



# Facilities and capabilities of AMADE structures lab

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## Capabilities

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# Facilities - General equipment

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## Reinforced concrete strong floor

- ▣ 28 m<sup>2</sup>.
- ▣ Connectors every 50 cm.

## Steel reaction wall connected to the strong floor

- ▣ For incorporating the actuators.

## Large variety of acquisition equipment

- ▣ LVDTs, transducers, inclinometers,...

## Climatic chamber (Itisa)

- ▣ Capacity of 17 m<sup>3</sup>.
- ▣ Working temperatures from -10°C to 50°C.



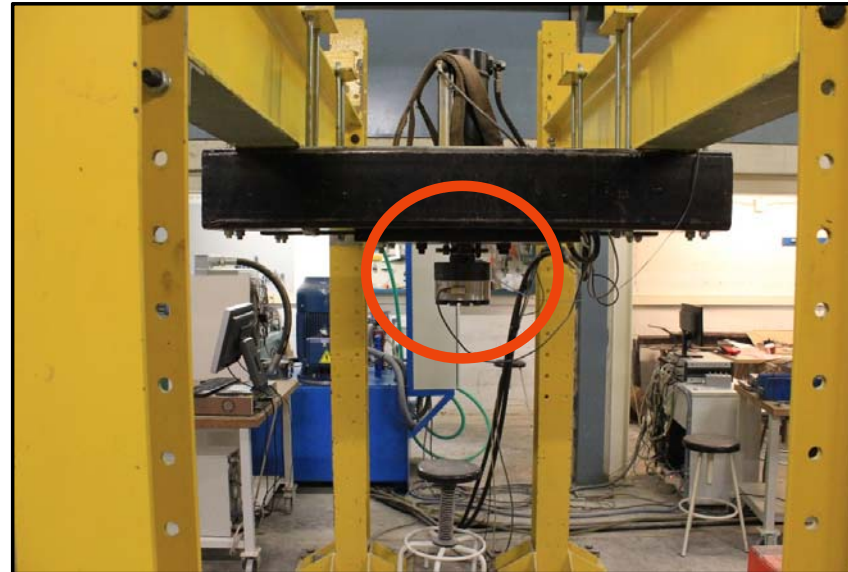


## Facilities – Equipment for static tests

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## Universal servohydraulic actuator (Servosis)

- ▣ Capacity of 300 kN.
- ▣ 200 mm stroke.
- ▣ Originally designed for static tests, but recently updated for working at higher speeds.



# Universal hydraulic testing machine (Servosis)

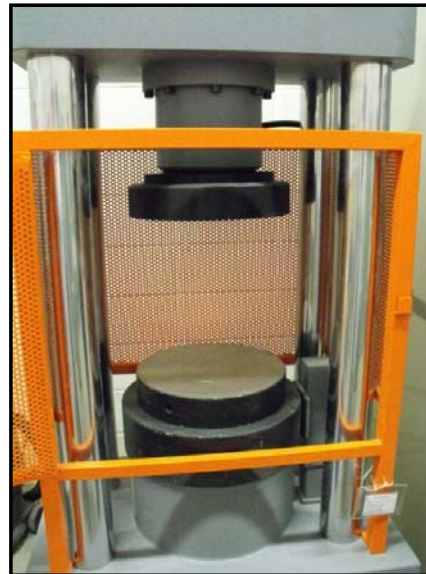
- ▣ Capacity of 600 kN.
- ▣ 900 mm free distance between grips.





# Compression hydraulic testing machine (Servosis)

- ▣ Capacity of 200 kN.
- ▣ 300 mm free distance between grips





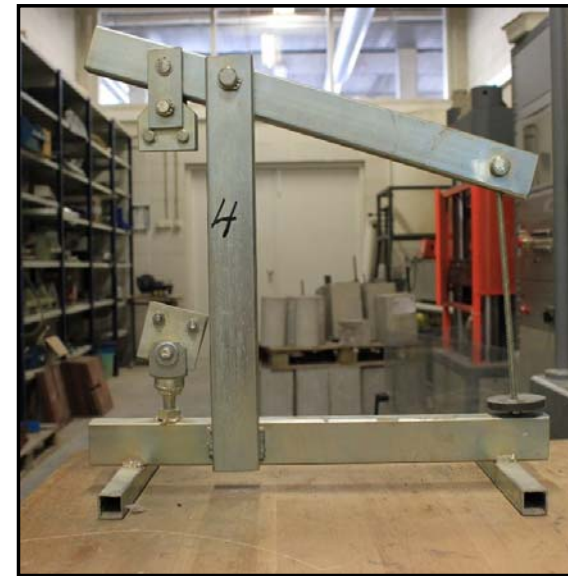
## Facilities – Equipment for long-term tests

