



HITRAP sections

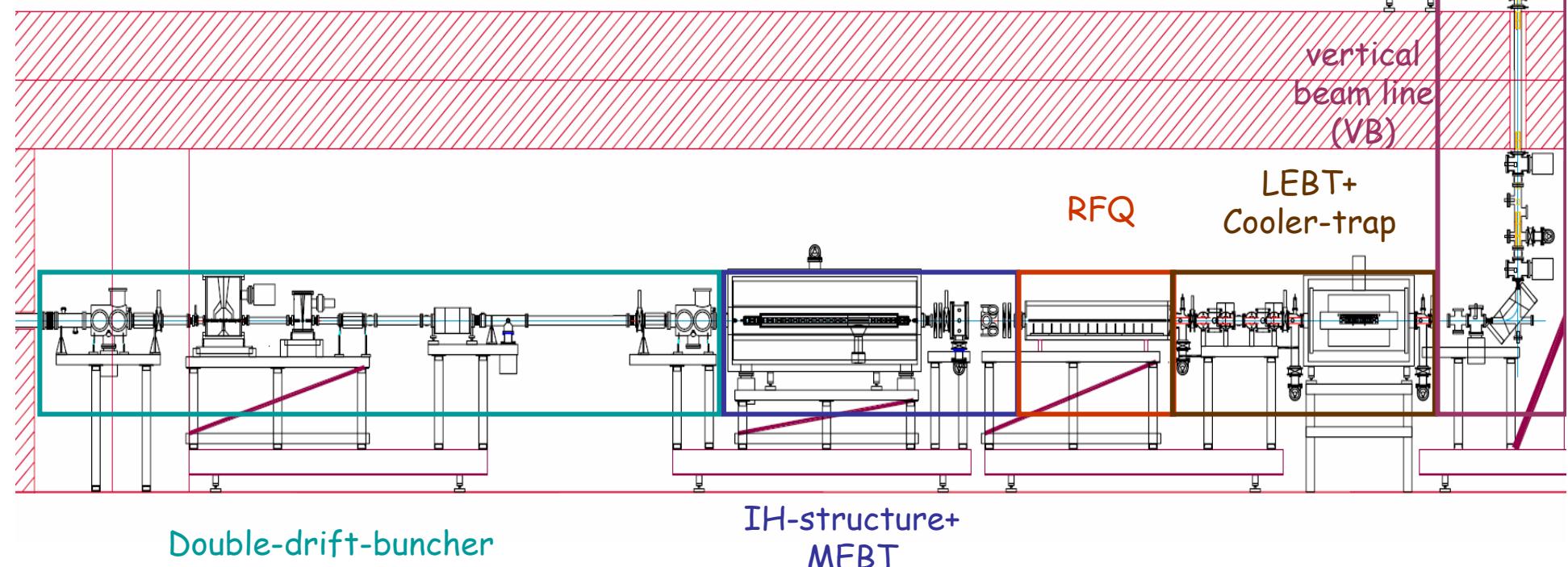
GSI

0 1 2 3 4 5 6 7 8 9 10m

Precision
trap
 g -factor

MAXEBIS

Other experimental setups



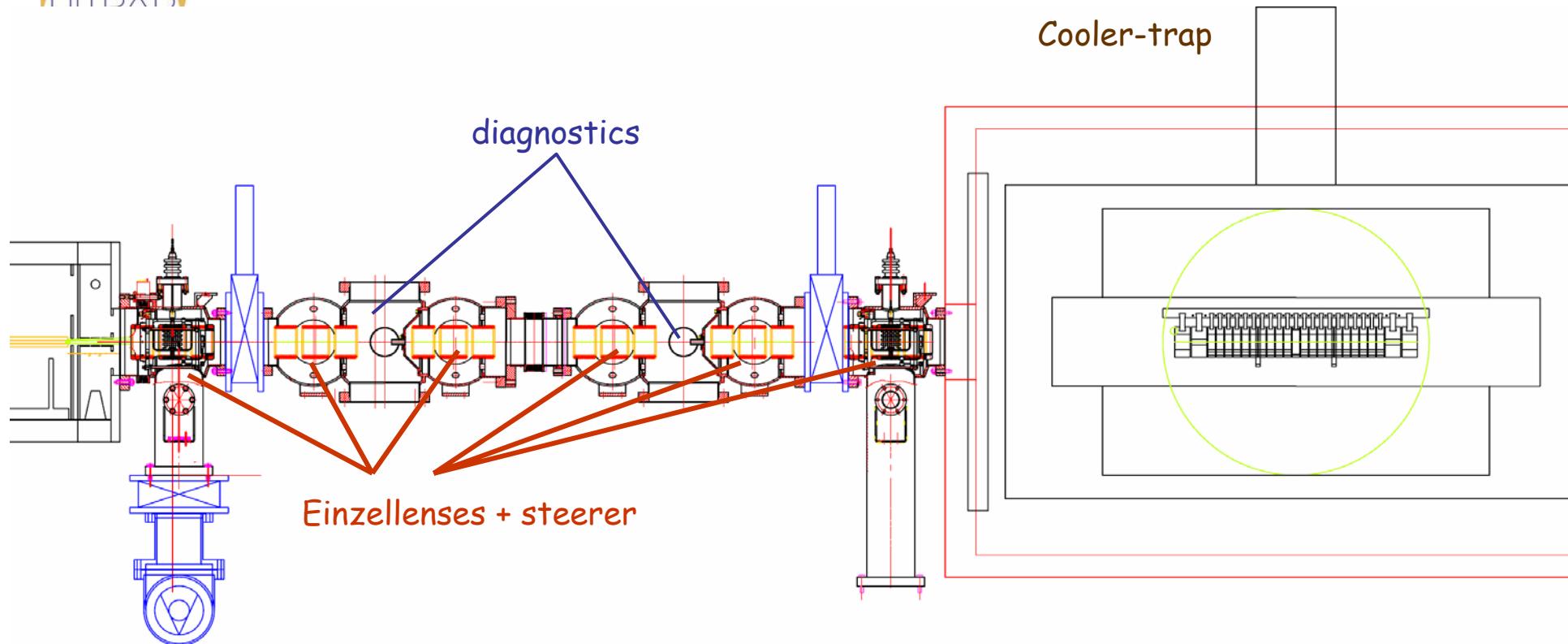


Systems to be controlled



- Power supplies (lenses, steerer, bender)
- Diagnostics (Cups, slits, MCPs)
 - * Position , slits → stepper motors, encoders
 - * Cups → Current amplifiers, charge integration
(Pulse width 1 μ s)
 - * MCPs + phosphor screens →
power supplies, digital cameras (external trigger)
- Vacuum system → Pumps, gauges, valves
(instead of accelerator control system)

Low energy beam transport (LEBT)

