HIGH RADIATION TO MATERIALS: EXPERIMENTAL AREA

Outline

- Location
- Test zone
  - Test tables geometry and position
  - Services (2011)
- Prerequisites for access
- Surface lab
- Control room

HiRadMat
High-Radiation to Materials
Location of HiRadMat Experimental Area

- BA7
- Control room
- Surface lab
- PA7
- TJ7
- HiRadMat Irradiation Area
- Test table Cool-down Area
- TNC tunnel
- TA7

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Location of HiRadMat Test Zone

Getting to the experimental area

Access only when prerequisites fulfilled (see further)

- “Standard” access until TJ7 (assembly area with test rack)
- Access in TNC only with special permission
- From TJ7, test object will be moved by crane and remotely to test zone
3 positions are foreseen for the test object (only the central position will be available in 2011)

Base tables carry services (water, signal, power)

Base tables are fixed to tunnel floor and aligned w.r.t. beam

Test object will be on a “mobile” table that connects to the base
Remark: Test object always needs to be in container (no contamination of environment during beam test)

- A “mobile” table is provided by HiRadMat
- In a surface lab, the contained test object is mounted on the table, connections & alignment are checked
- The mobile table with contained test object (aka test table) is brought down to TJ7 on a HRM trailer
- If needed, additional assembly of the test table or its accessories is done in TJ7
- The overhead crane takes the test table from TJ7 and installs it on the base table in TNC
Test tables

Dimensions

- Volume around beam: ~R=300mm, L=1500mm
- Max weight on table: 1500kg
- Height of beam axis:
  - from table: ~1050mm
  - from floor: ~1725mm
Test tables

- Test object mounted on mobile table (in surface lab & during handling)
- Test table installed on base table in TNC (ready to receive beam)
Test zone services

Services available in 2011

Table in position “B”
(“A” and “C” will be equipped in 2012)

- Power (220V)
- Signal rack for testing signal & motorisation connections

On passage-side wall opposite to test stand:
- Manual gas connector for neutral gas (He or N₂ – on request)

In TA7-TJ7, at ~25m from test stands
- Power (220V)
- Signal rack for testing signal & motorisation connections

Services available in irradiation area in 2011

Plug-in on base-table in position “B”:
- Cooling circuit (30kW, 3m³/h, 9bar)
- Power (4 kV/2.5kA)
- Signal cables (50V/2A e.g. for camera, motorisation, vibration measurement)
Test zone services

Connectors

- Plug-in signal & motorisation connectors

- Water connector
  (as used in LHC collimators)

More interfaces to be defined:
- Power (plug-in)
- Gas (manual)
- Coax CK50 (manual but plug-in development)
Table assembly in tunnel

Integration in tunnel

Tables compatible with different sizes and types of test objects

Installation of table is 100% remote
Each access to TNC must be duly justified. They must be requested before the test table installation.

Reminder: Test objects must be contained, cable feed-throughs and portholes must be tight

After the beam test, the test table will be moved remotely to a downstream location in TNC for a cool-down time defined by the radioprotection team.

After the cool-down time, the object will be transported to the surface and brought to an adapted (CERN-RP) lab for dismantling. HiRadMat project recovers the mobile table, the user is responsible for treatment of the test object.
Access to HiRadMat experimental areas

Prerequisites for access to PA7, TA7, TJ7, TNC

Before access you need to obtain (~1 week):

- Valid CERN access card
- Hard hat with frontal lamp, safety shoes, self rescue mask (lent by HiRadMat if needed)
- Personal dosimeter
- Operational dosimeter (lent by CERN-RP)

At start of access, you need to have on you:

- Training subscription via cta.cern.ch
- On-line course via sir.cern.ch
- Dosimeter from service-rp-dosimetry.web.cern.ch - pages for users & associates. Requires access card, radioprotection course and medical certificat

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- Base table has all connectors, signals read in control room
- Test object is mounted on mobile table (➔ test table)
- Test table is aligned (CERN surveyors) w.r.t. virtual beam
- No radioactive objects allowed!
Control Room

All monitoring during beam test from control room

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Thank you for your attention – Any questions?