

Project title: **Innovative lightweight cold-formed steel-concrete composite floor system**

Acronym: **LWT-FLOOR** Project ID: **UIP-2020-02-2964**

3rd LWT-FLOOR Project Workshop

Preparation of laboratory tests of large-scale specimens

**Marko Bartolac, Ivan Lukačević, Ivan Ćurković,
Andrea Rajić, Vlaho Žuvelek**

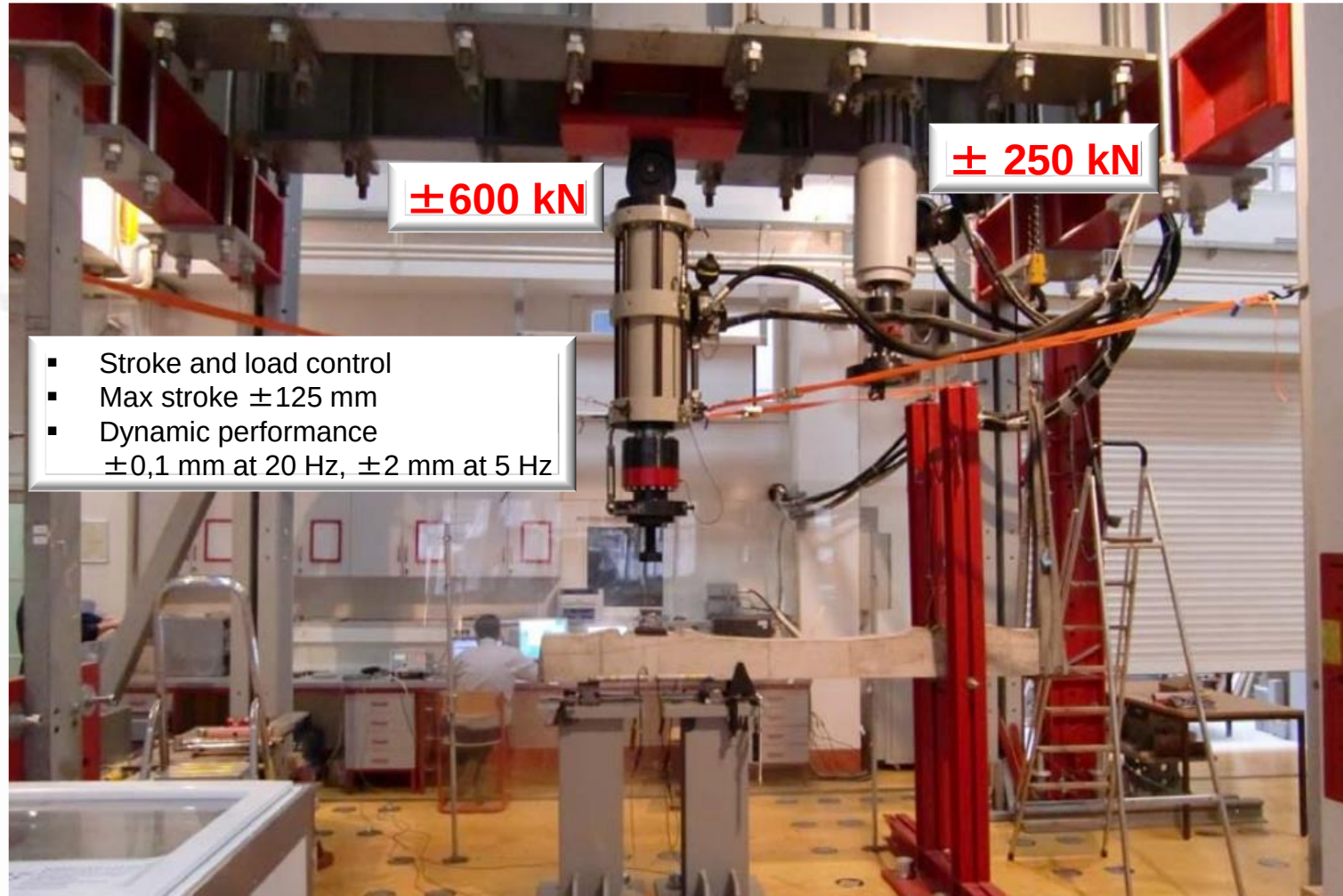


University of Zagreb/Faculty of Civil Engineering

<http://www.grad.unizg.hr/lwtfloor>

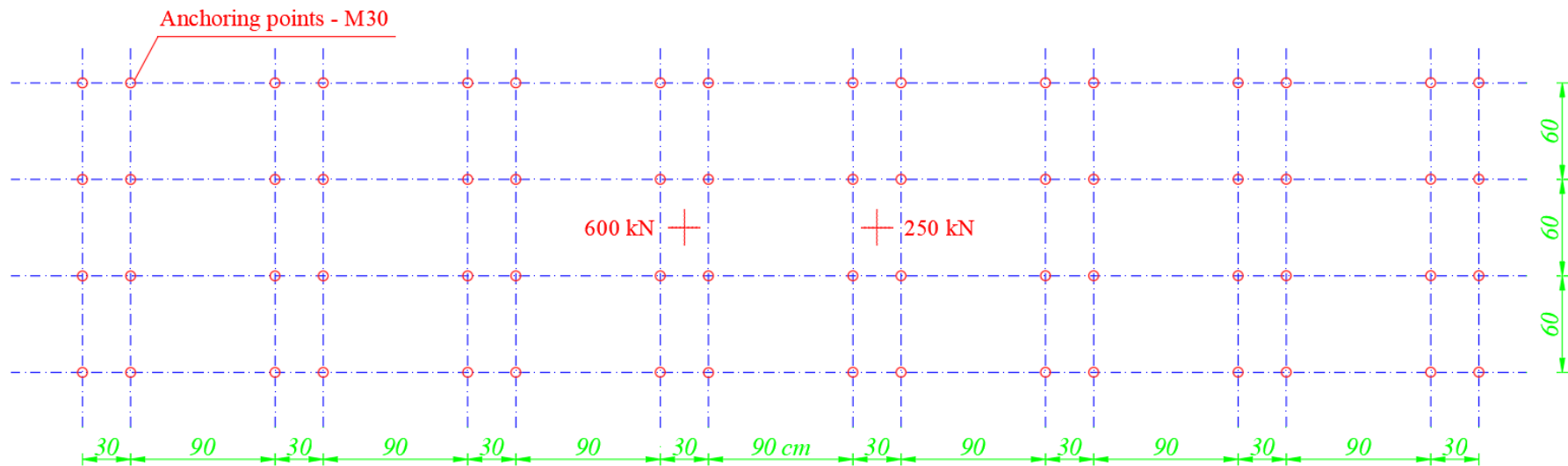
Dynamic testing machine

- Basic machine specs...