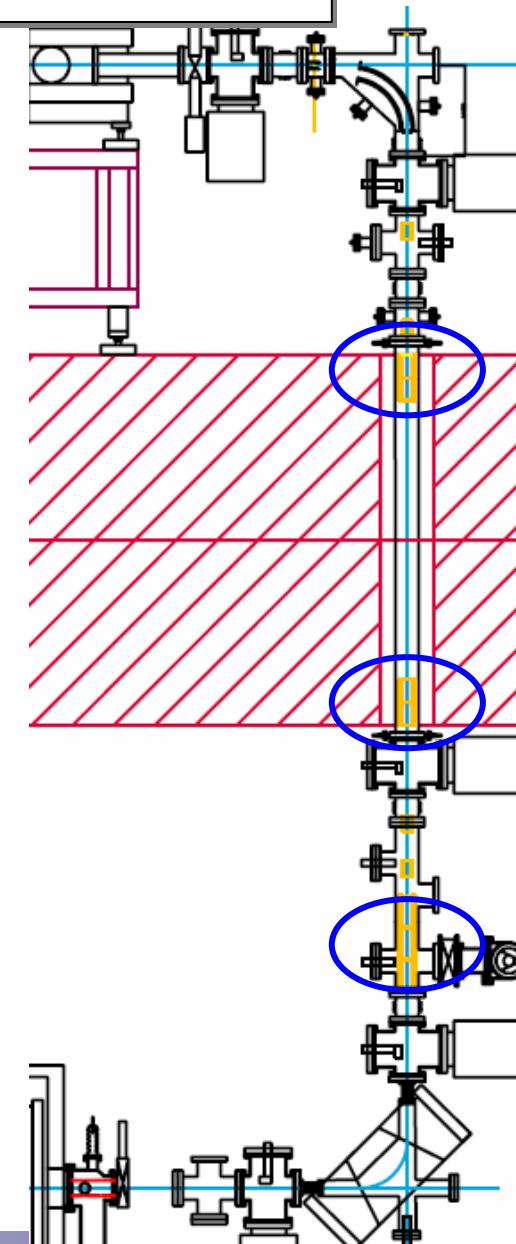
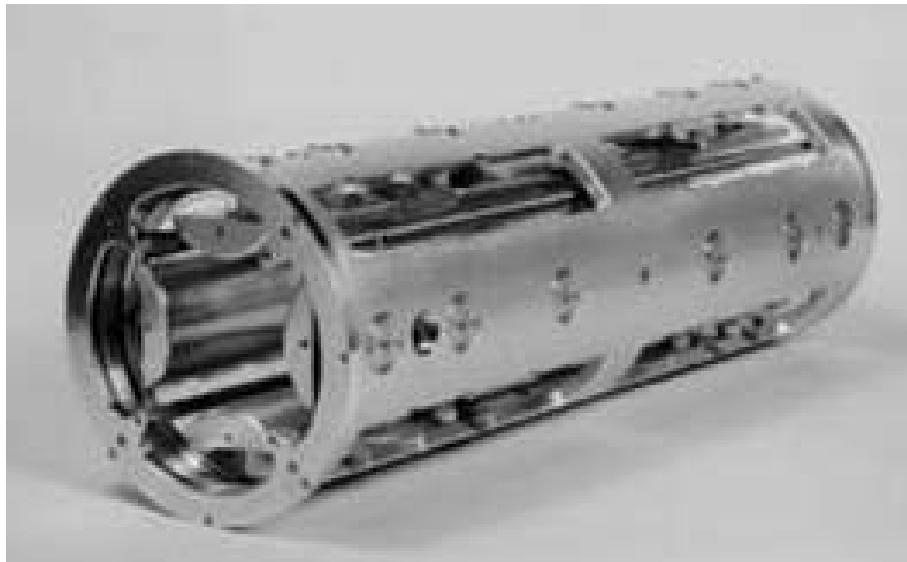


Voltages: 20-50 kV (lenses), max ± 5 kV (steerer)

Diagnostics: FC and MCP+P-screen

Vacuum control → Accelerator control system

Quadrupole lenses



NEC Pelletron example:
Quadrupoles of the vertical beamline:
aperture: 40 mm, length 80 mm

