

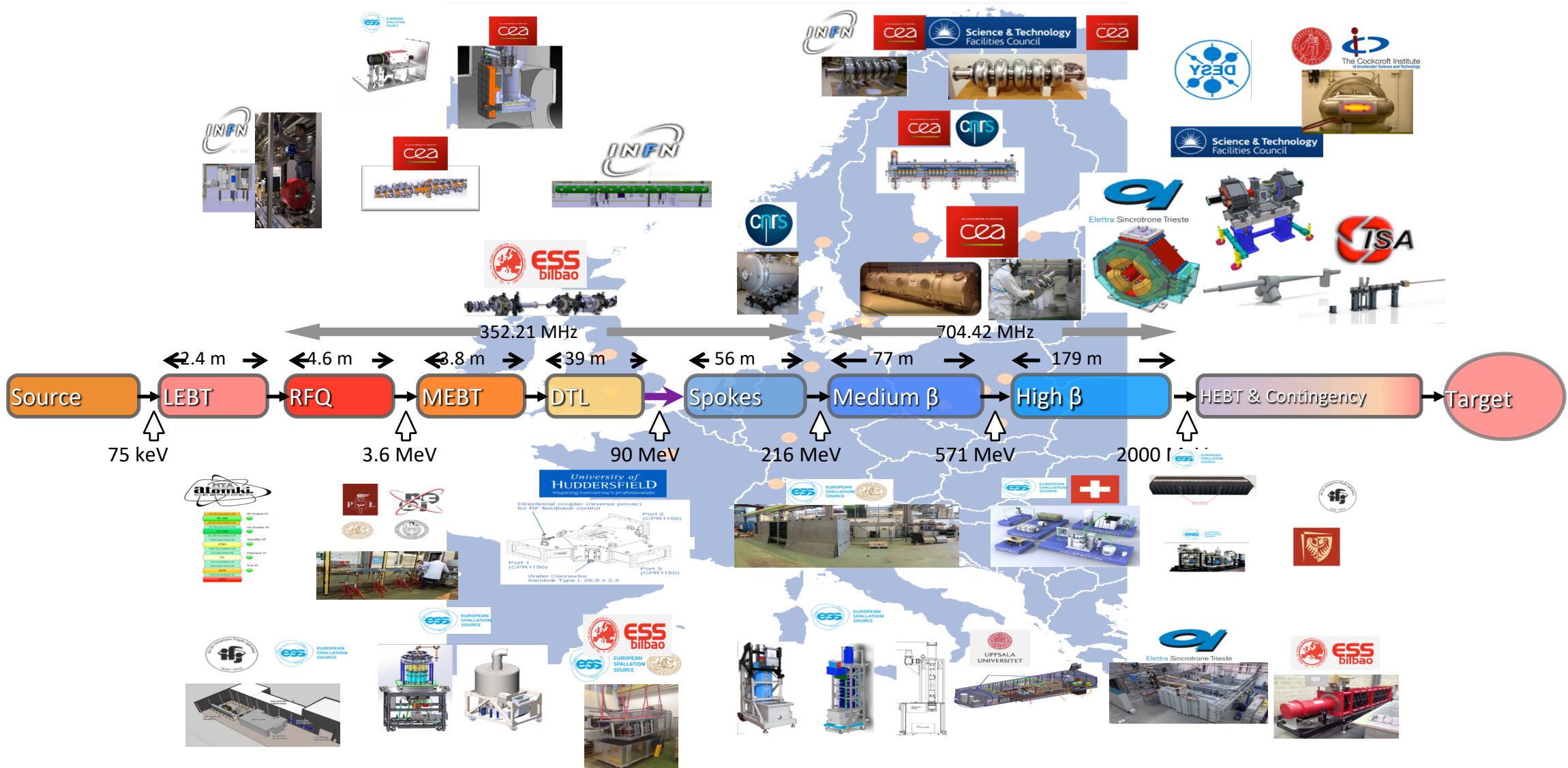


# ESS Machine Update

Kevin Jones  
Technical Director

IKON#18, Grand Hotel Lund, 24 February  
2020

# The machine is being built by a diverse collaboration



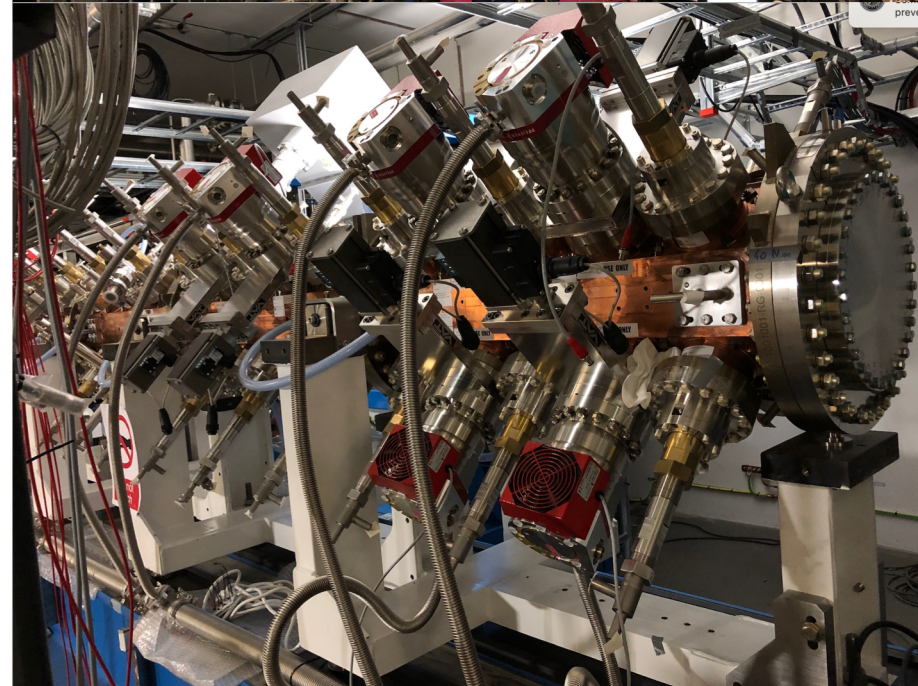
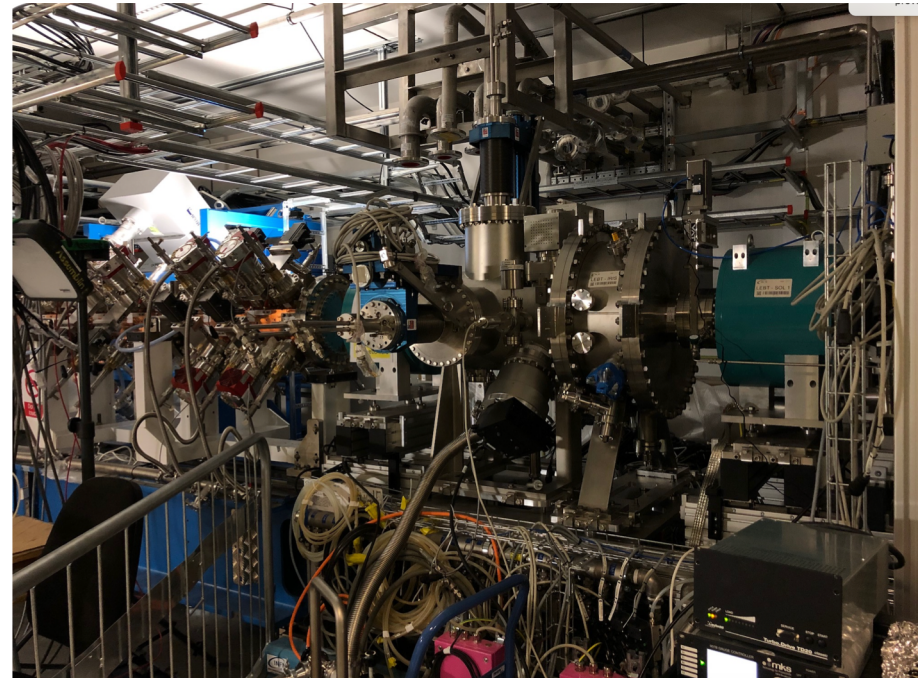


# Machine Status

January 2020

## Robust activity in the Accelerator Buildings (G01/G02)

- Low Energy Beam Transport re-installed after modification post-commissioning, with new variable iris beam chopper
- Radio-frequency Quadrupole (RFQ) accelerating structure in place, bead pull complete, and being fitted for operation





# Machine Status

January 2020

## Robust activity in the Accelerator Buildings (G01/G02)

- RF couplers to the RFQ structure are in place, along with all waveguides
- Medium Energy Beam Transport (MEBT) is in place and is being fitted with services



