The Bologna Integration Hall of MORFEO: A New Facility to Assemble ELT-Class Instrumentation

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The Bologna Integration Hall is pivotal in the development and validation of the MORFEO optical system, an essential component of the Extremely Large Telescope (ELT). MORFEO aims to revolutionize astronomical imaging by relaying the ELT's focal plane to MICADO using a blend of static and deformable optics. The alignment and recollimation of MORFEO, involving complex 1-meter free-form, deformable, and spherical mirrors, require specialized techniques and tools, such as Coordinate Measurement Machines (CMMs) and Laser Trackers, to manage thermal variations at the observatory. The instrumentation available in the integration room and in the supporting electronic and optical laboratories was renewed through the purchase of new instruments, financed under the PNRR project STILES, Notice No. 3264 28-12-2021 PNRR M4C2 PNRR Reference IR0000034 STILES Investment 3.1 CUP C33C22000640006

construction site tools

- overhead crane (3 ton)
- hydraulic crane (2 ton)
- n.3 scissor lift (11.8m, 8.2m lifting height)
- picking elevator (8.0m)
- electric pallet jack (3 ton)
- forklift (4 ton 6m lifting height)
- pallet jack with scale (2 ton)
- External storage with two ISO 20' containers and a tent

The Bologna Integration Hall, a building of 17.4 x 11.9 x 11.9h m
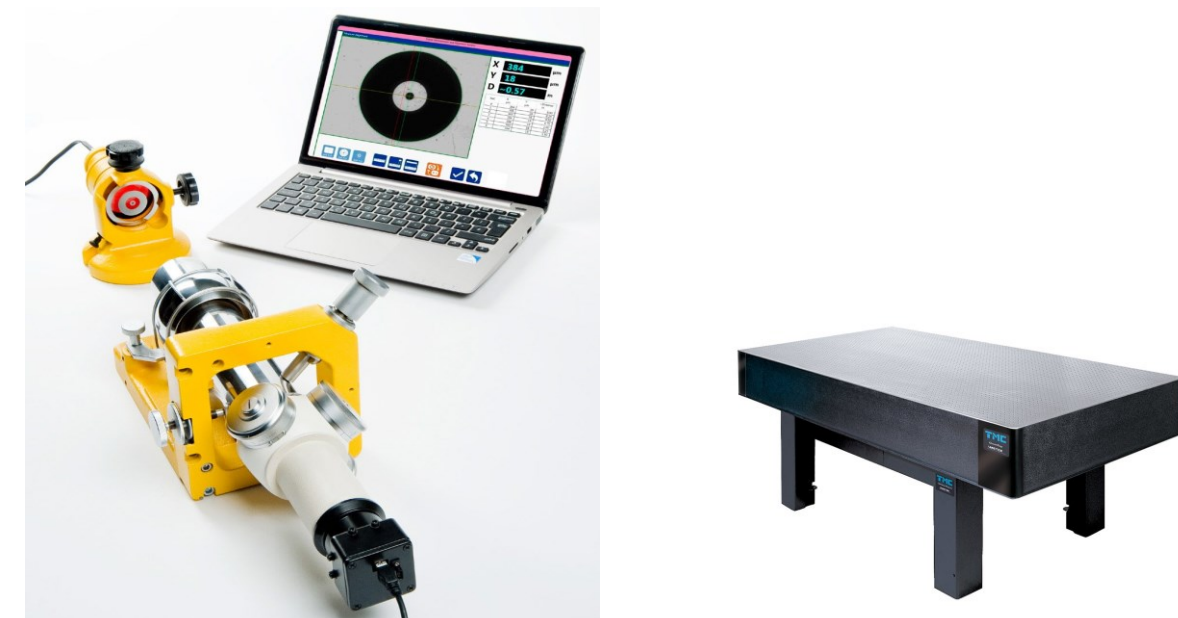
Optical equipment