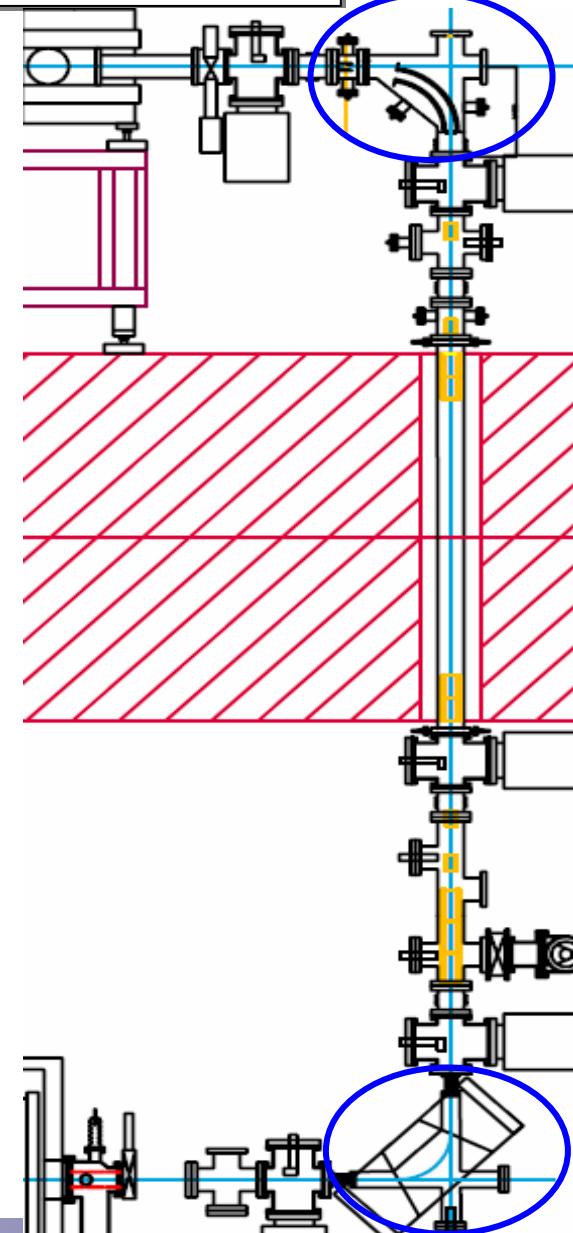
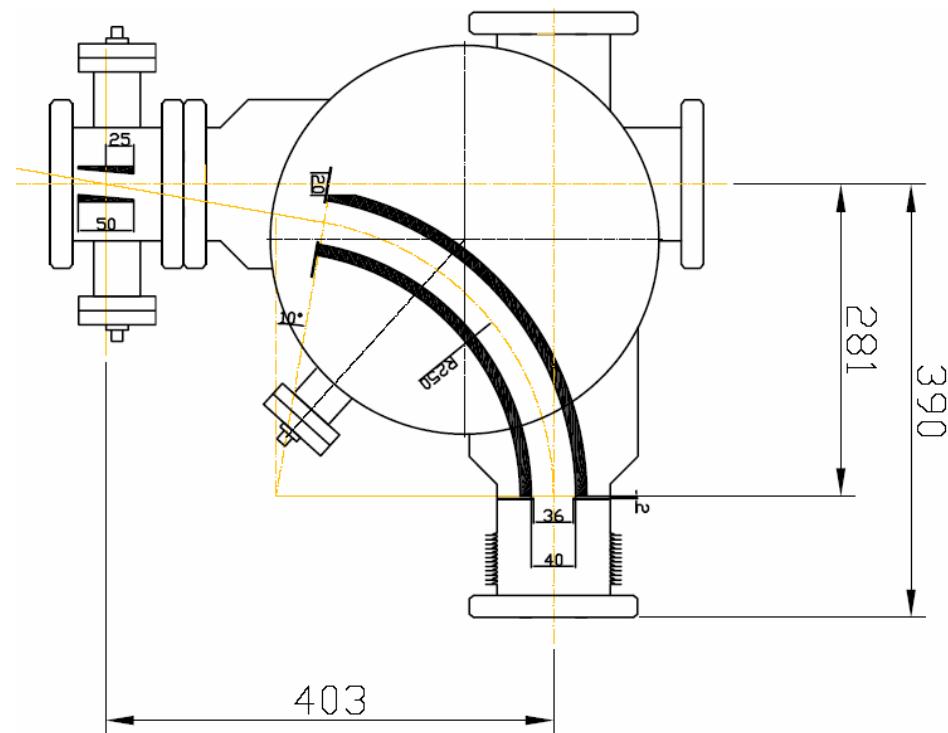
max voltages: ± 2 kV



