



# **DFH Design Detail Review**

## **Assembly sequence and tunnel transport aspects**

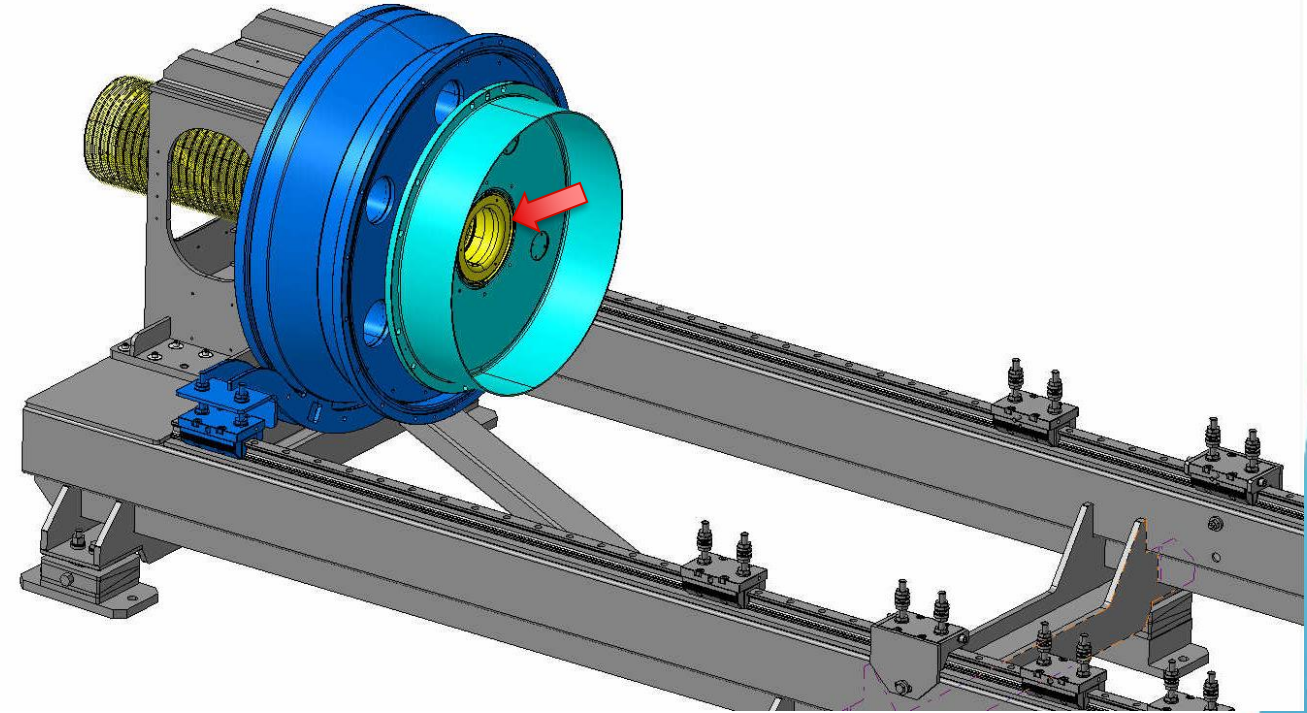
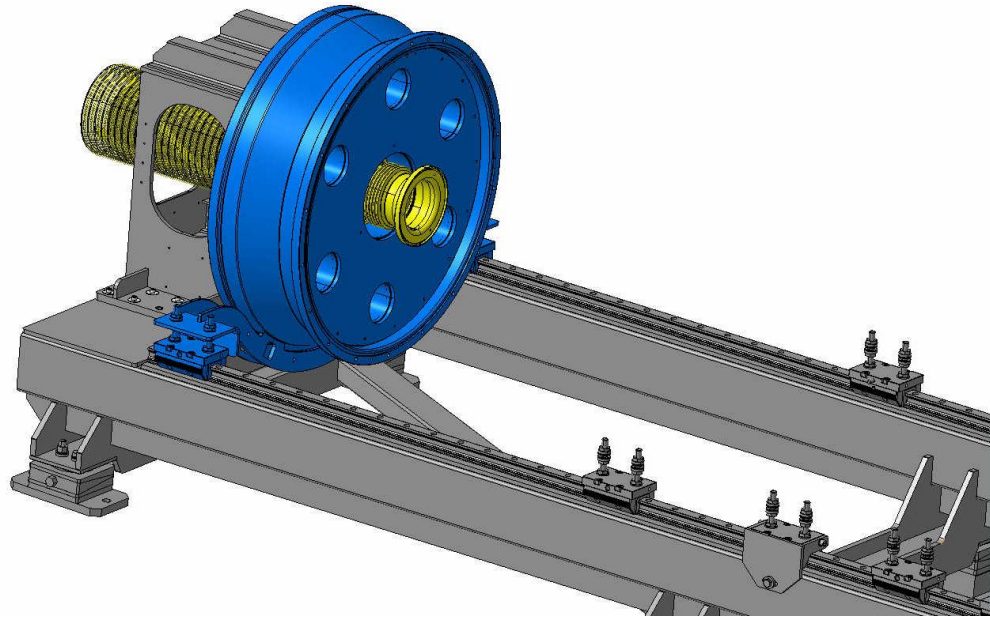
R. Betemps, F. Pillon, C. Bertone, E. Richards, for WP6a