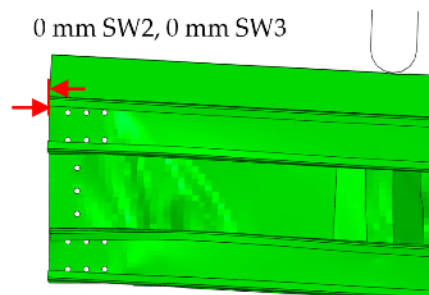
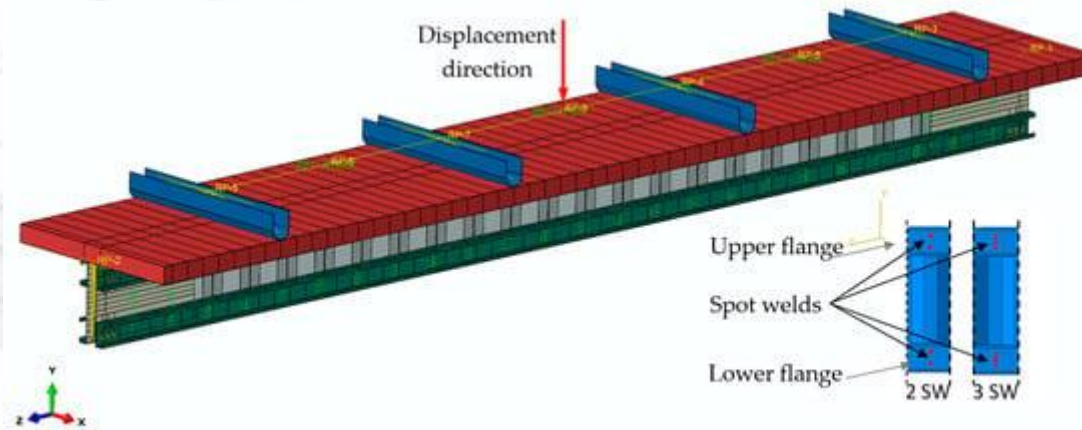
Dynamic testing machine

- Floor anchoring points
 - Limitations for specimen dimensions (this is not a „happy” raster)

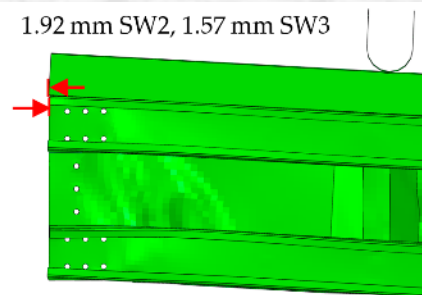


Requirements

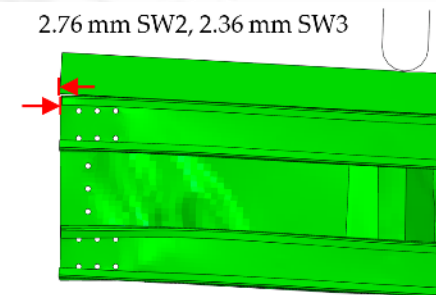
- Preliminary FE analyses
- Expected piston forces up to 300 kN



(a)



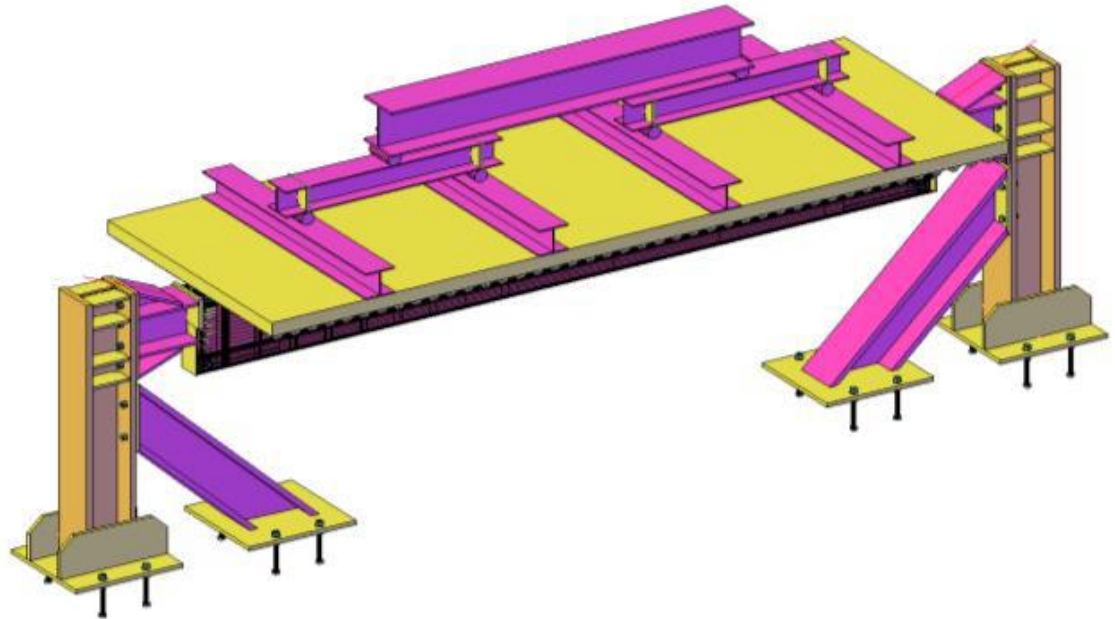
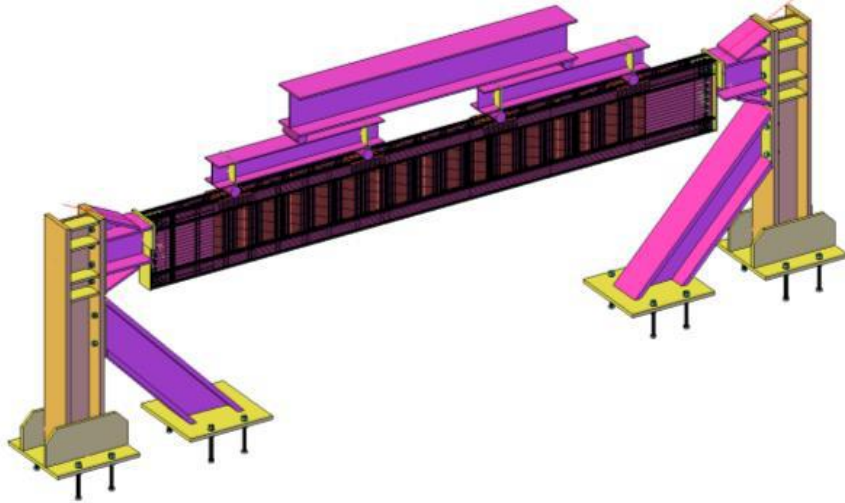
(b)



(c)