Bender

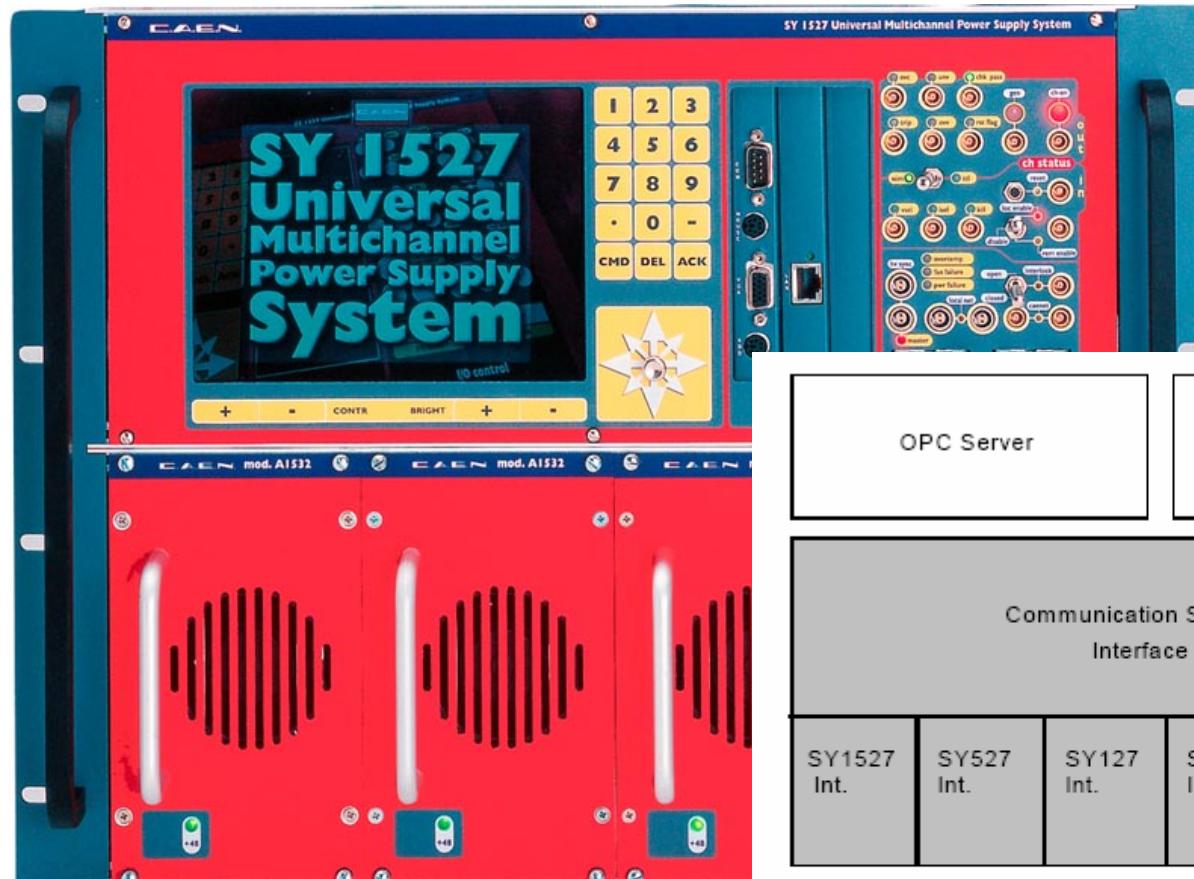
GSI

Bender of the vertical beamline:
magnetic bender, aperture = 25 mm,
 $R = 200 \text{ mm}$, $I < 20 \text{ A}$
electrostatic bender, aperture = 40 mm,
 $R = 250 \text{ mm}$ radius, $V < 2\text{kV}$





Power supplies



example:
CAEN multi channel system
Ethernet, RS232, CAENET

OPC Server

ActiveHV

Communication Support
Interface

SY1527
Int.

