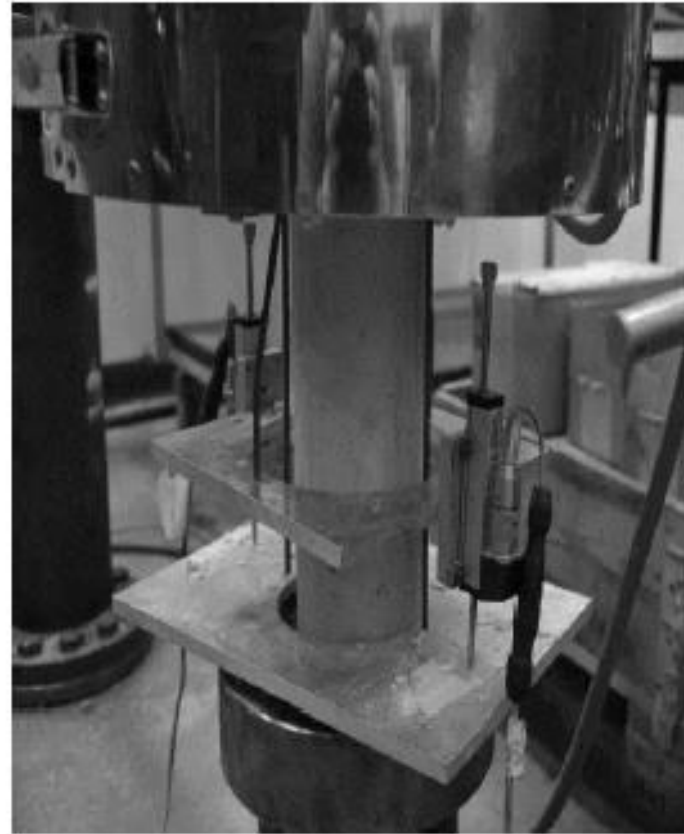
## *Fire Lab at DBI*

*(Danish Institute of Fire and Security Technology)*



*Fire test of superlight floor deck*

## *Structural and concrete Lab at DTU-BYG*





- *PhD SCHOOL AT DTU-BYG: structure, admission, milestones*
- *PhD projects: focus on fire-related projects and lab facilities*
- *FIRE GROUP: shortly about us*



## *DTU-BYG Building*



**DTU Civil Engineering**  
Department of Civil Engineering

Co-funded by the  
Erasmus+ Programme  
of the European Union



## Fire Group

Kristian Hertz  
Professor

Fire Safety, Concrete Structures



Lars Schiøtt Sørensen  
Assoc. Professor, MiB Leader

Fire dynamics, fire safety, risk

Luisa Giuliani  
Assoc. Professor

Structural fire safety



Frank Makert  
Assoc. Professor

Fire risk, fire dynamics

Laurens van Gelderen  
Research assistant

In situ burning oil



Rolff Ripke Leisted  
PhD student

Combustion materials

Anne Dederichs  
SP - DTU part-time Assoc. Prof.

