ELI Beamlines
CS Status

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ELI Beamlines, Dolni Brezany, Czech republic
ELI Beamlines

Laser Building

First Floor

Laser 1
100 mJ, 1 kHz beamline

Laser 2
PW / 20 J / 10 Hz beamline

Laser 3
PW / 30 J / 10 Hz beamline

Support Room
Cryogenic systems, power supply cooling, auxiliary systems

Laser 4
10 PW / 1.5 kJ beamline

Ground Floor

Experimental Hall 1
Material & biomolecular applications

Experimental Hall 2
X-ray sources

Experimental Hall 3
Plasma Physics

Laser 4c
10 PW pulse compressors

Proton acceleration

Experimental Hall 4

Basement

Experimental Hall 5
Electron acceleration

Experimental Hall 6

Date:
CONTROL SYSTEM INSTALLATIONS

• Installations overview
• Installations of top level control system
• Installations in Plant rooms
• Installations in Experimental halls
INFRASTRUCTURE INSTALLATIONS

Basic infrastructure necessary for operation

- Electrical power installations
- Data communication installations
- Vacuum installations
- Cooling water
- Compressed air
- etc.

Locations

- Central control room
- Server room B
- Experimental halls
- Plant rooms
- Laser halls

The most important infrastructural installations for CS operation

- Electrical power
- Data communication
- Necessary trays for both Electrical power and Communication
INFRASTRUCTURE INSTALLATIONS

Communication installations

- Communication is based on optical fibers
- There are actually more than 15 000 fibers installed in the building
- Average length of fibers installed is ~250m
- The longest fiber is ~450m
- All optical fibers are Single Mode type

Electrical power

- Basic installation is part of building
- Local installations done by electrical team

Infrastructural installation approach

- Create and update 3D model of technologies
- Create 3D model for racks and distributor for CS
- Create 3D model of trays for el. power, opt. fibers, local vacuum distribution
- Necessary trays for both Electrical power and Communication
- CS components are installed in 19” racks or small distributors on DIN rails
Installations overview

COMMON APPROACH FOR CS INSTALLATIONS ADOPTED

CS components are installed in:

- 19” racks
- Distributors with DIN rail
Top level CSInstallations

TOP LEVEL

MAIN CONTROL ROOM

SERVER ROOM B

LOCAL LEVEL

LASER HALLS

EXPERIMENTAL HALLS

PLANT ROOMS

LASER LCR

EXP. LCR
Main Control Room

**OPTICAL FIBERS**
- Control
- KVM

**UTP CABLES**
- Users support
- Internet
- Telephony

SERVER ROOM B
Plant Rooms

PLANT ROOM RACK

DISTRIBUTOR

DEVICES

SERVER ROOM B
DISTRIBUTION RACK

- At minimum 1 in each Experimental halls
- Distributes optical network
- Distributes electrical power
Experimental Hall

NETWORK DISTRIBUTION

Server Room B

MPO/MPO to Server Room

DIST. RACK

LOCAL LC/LC

CS. RACK

MPO/MPO
Experimental Hall

VACUUM & SWITCH YARD
CONTROL RACK

- Common solutions
- Power on top
- ODF for network
- Management switch
- Control switch
- … + specific devices

RACK ANATOMY

- Power supply panel
- ODF (Optical Distribution Frame) with module
- Management switch
- Control switch
- MPS Panel
- Local control computer
  - Vacuum
  - Switch yard
Thank you for attention!