# Outlines

- Assembly sequence DFHX
- Tunnel transport aspects

# Assembly sequence DFHX

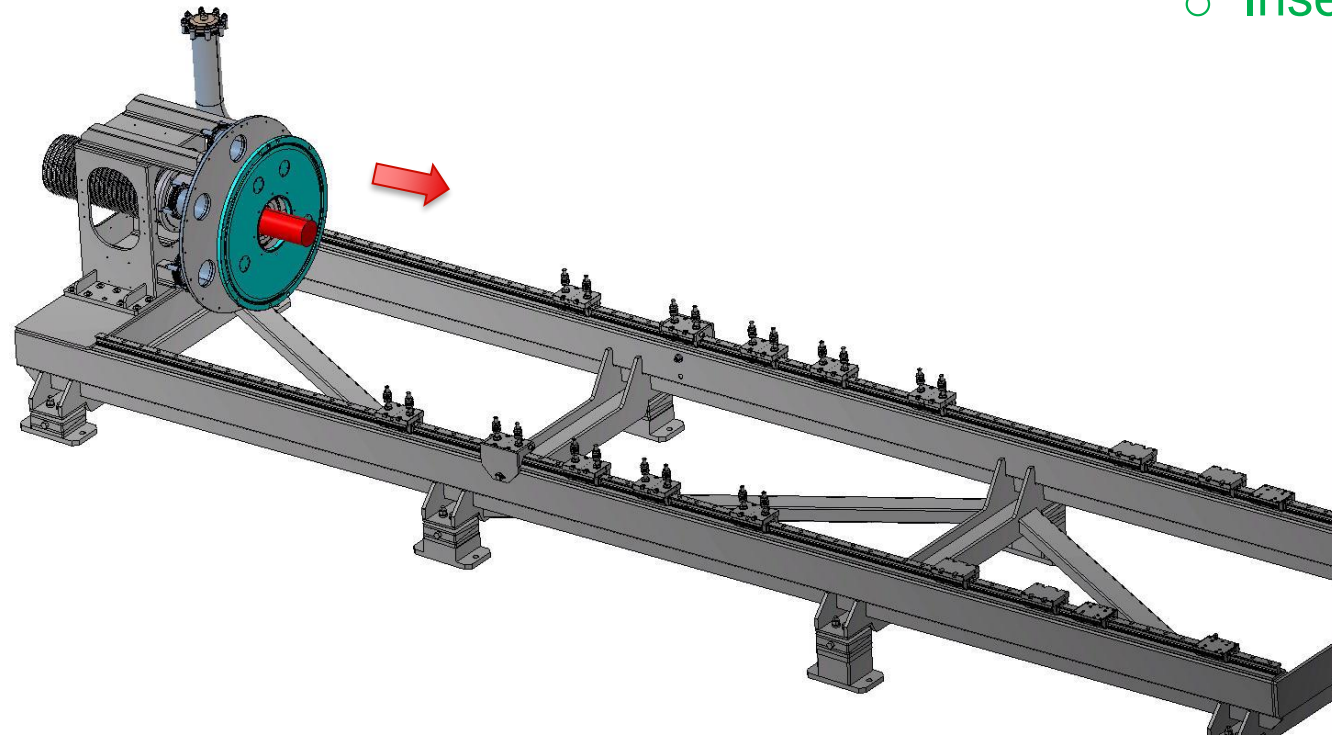
# Step 1 : link installation & first flange