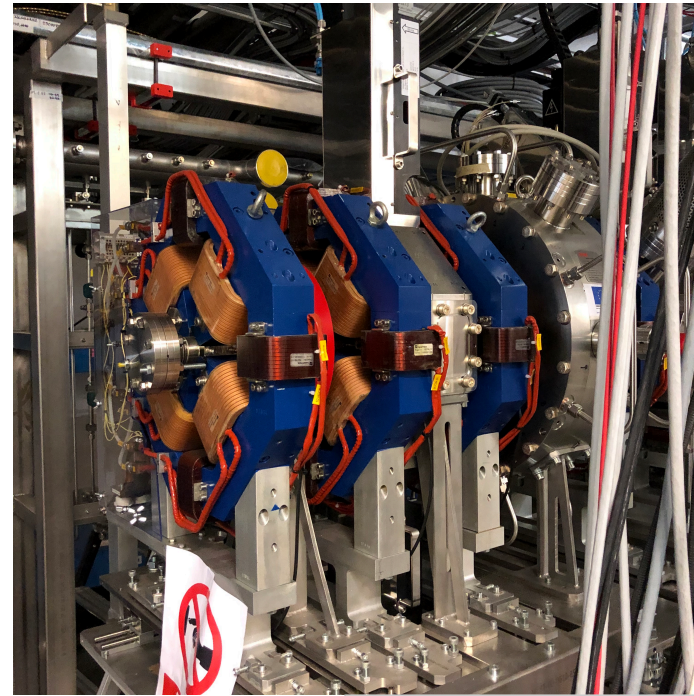
# Machine Status

January 2020



## Robust activity in the Accelerator Buildings (G01/G02)

- Medium Energy Beam Transport (MEBT) is in place and is being fitted with services
- Over 3600 pieces of high-power radio-frequency waveguide (352 and 704 MHz) have been installed throughout the machine





# Machine Status

January 2020



## Robust activity in the Accelerator Buildings (G01/G02)

- Valve boxes and cryogenic service piping for the Spoke Cavity superconducting linac are being received
- Valve boxes and cryogenic distribution for the medium beta linac cryomodules are in place and undergoing site acceptance testing



# Machine Status

January 2020



## Robust activity in the Accelerator Buildings (G01/G02)

- Cryogen distribution and 704 MHz wave guides in the G01 tunnel
- Linac Warm Units (focusing magnets and beam diagnostics) in the High Energy Beam Transport area



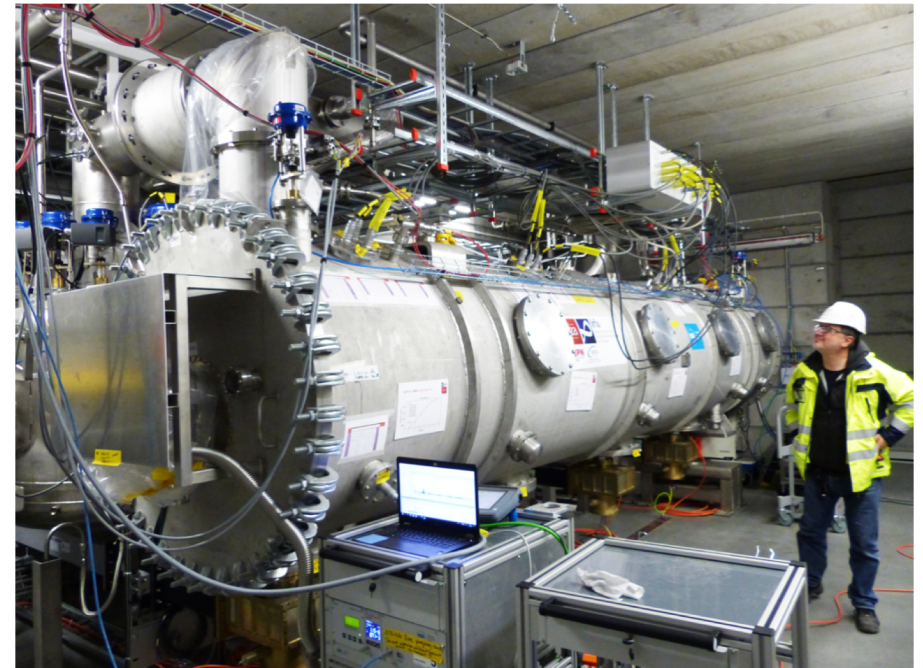


# Machine Status

January 2020

## Robust activity in the Accelerator Buildings (G01/G02)

- The prototype medium-beta cryomodule is undergoing cryogenic testing in Test-Stand 2 in building G02 – a milestone for the cryopant and test-stand capability – achieve 2K operation last week