- n.2 optical tables TMC 2000x1000x300mm
- Micro Alignment Telescope
- optomechanical components
- Cameras
- Ambient T/H monitor system
- Laser tracker

first floor

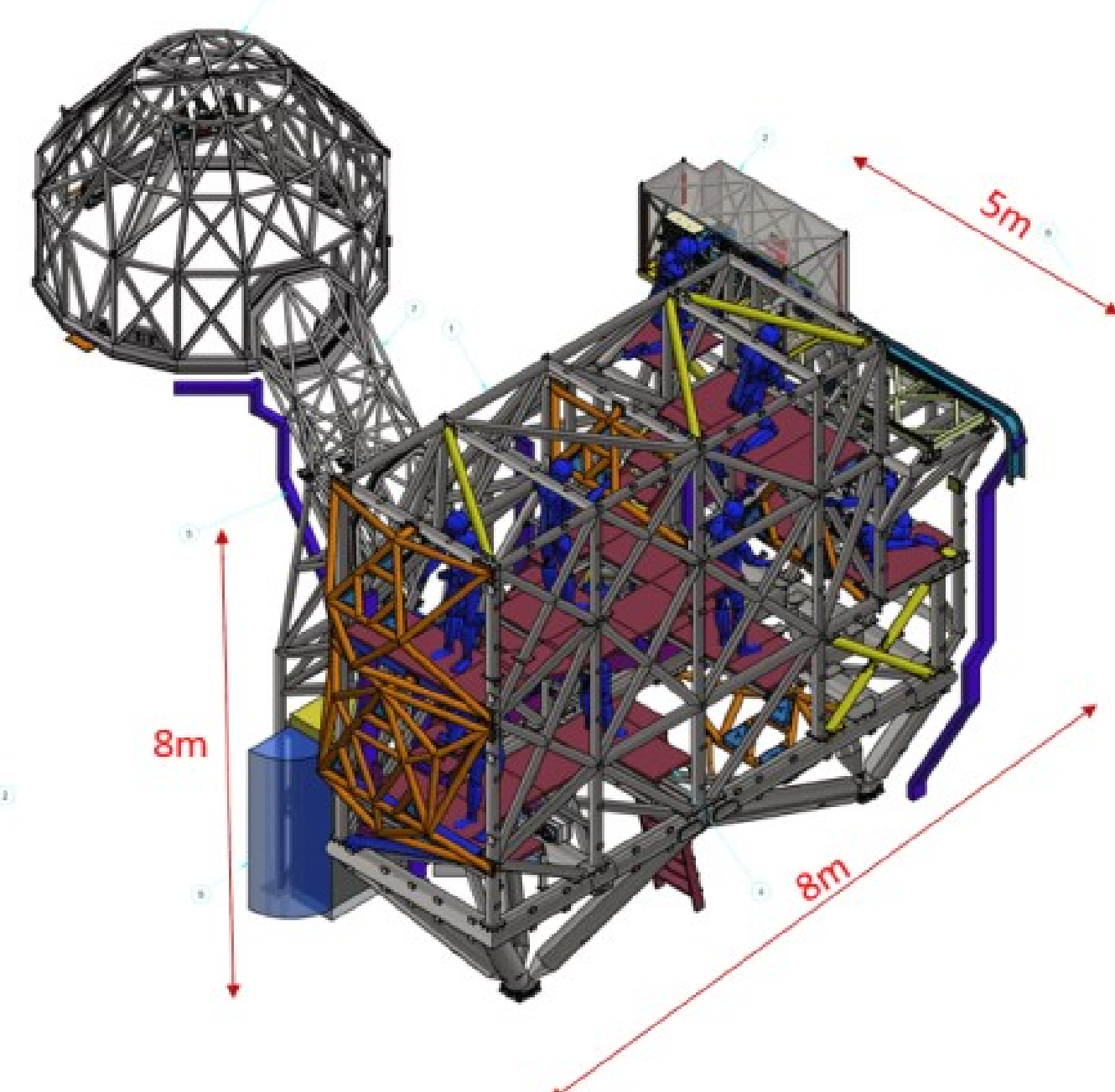ground floor

The optical laboratory

