Installation technique et scientifique

ExperDYN testing platform: High-capacity High-speed-jack

Dynamic testing of materials and reduced-scale structures

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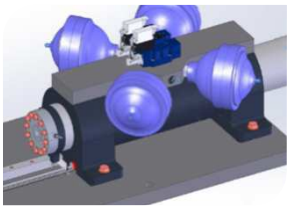


Description

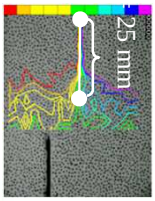
This high-capacity (300 kN) high-speed-jack testing facility allows to characterize the dynamic response of materials (concretes, fibre-reinforced concretes, rocks, composites, polymers) and reduced-scale structures (assemblies, reinforced concrete structures...) under different kinds loads (tension, compression, shear, bending, fracture…) considering a large range of speed (0.1 to 6 m/s) and strain-rates (up to 100 s^{-1}). The damage modes are analysed by ultra-high speed imaging and compared to numerical predictions (FEM or DEM codes).

Description of the testing facility: Double-acting hydraulic jack equipped with 13 accumulators and 3 high-speed servo-valves

Technical characteristics:
Useful stroke: 400 mm
Acceleration stroke: 50-100 mm
Speed range: 0.1 to 6 m/s
Load capacity: 300 kN
Mass of the jack: 850 Kg
Force sensors: 125 / 500 kN
Bench length: 4 m

Some examples of use

Dynamic cracking testing



Dynamic shear testing

Dynamic tensile testing

Sub-scale structure testing

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