SY527
Int.

SY127
Int.

SY403
Int.

N470/570
Int.

N568
Int.

TCP/IP

HSCAENETLib

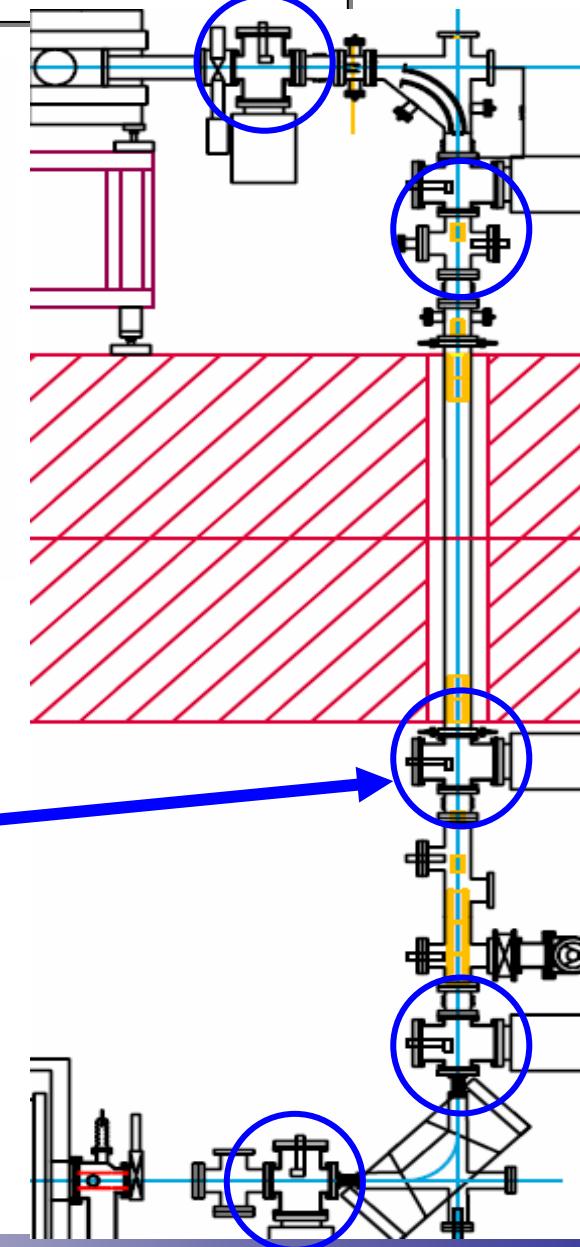
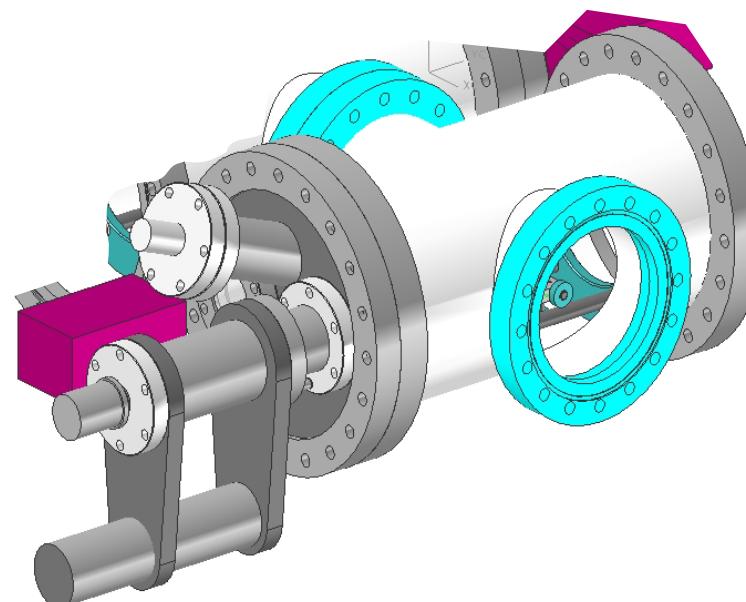
CAENET (A303A/A1303)