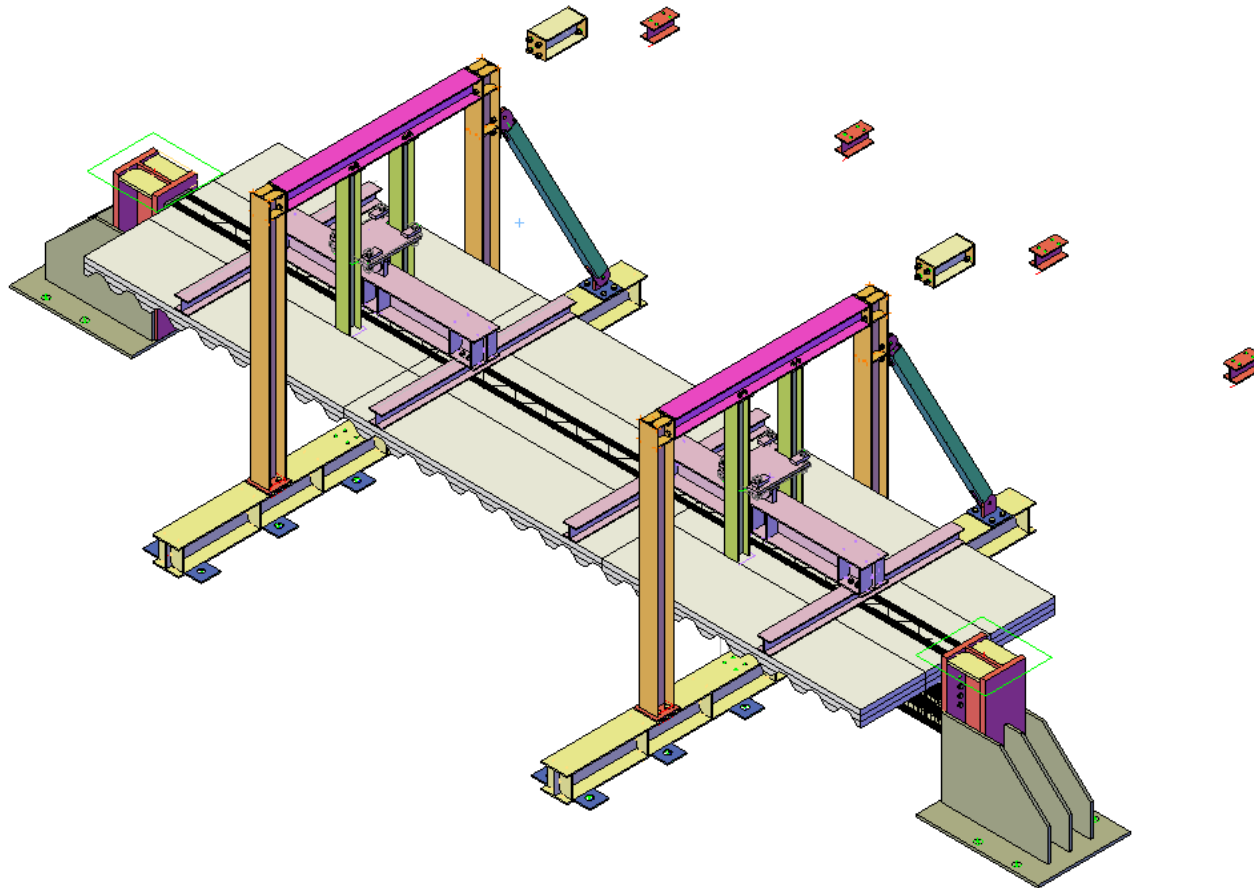
Solutions

- Test rig: initial proposal

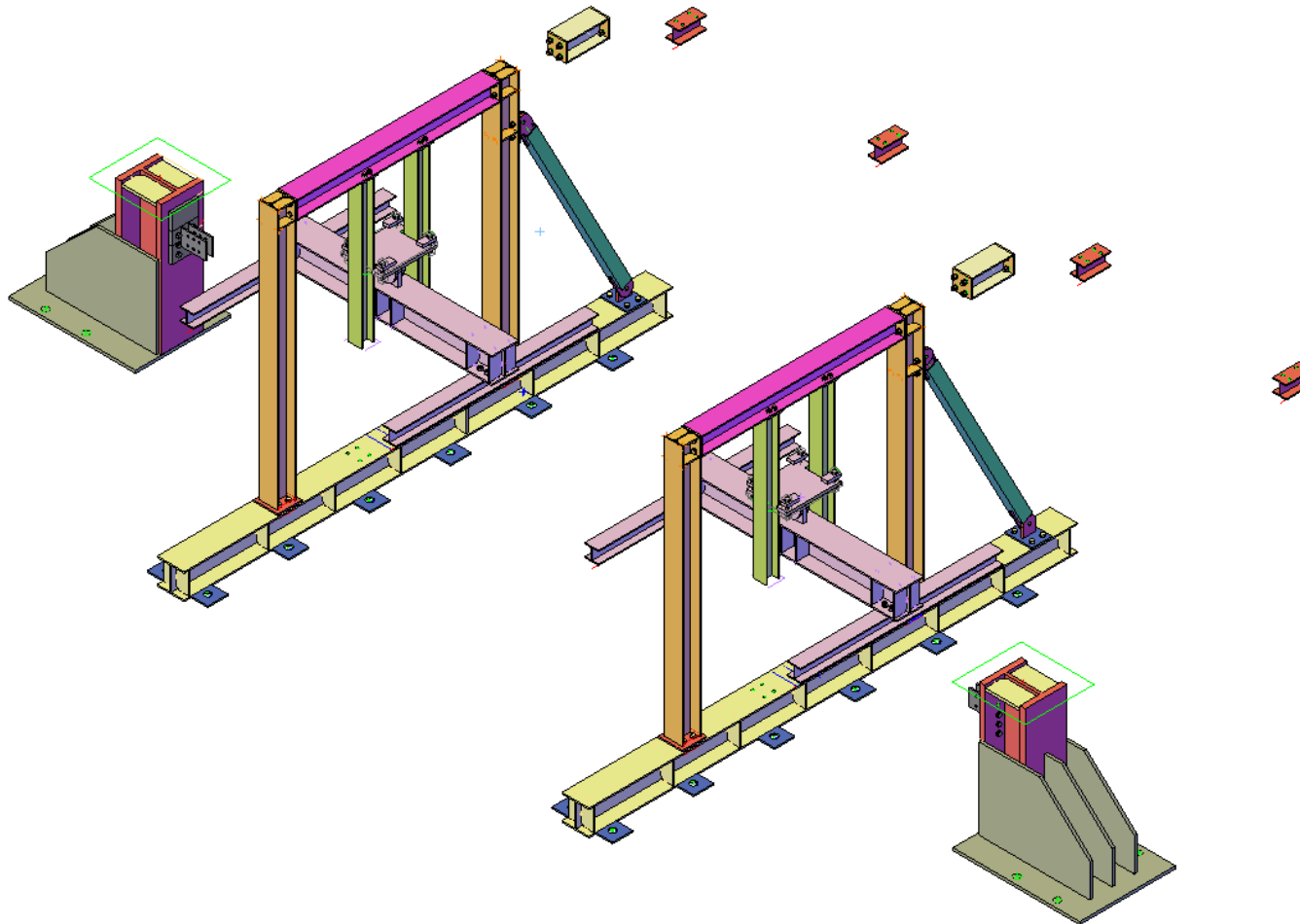


Solutions

- Test rig: final solution



- Test rig: final solution



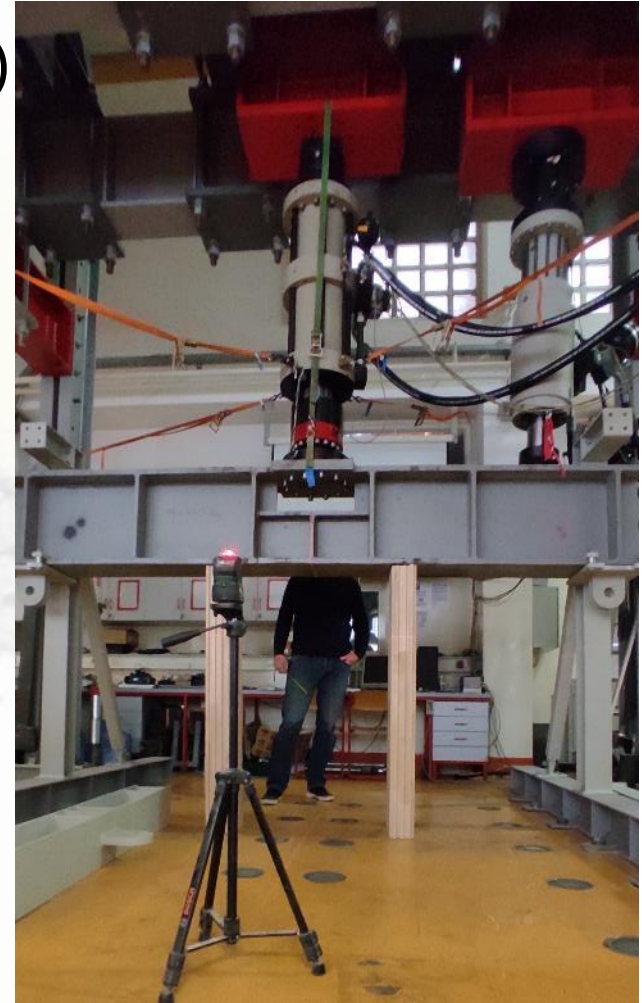
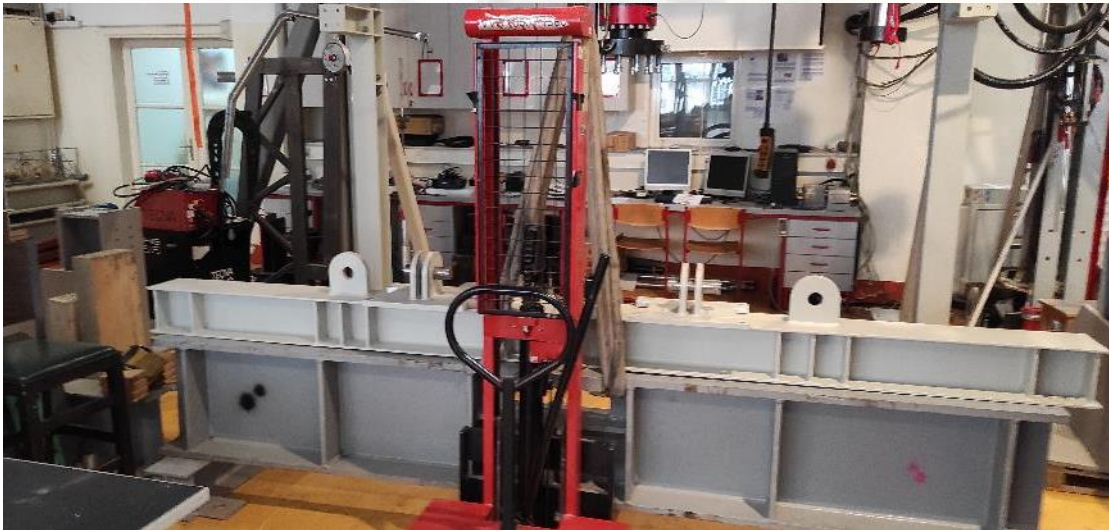
Requirements