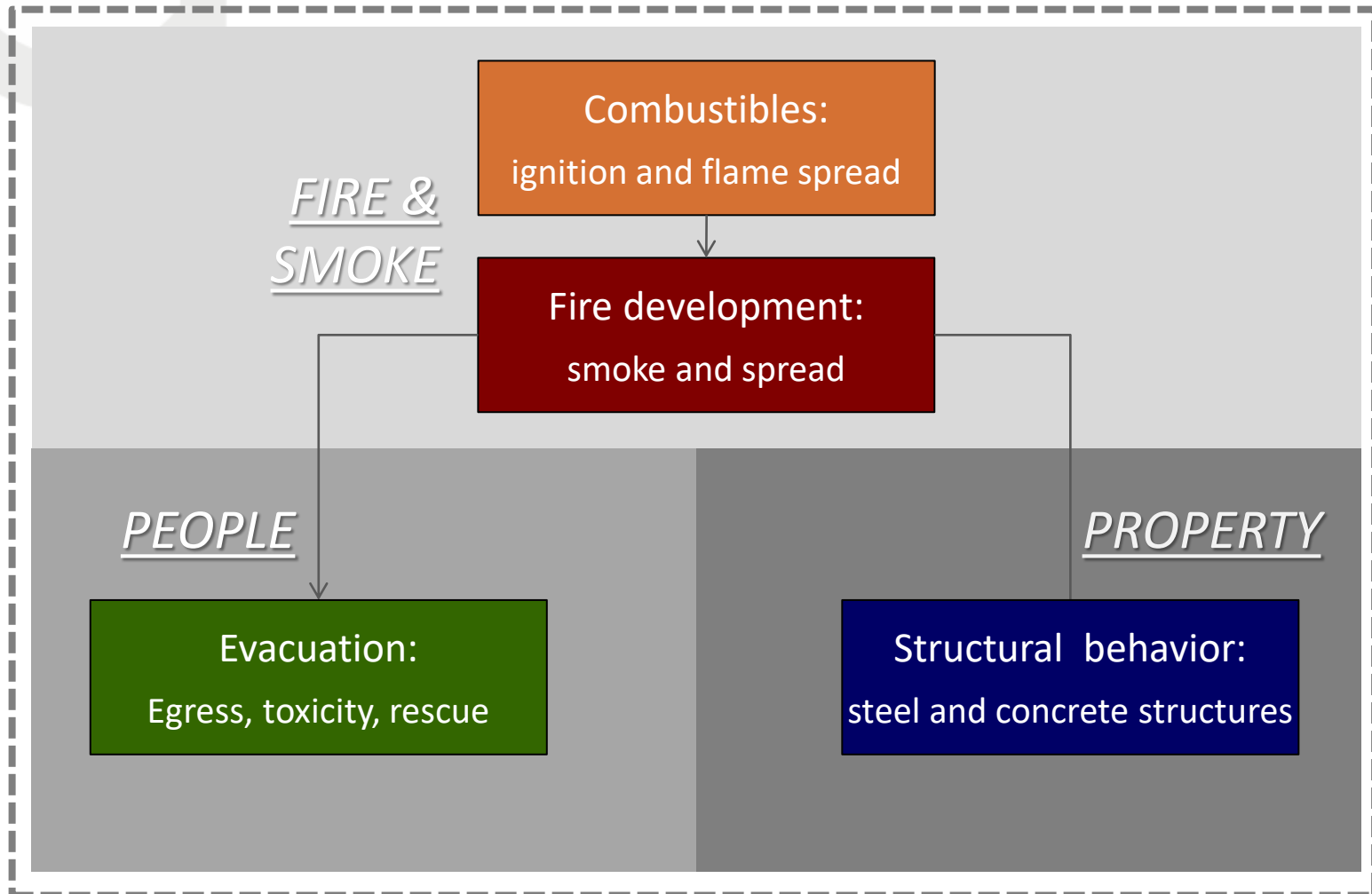
Evacuation, toxicity























Aline Møller  
MiB study secretary

# Research areas in fire safety

## FIRE RISK








## Group competences

MAIN RESEARCH AREAS	 KHZ	 LSS	 FRAM	 LUGI	 AND
FLAME					
FIRE					
STRUCTURE					
EVACUATION					
RISK					



## Group activities

MAIN RESEARCH AREAS	 KHZ	 LSS	 FRAM	 LUGI	 AND
<b>RESEARCH</b> (2 recent pub.)	HCS, JSFE	FR, CHEMOS. SEN.AN. FIRE	Toxic Emission Flame retard. Bio-materials	<i>INT.PAINT, FSJ PC FFE, IJST</i>	TUN.VEN., JFS
<b>TEACHING</b> (A.A. 2016-17)	11023, 11050  11B01	11020, 11022	11022 (Lab) 11B05 11B04, 11B11	11023, 11080  11B01, 11B12	11080  11B25
<b>INNOVATION</b> (industrial collaboration)	BETON EL.  4 PATENTS	OFFSHORE WINDPOWER	HYDR. SAFETY IEA HIA Task37 COST FP1404		
<b>LEGISLATION</b> (public sector consultancy)	BR EN1991-1-2 EN1992-1-2	DS127 TBSi Energist.	DNVGL/ROCK WOOL	EN1991-1-2	DS





Co-funded by the  
Erasmus+ Programme  
of the European Union



# Thank you for your attention

*Luisa Giuliani, Ph.D., P.E. - [lugi@byg.dtu.dk](mailto:lugi@byg.dtu.dk)*

*Civil Engineering Department, Technical University of Denmark*

**Knowledge FOR Resilient soCiEty**