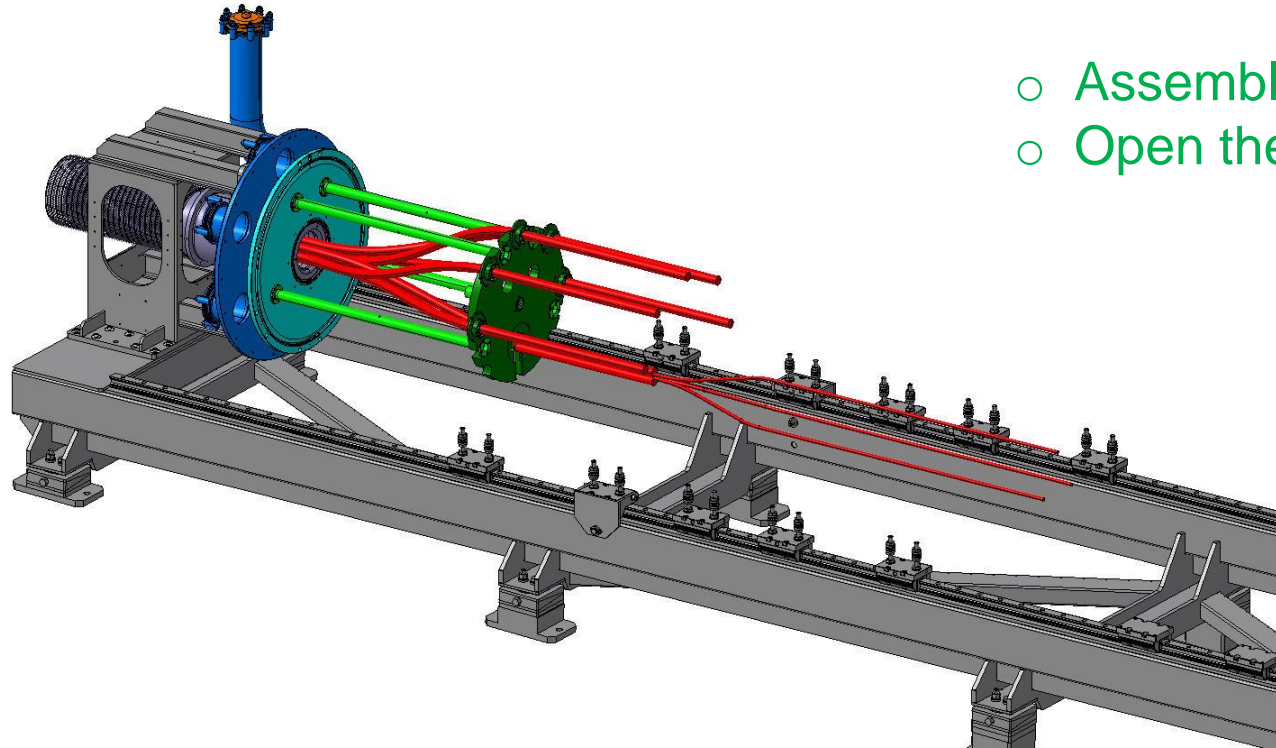
- Link in place
- Weld the link & first flange

