Science & Technology Facilities Council

MOP009 Status of the RAL Front End Test Stand

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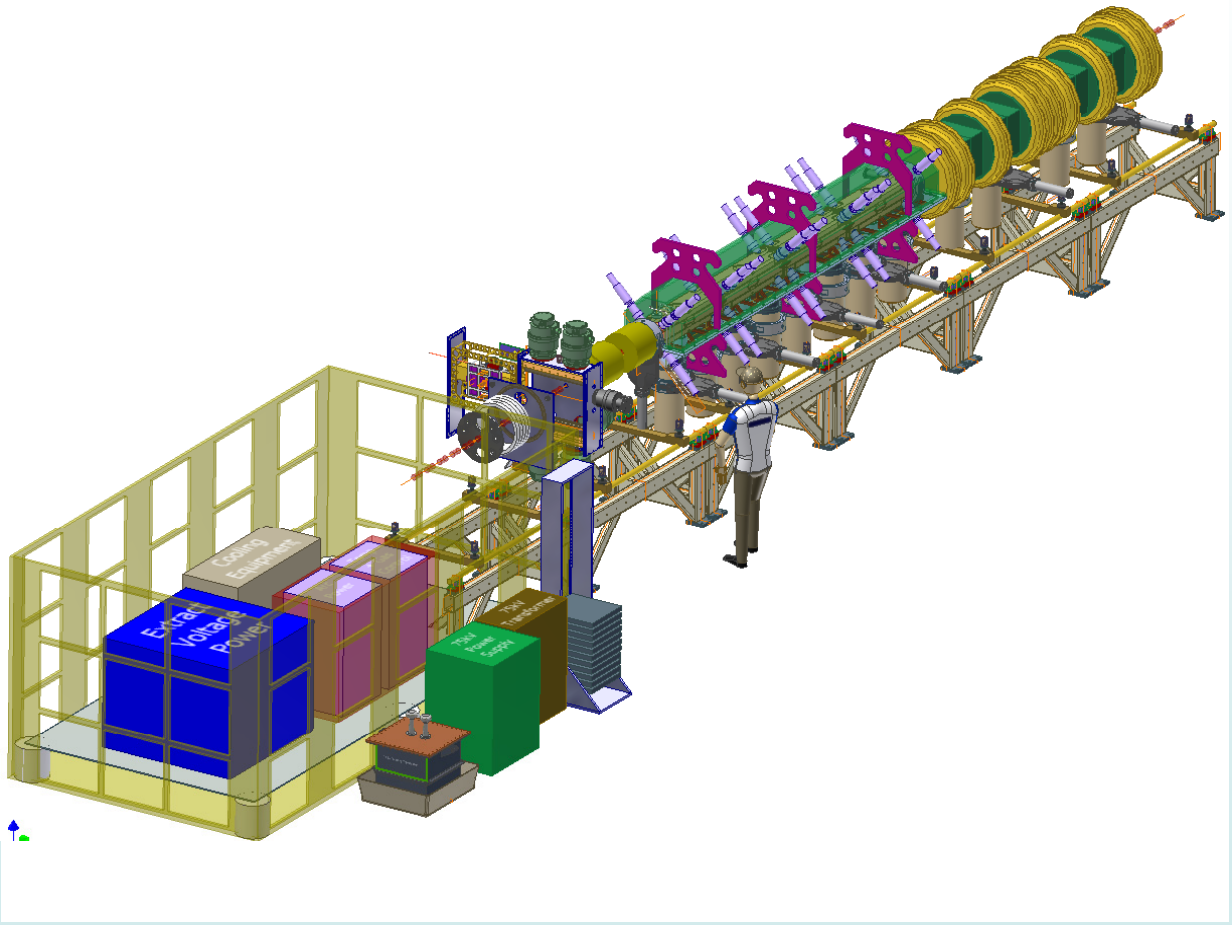

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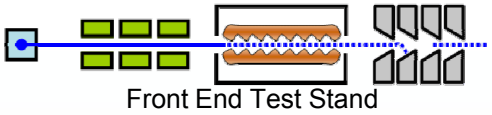
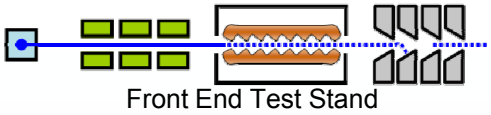


The Front End Test Stand (FETS) is a collaborative project, between STFC, UK and Spanish universities to design and construct a test stand for demonstrating key technologies for the front end of next generation high power accelerators.

Proton drivers with MW beam powers are called for in many future applications eg

- Spallation Source
- Neutrino factory
- Accelerator driven systems
- etc

A big challenge for these future machines is controlling beam loss. Beam loss leads to component activation – component activation hinders hands-on maintenance.



The purpose of the RAL Front End Test Stand is to demonstrate high quality chopped beams of H^- ions.

- 60 mA H^-
- 3 MeV
- up to 2 ms pulse length
- up to 50 pps repetition rate
- ‘perfect’ chopping
- non destructive, full power diagnostics

FETS main components:
- High brightness H^- ion source.
- Magnetic Low Energy Beam Transport (LEBT).
- High current, high duty factor Radio Frequency Quadrupole.
- Very high speed beam chopper.
- Comprehensive diagnostics.

Installation has started at RAL with first ion source beam expected within a month.