- Specimens length –steel beam 6 m & concrete slab 6 m



Solutions

- Test rig assembling
 - Forklift, crane (min.), muscles (max)



Pretesting steps

- Specimens assembling



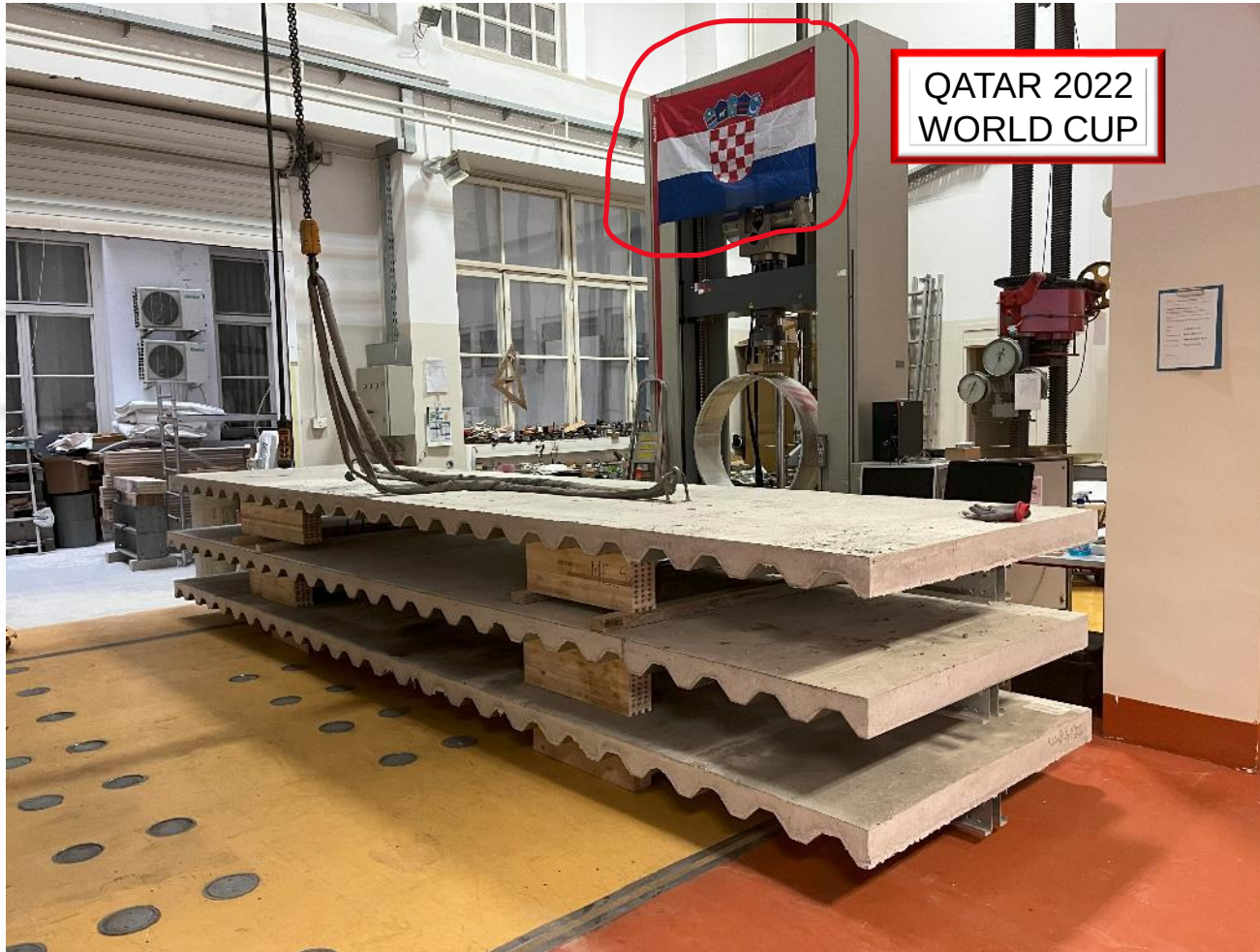
Pretesting steps

- Specimens assembling



Pretesting steps

- Specimens assembling



Pretesting steps