# Machine Status

January 2020



## Robust activity in the Accelerator Buildings (G01/G02)

- Modulators for powering klystrons in Test-Stand 3 in G02
- High Power RF components being installed in G02





# Machine Status

January 2020



## Robust activity in the Accelerator Buildings (G01/G02)

- Assembly of Tank 1 of the Drift Tube Linac (DTL) is well underway and will be ready for installation in the late Spring 2020

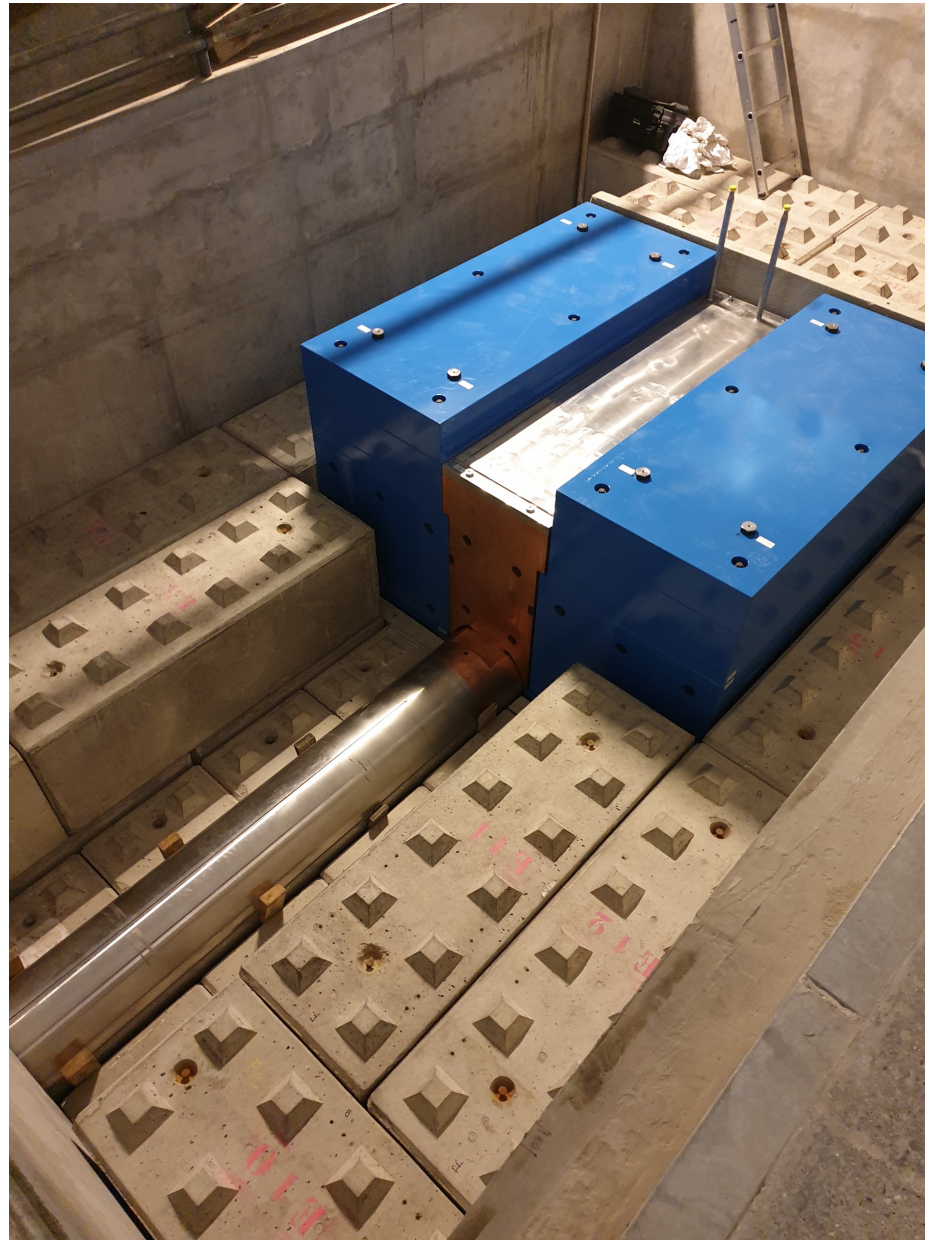