## Step 2 : MgB2 Cable

- Insert the cable in place

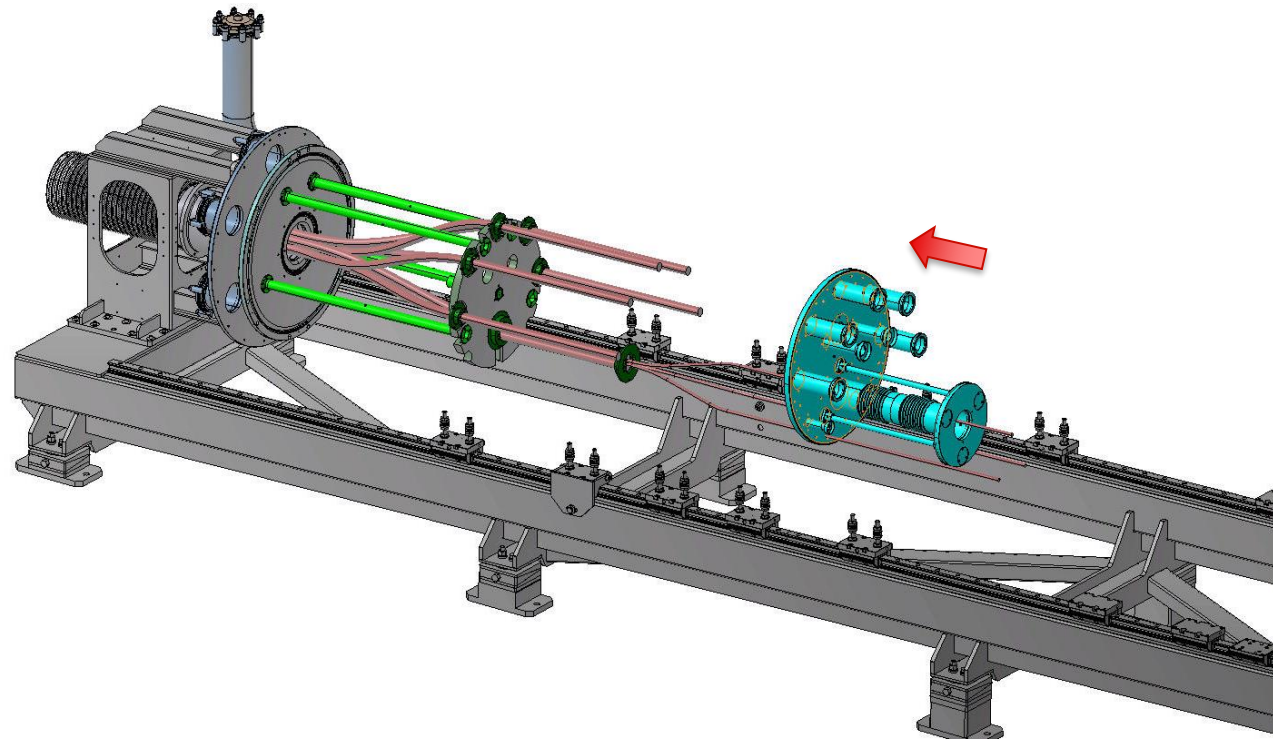


# Step 3 : cable opening

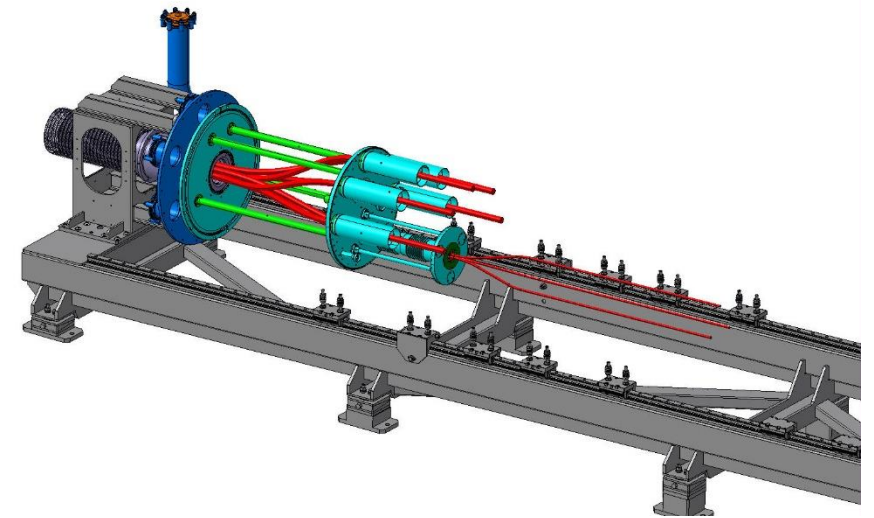


- Assembly of the support