- Specimens assembling



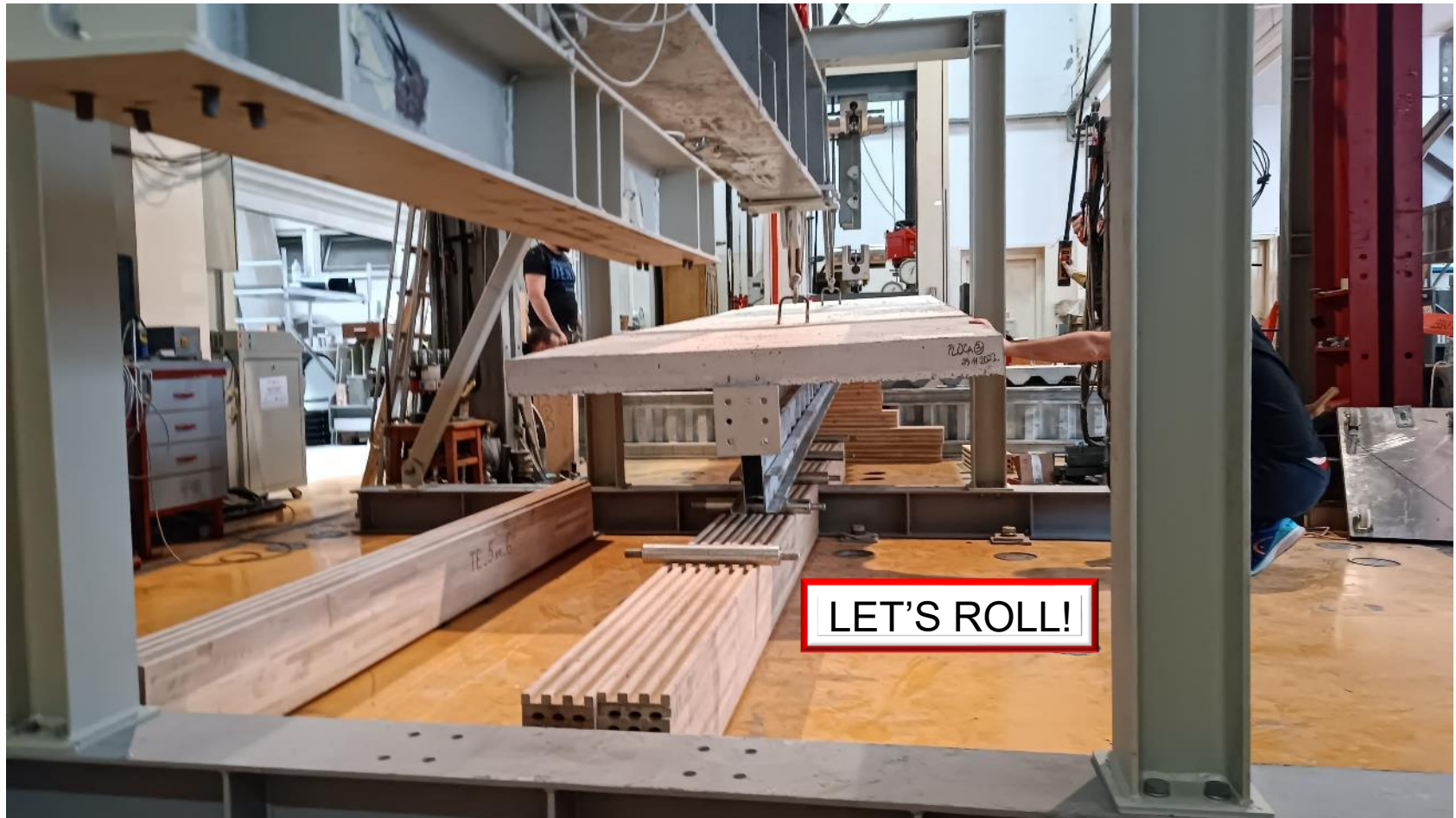
Pretesting steps

- Positioning of specimens in test rig



Pretesting steps

- Positioning of specimens in test rig



Pretesting steps

- Positioning of specimens in test rig



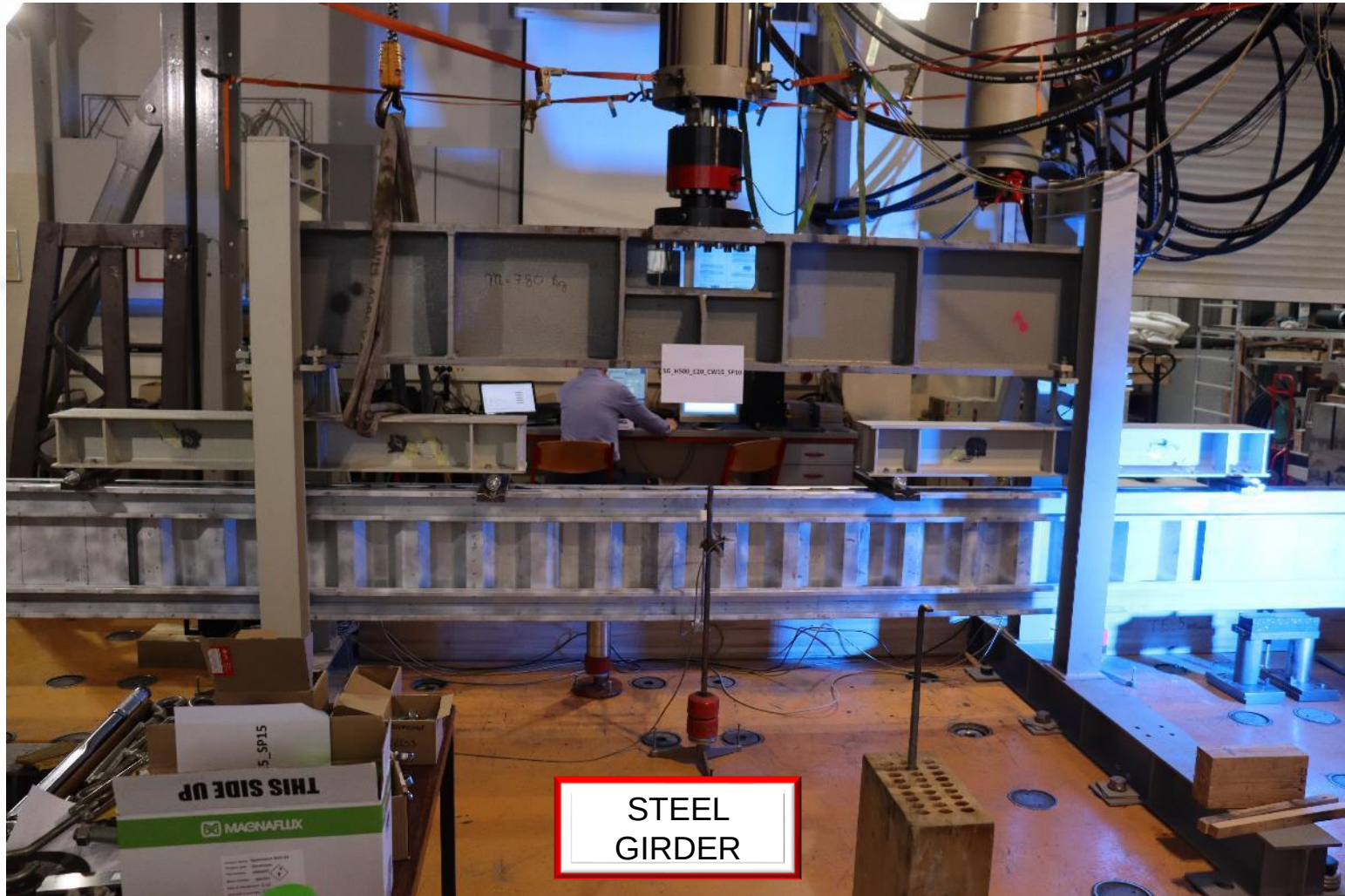
Pretesting steps