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## Tensile testing frames for LT Pull-Out tests



## Tensile testing frames for LT resin characterization



## Tensile testing frames for LT load



## Creep testing frames for concrete characterization



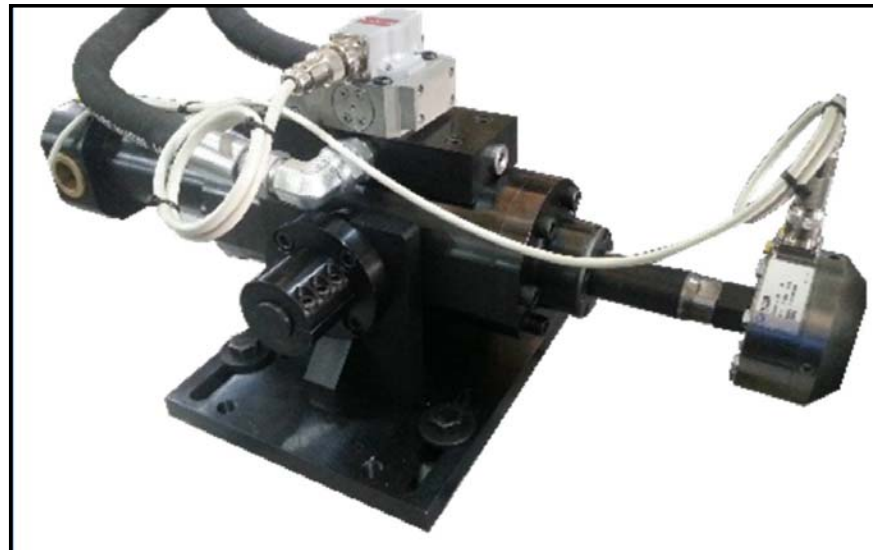


## Facilities – Equipment for dynamic tests

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## Universal servohydraulic actuator (Servosis)

- ▣ Capacity of 100 kN.
- ▣ 200 mm stroke.
- ▣ Specially designed for dynamic tests.



## Hydraulic group (Servosis)

- ▣ 60 l/min flow.
- ▣ Up to 50 Hz (with a limit on kN/s)