- Open the cable

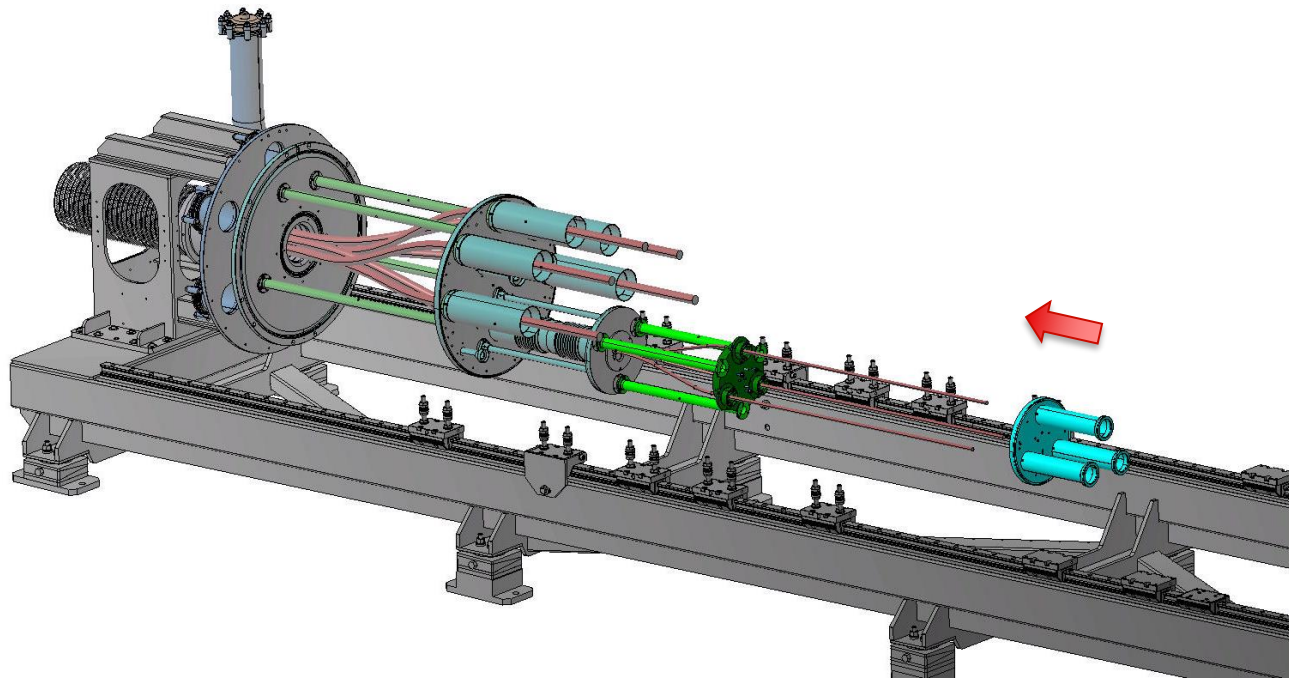
# Step 4 : flange shuffling module 1



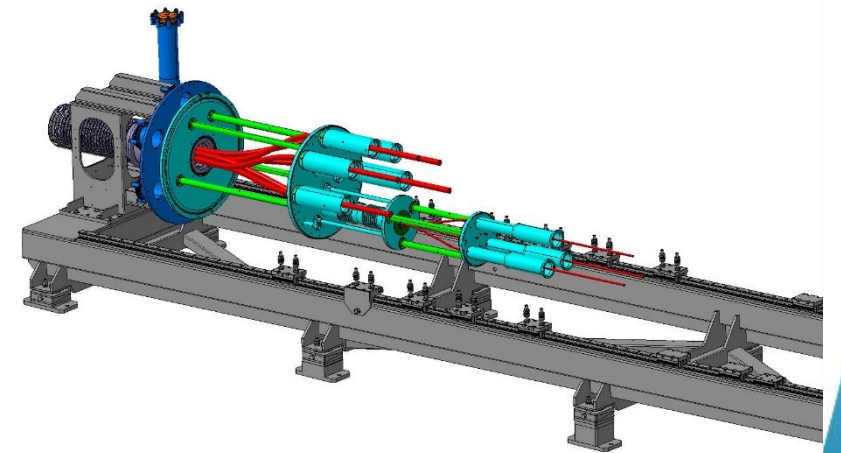
- Assembly the flange shuffling 1
- Cable support & protection