- Positioning of specimens in test rig



Pretesting steps

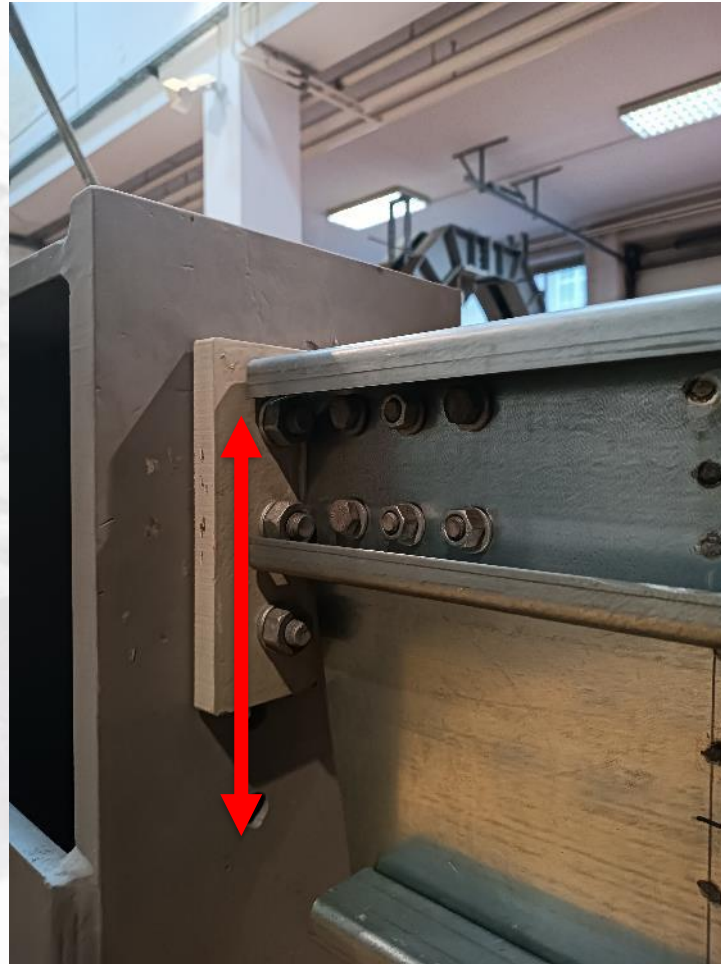
- Positioning of specimens in test rig



Testing details

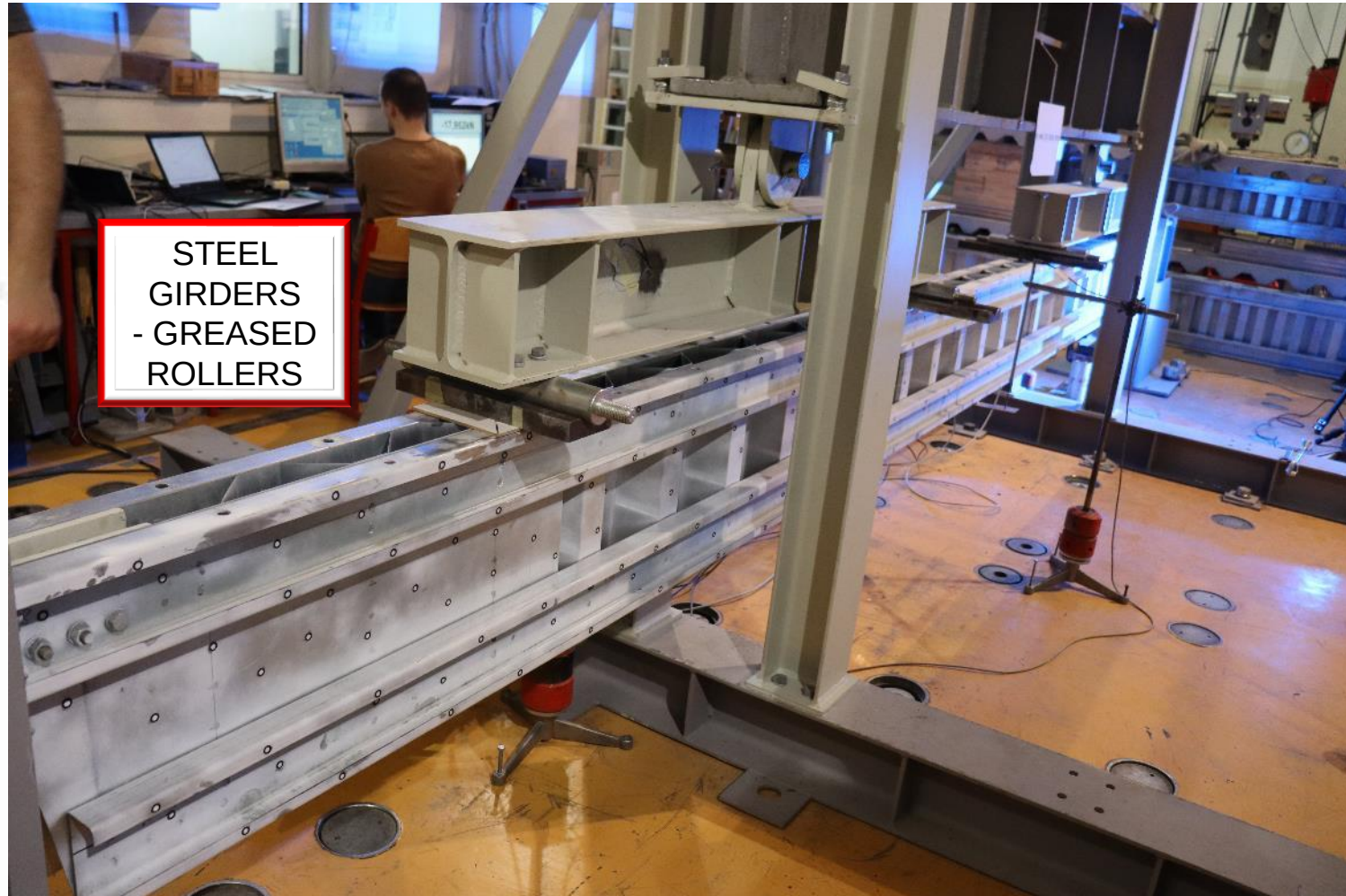
- End supports

VARIABLE
SPECIMEN
HEIGHTS



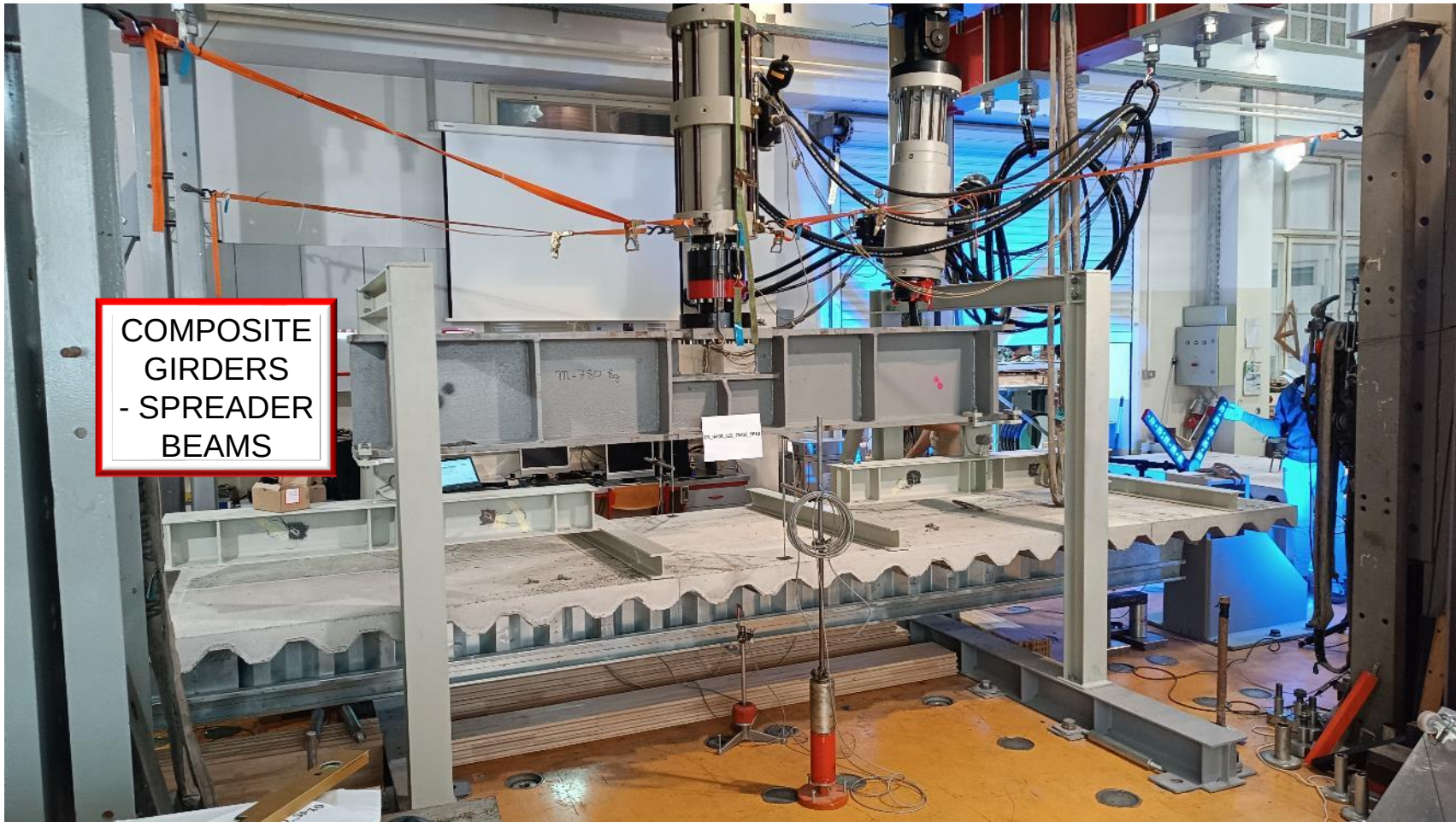
Testing details

- Load introduction