## Capabilities – Static tests

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# Characterization tests

Tensile strength of resins and FRP bars



Compressive strength of concrete



# Pull-out tests (internal and external reinforcement)

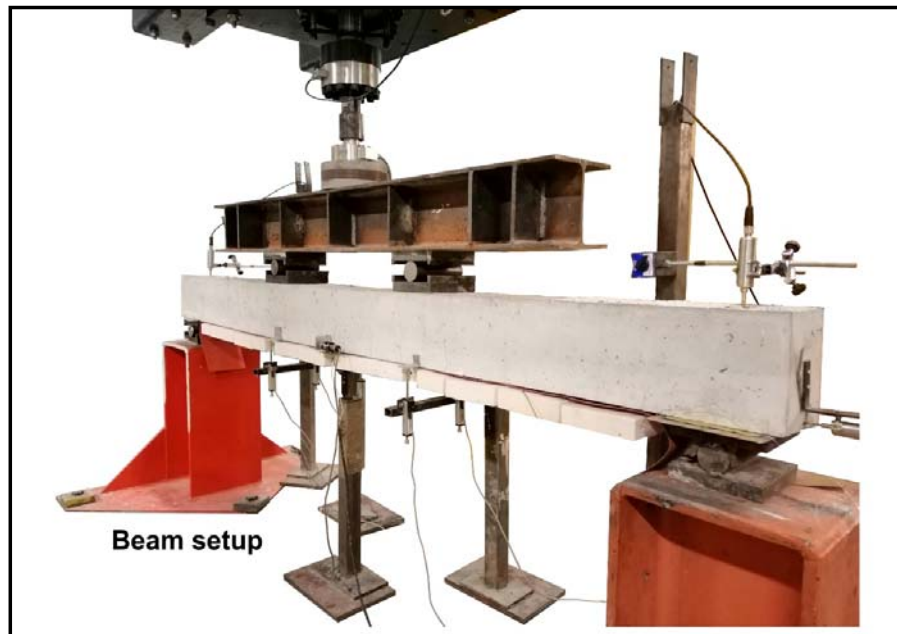
Internal



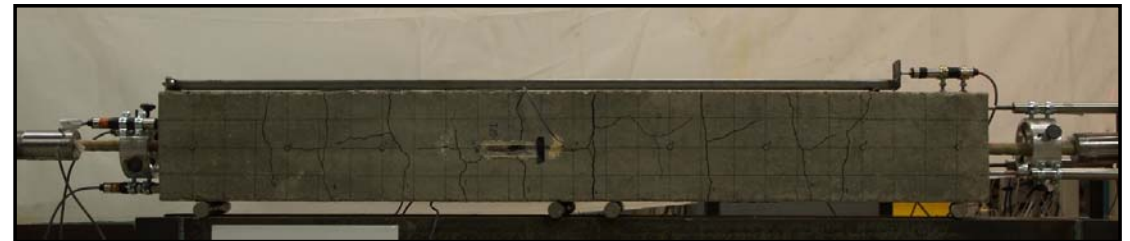
NSM and EBR



## Flexural tests



## Tensile tests on RC tensile elements



# Static cyclic test of a Buckling-Restrained-Brace (Seismic design with energy dissipative devices)





# Capabilities – Long-term tests

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# LT pull-out tests

NSM



EBR



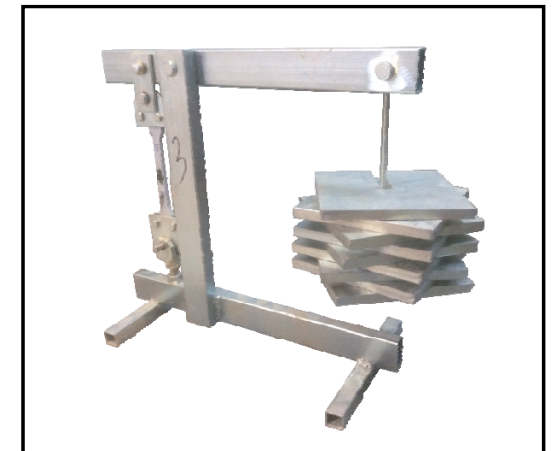
## LT flexural tests



## LT tensile tests on RC tensile elements



## LT tensile tests on resins



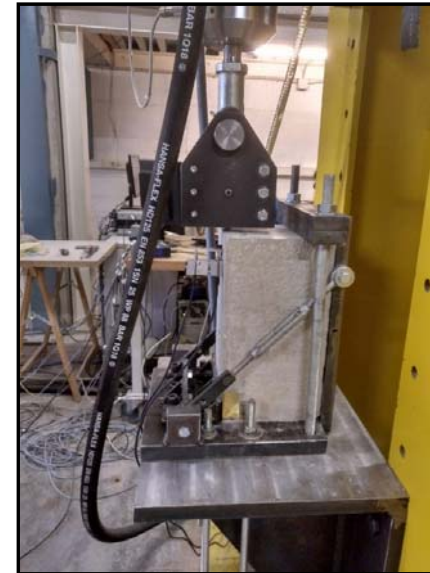
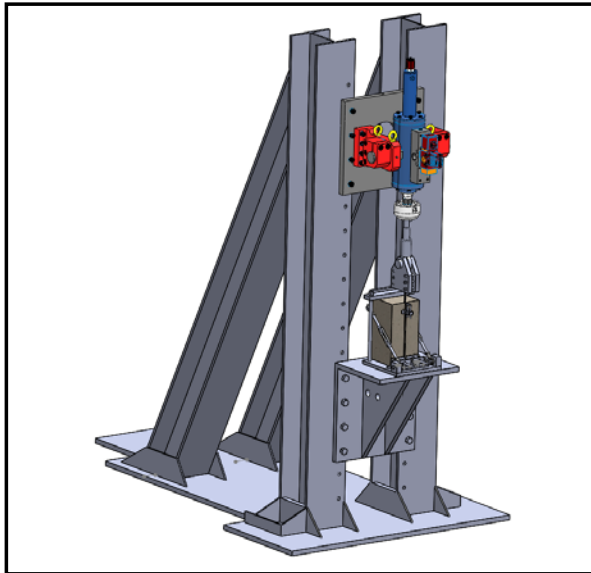


## Capabilities – Dynamic tests

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# Fatigue tests (starting)





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