Site equipment

- Cooling Power Unit cooling power 147 kW (thermal 174 kW)
- Water cooling power 107kW, temperature 7/12C, 20 cbm/h
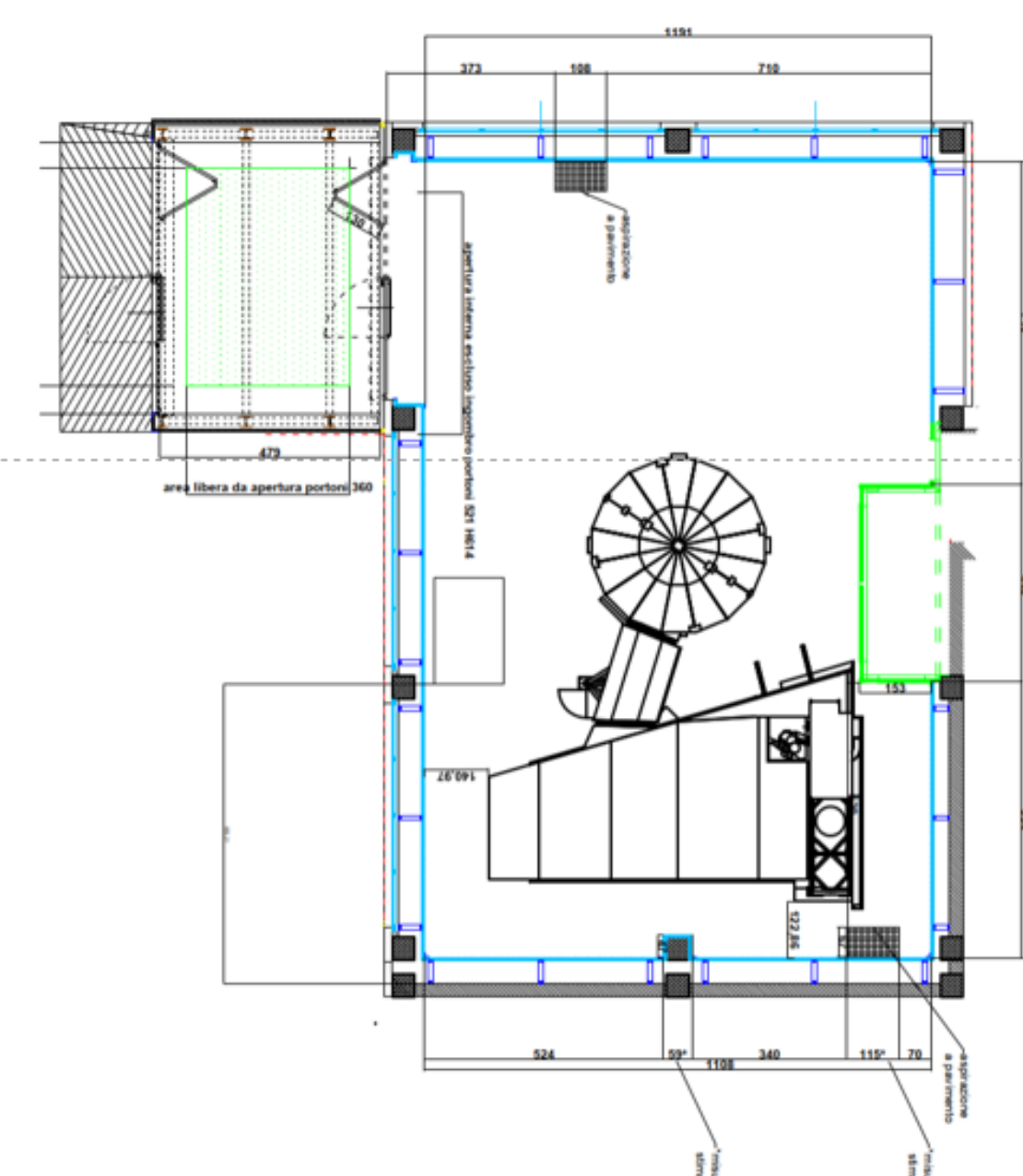- Ups Liebert EXL S1 1000kVA
- Air conditioning

