Research in the area of Solid Structures at the University of Luxembourg
Ass.-Prof. Dr.-Ing. Danièle Waldmann-Diederich

Reinforced and prestressed concrete structures “Structures en béton armé et précontraint”

Research group: 2 PostDocs and 6 PhD students
Main research subjects

- Smart buildings
- Smart structures
- Demountable structures
- Circular economy

aligned with the strategy of the Institute of Civil and Environmental Engineering.

Strategy of Laboratory of Solid Structures

- Visibility towards the “outside world”
- Integration of UL into Luxembourg
- Reference point for industry, engineering consultancies and administrations
New innovative concrete formulation
Substitution of cement and traditional aggregates by waste or renewable products aiming at a
- reduction of energy consumption
- reduction of consumption of natural resources and a
- reduction of CO₂ production

Structural analysis of concrete structures
Analytical, numerical and experimental analysis of reinforced concrete or prestressed concrete structures

Computational modelling for concrete
Multi-Physics Numerical Simulation of the chemical, mechanical and thermal material behaviour of concrete
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Dry-stacked modular masonry block
Modular dry-stack masonry block
Chewe Gelen & Waldmann (2016-2020)

- Experimental tests of the load-bearing behaviour
- Numerical analysis
- Design model
- In-situ applications on construction site

Static compression tests on complete walls

Publication in Top 10 Journal:
Impact of the height imperfections of masonry blocks on the load bearing capacity of dry-stack masonry walls
ELSEVIER Construction and Building Materials March 2018