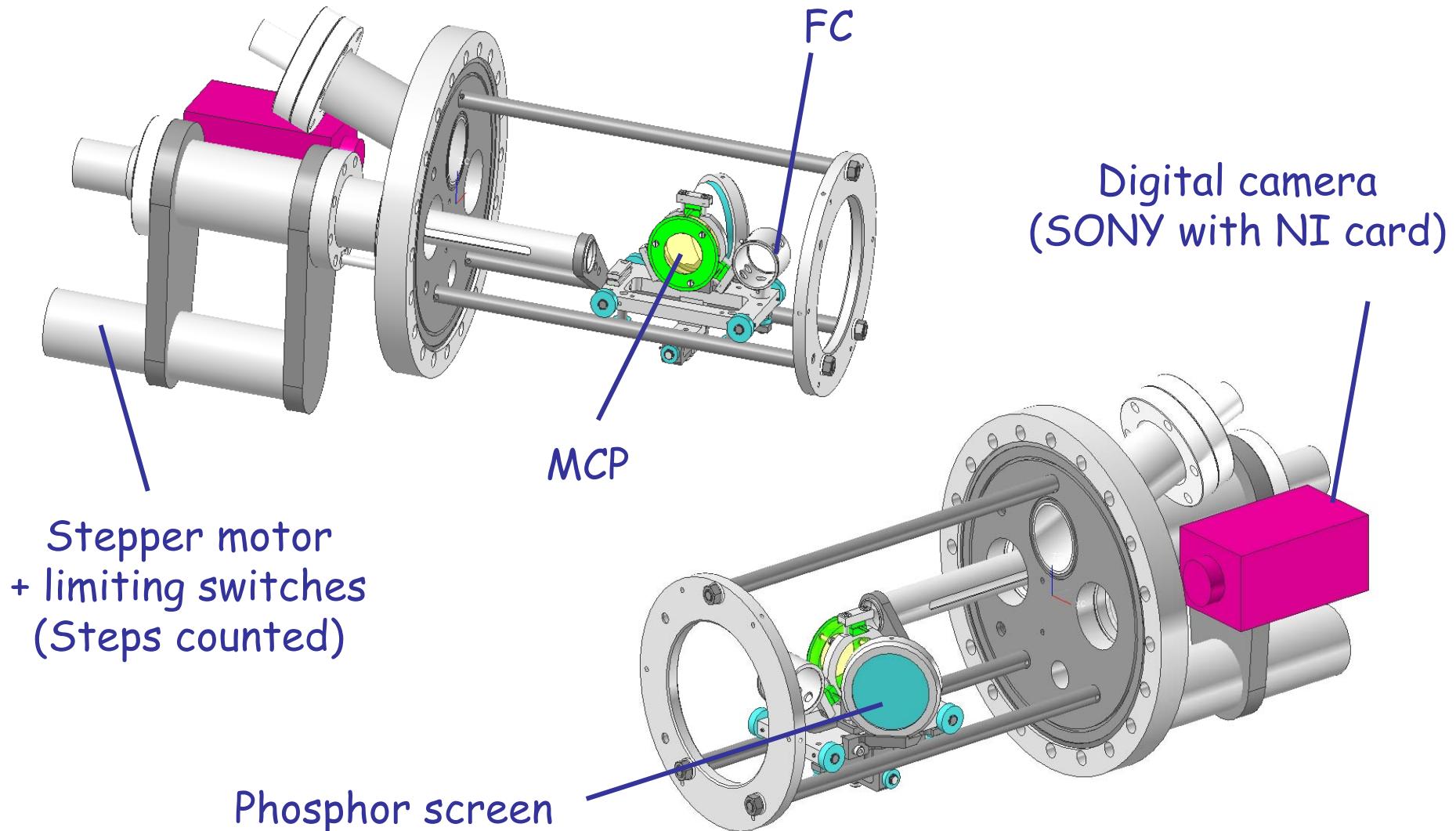
Diagnostics in the VB



- Faraday cup
- MCP with phosphor screen
- Digital camera
- Stepper motor



Diagnostic boxes (KVI Groningen)