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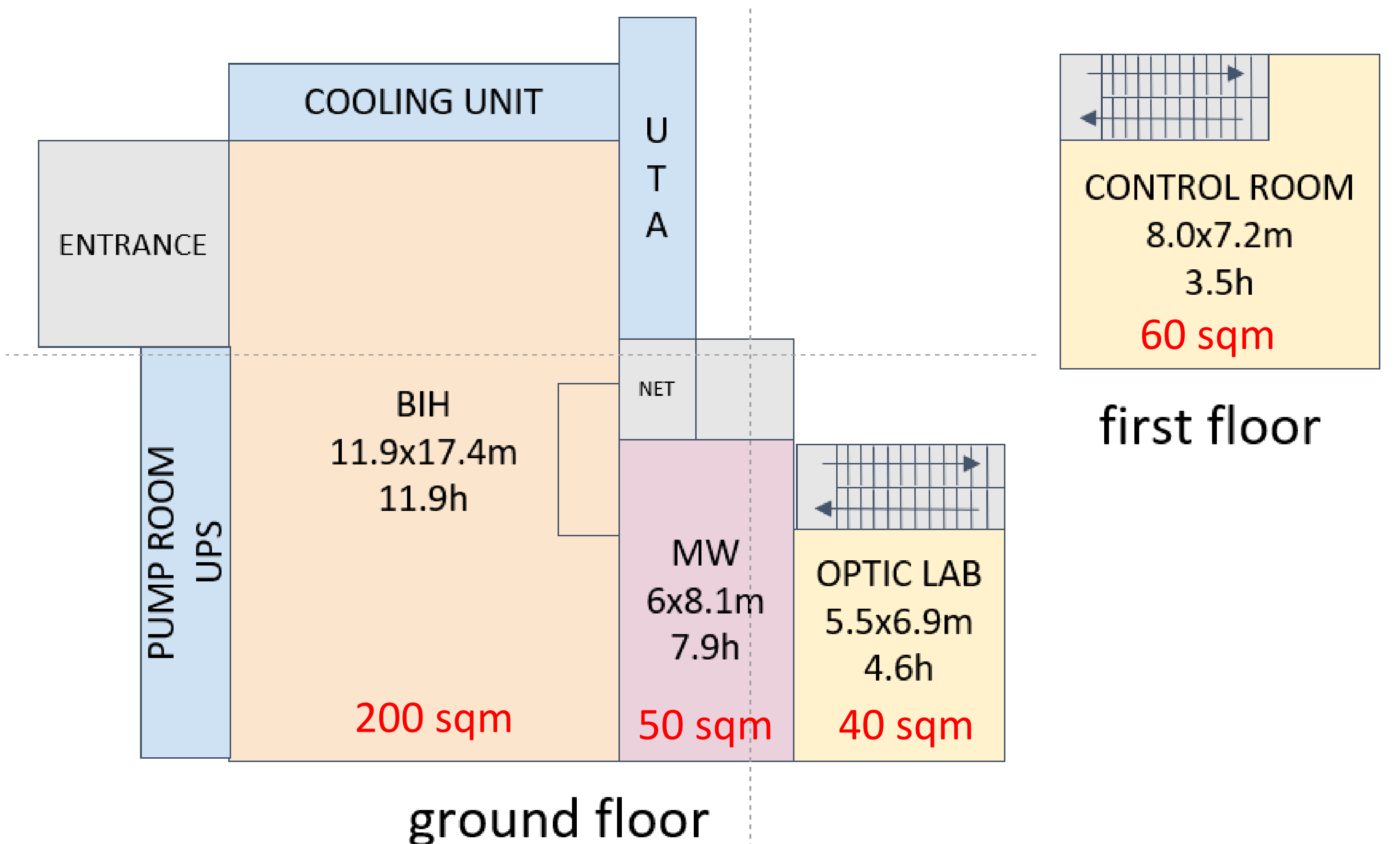
Morfeo mechanical structure

Morfeo inside the integration hall