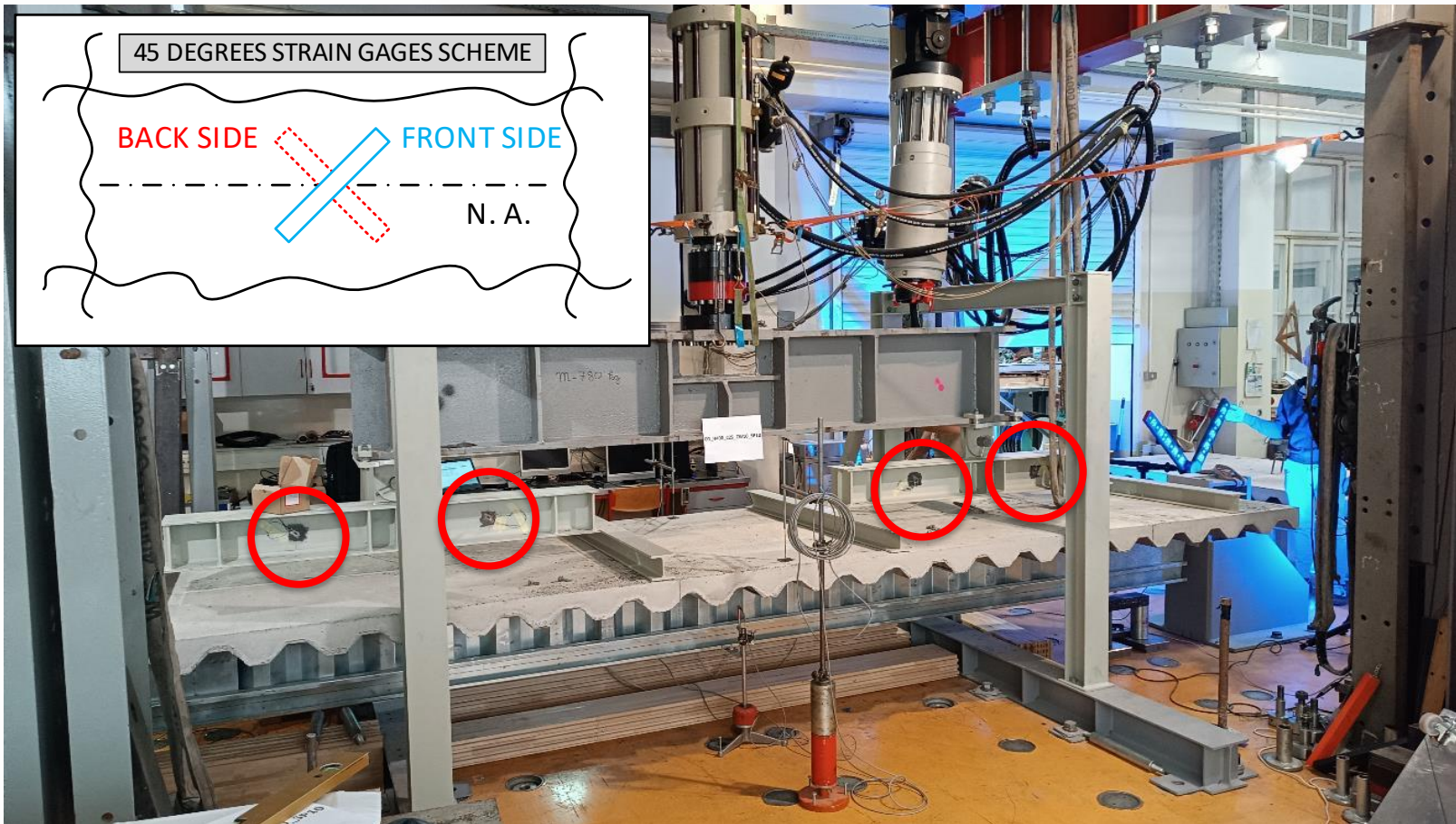
Testing details

- Load introduction

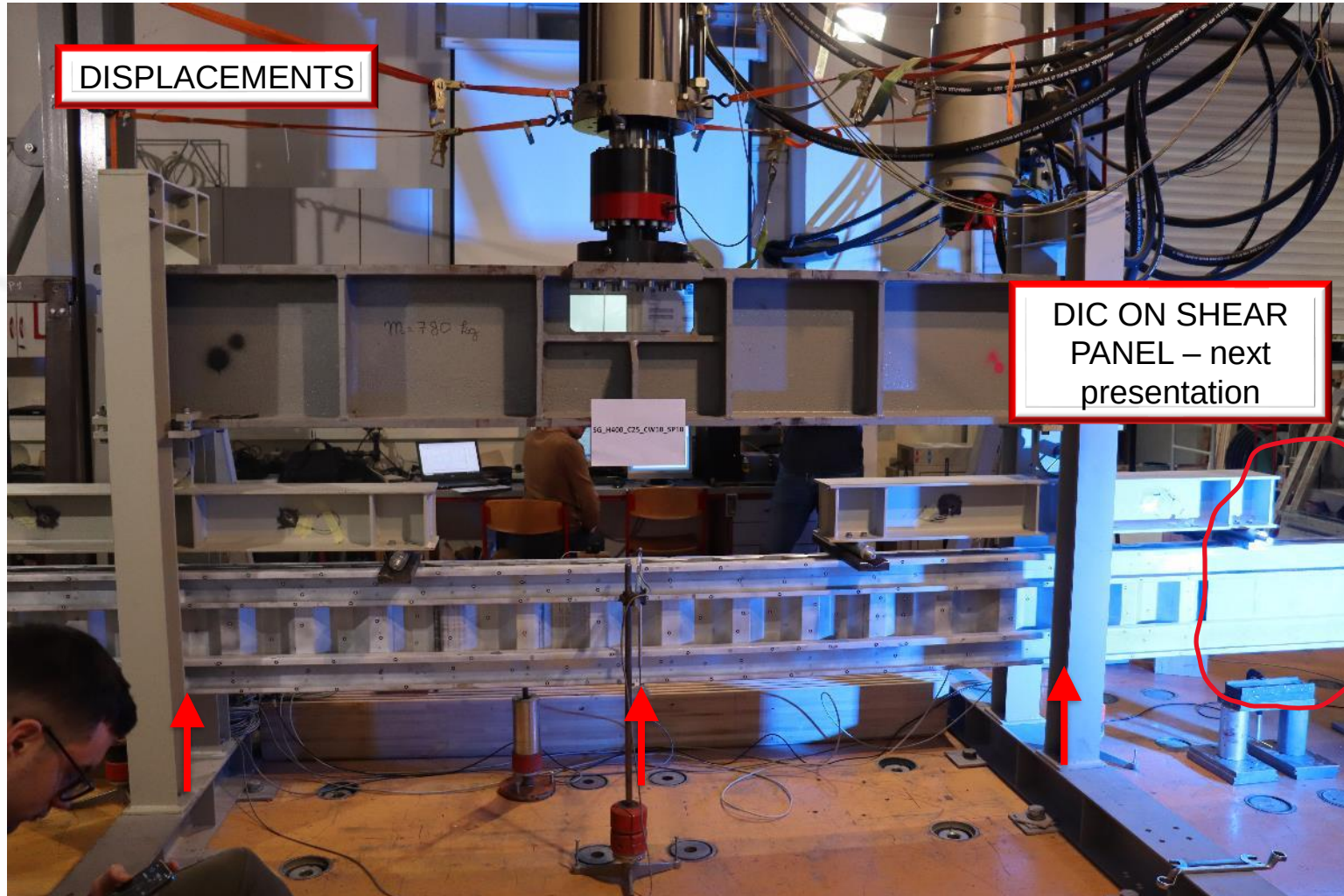


COMPOSITE
GIRDERS
- SPREADER
BEAMS

- Control measurement of shear stresses – variation of load transfer during testing

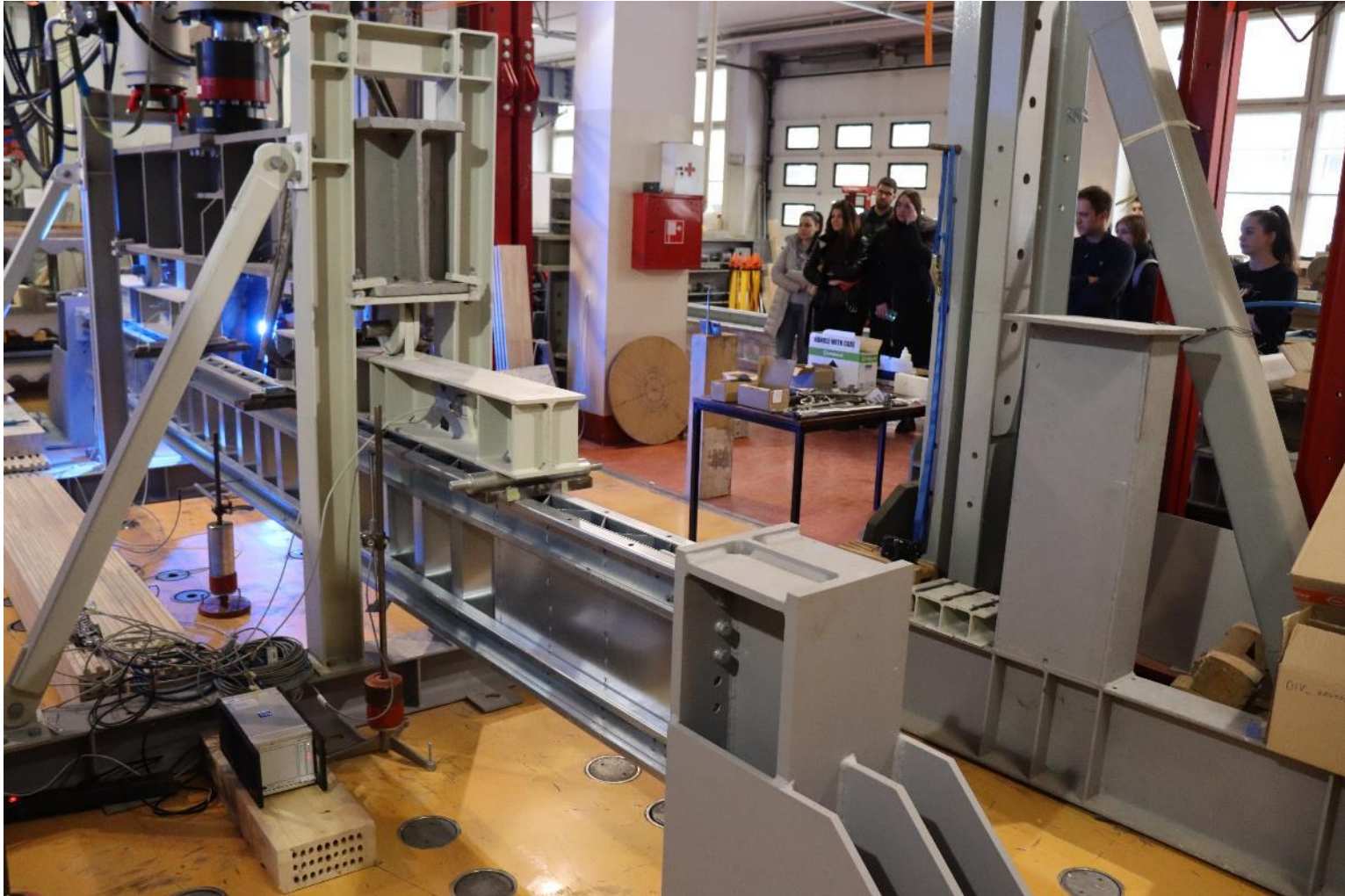


- Instrumentation – steel girders