Diagnostics output



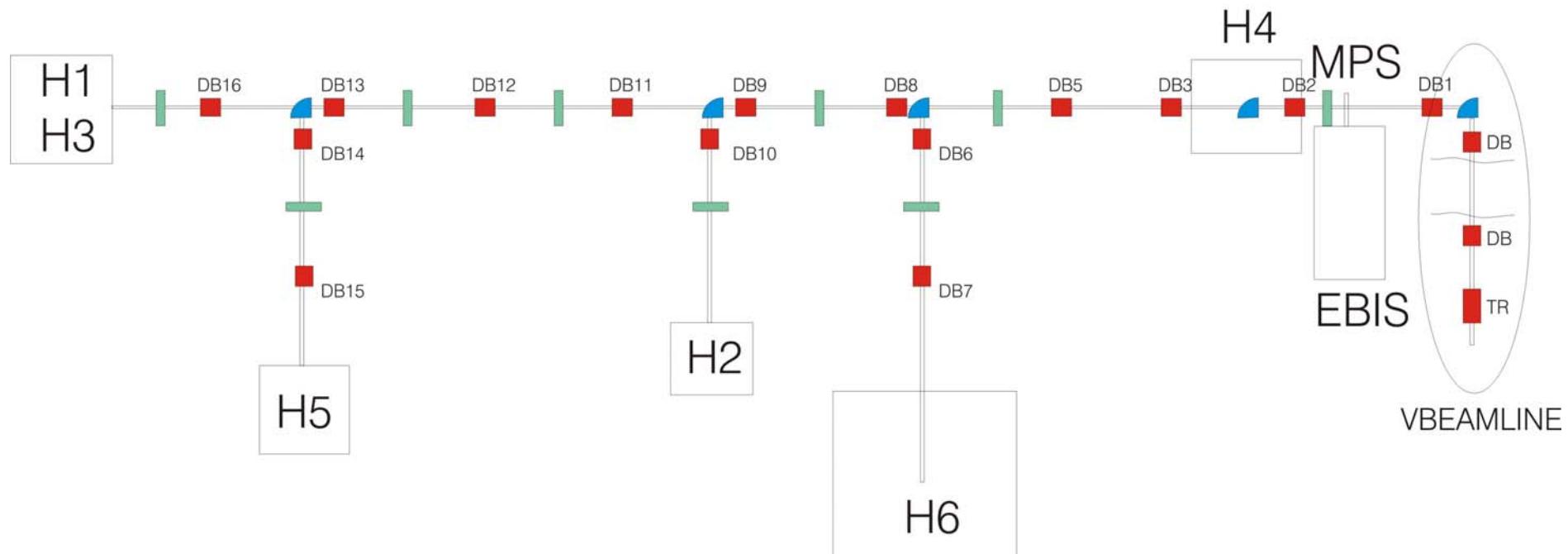
- Charge integration
- Time dependence of beam current
shunt voltage or MCP signal
- Beam profile
2-d plot, x- and y-profile (Gauss fit?, FWHM),
intensity plot
- Position of diagnostics device (encoder, counting steps)



Beam lines towards the experiments



~23m



- electrostatic kicker/bender 90° A=20mm, R=250mm
- QP doublet, 80/20/80mm, A=40mm

Voltages < 2kV
Diagnostics: FC and MCP+P-screen
Vacuum control → CS instead of
Accelerator control system?