# Machine Status

January 2020

## Tuning Beam Dump

- The tuning beam dump has been received and is being installed



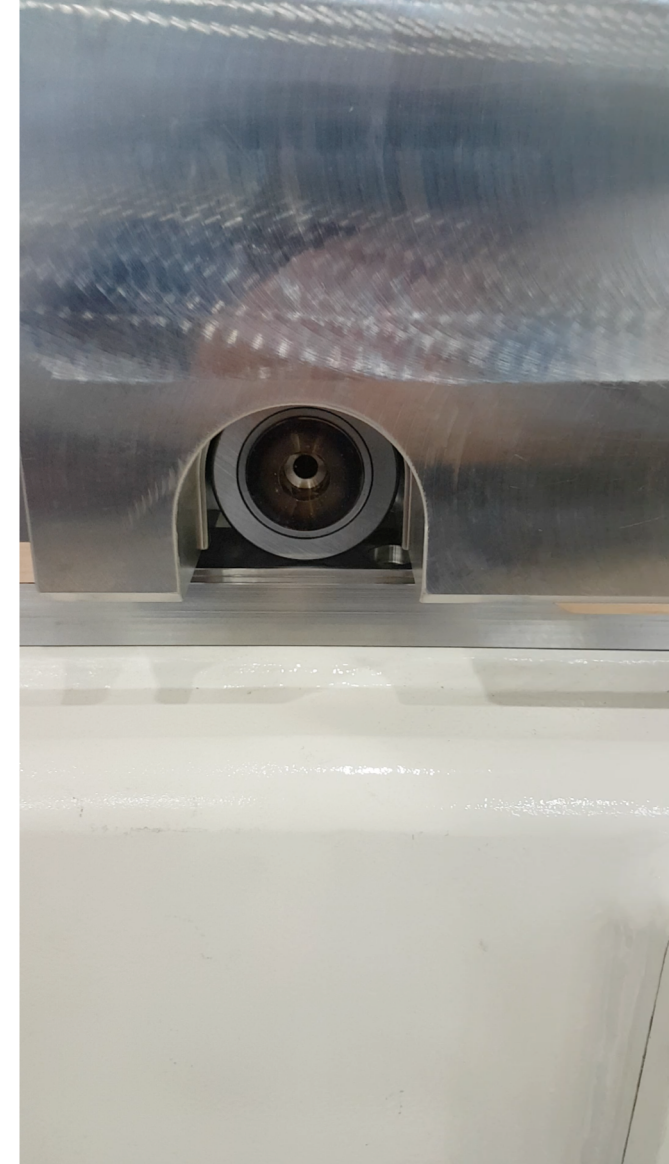
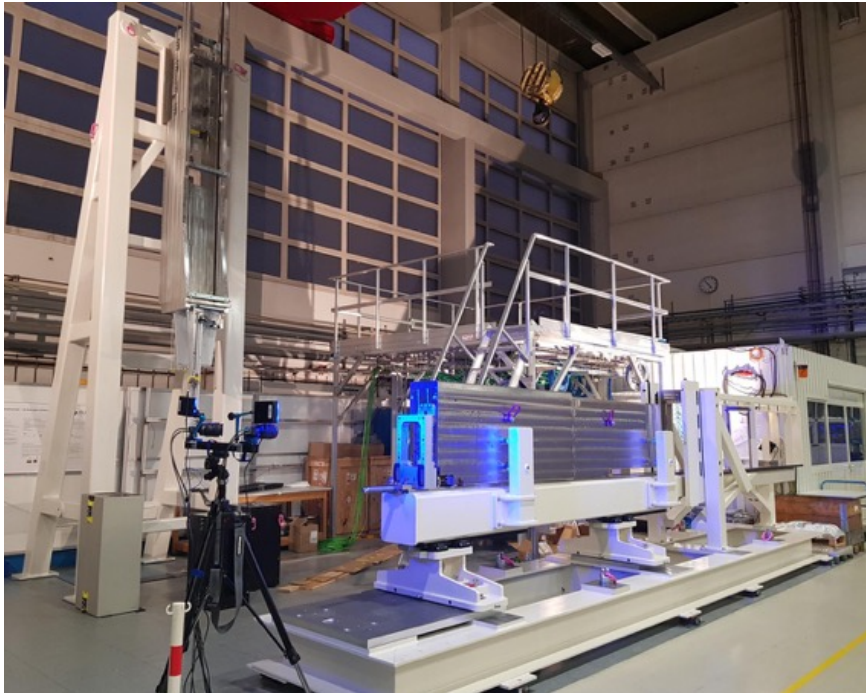


# Neutron Beam Extraction System (NBEX)



January 2020

- Verification of the NBPI design continues at FZJ by use of the Insert Installation Tool and the Horizontal Handling Test Stand.
- Modified wheel solution has shown good results.