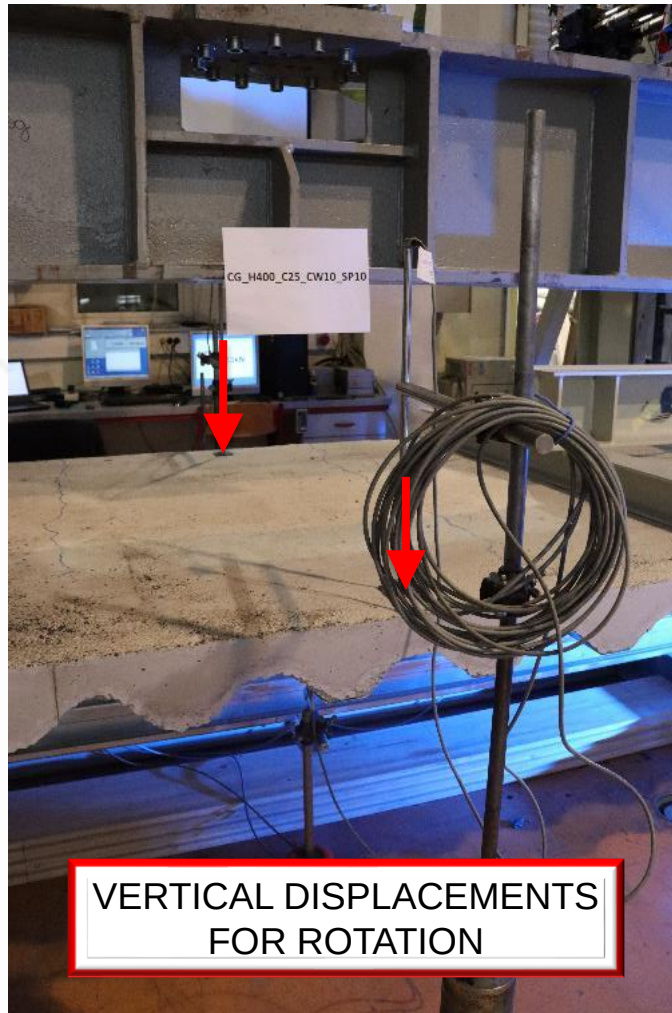


Instrumentation

- Instrumentation – steel girders



- Instrumentation – composite girders (additional to s. girders)



Instrumentation

- Instrumentation – composite girders



THANK YOU FOR YOUR ATTENTION!

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