# The Monolith Vessel is nearing completion

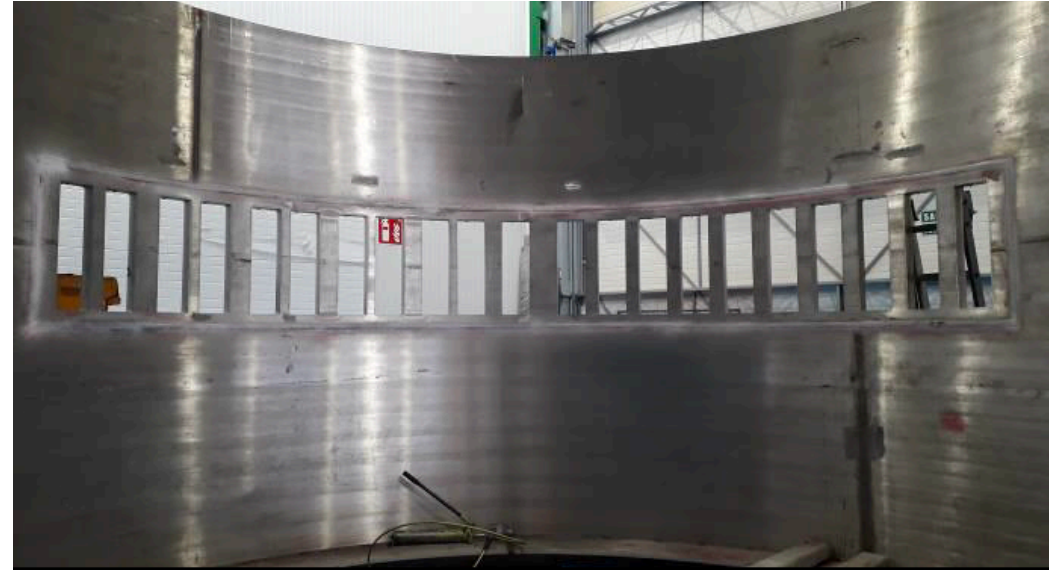


January 2020

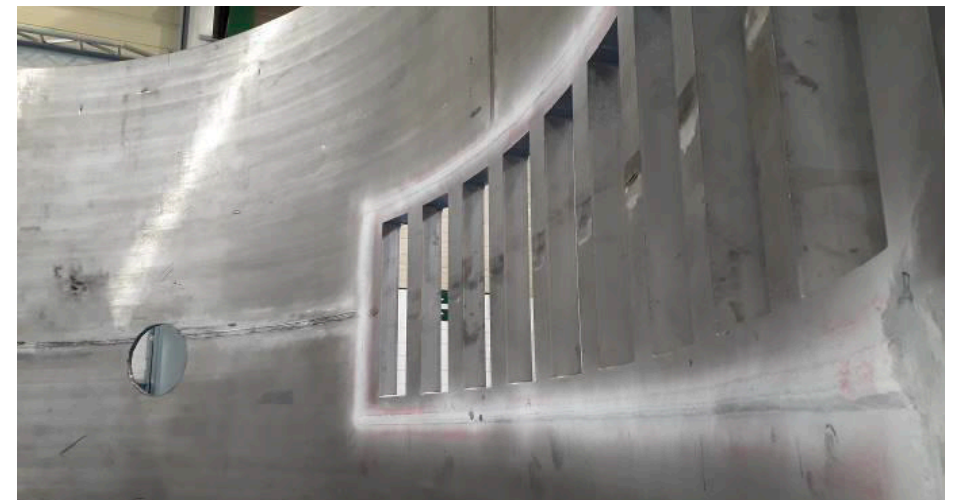
- Manufacturing ongoing.
- Unforeseen fabrication challenges pushes the delivery to April.



Lower body completely welded



Inside view



Weld penetrant test detail



# Outer monolith shielding is ready for shipment

January 2020



Questions?