# Step 5 : flange shuffling module 2



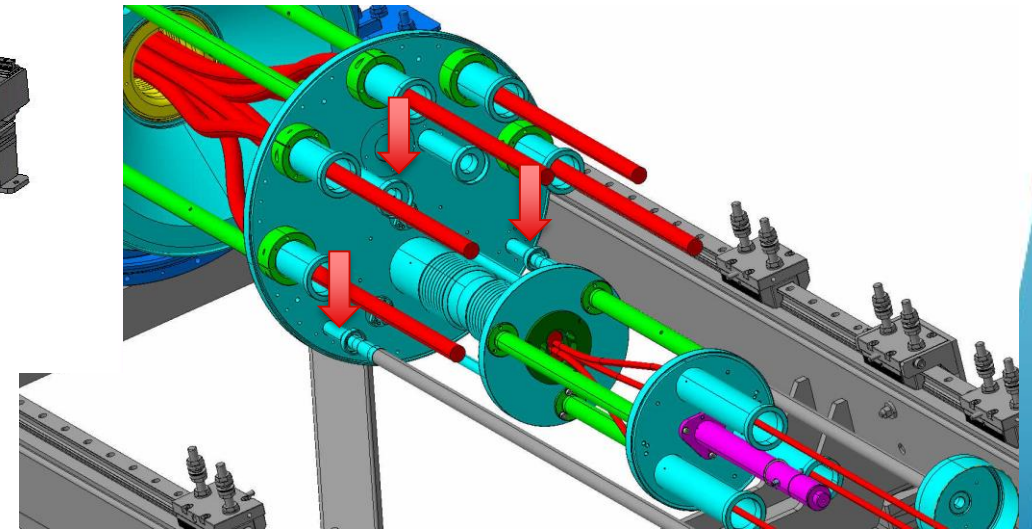
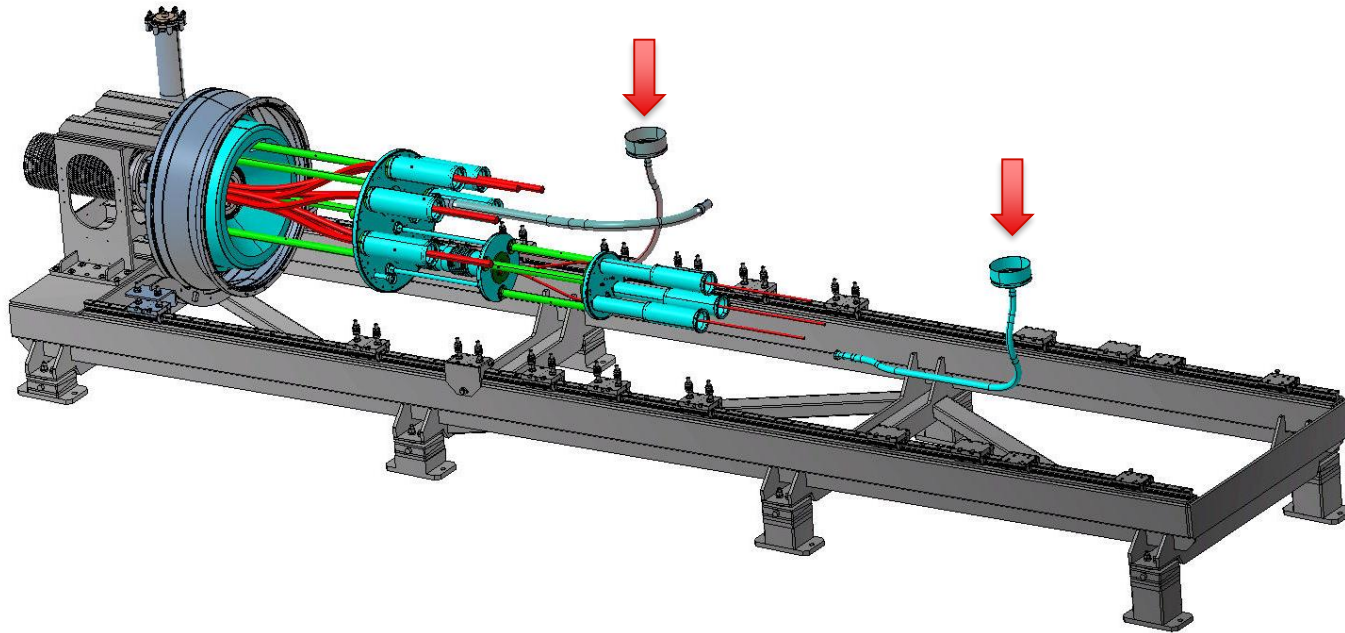
- Support the assembly
- Open the cable
- Assembly the flange shuffling 2
- Cable support & protection



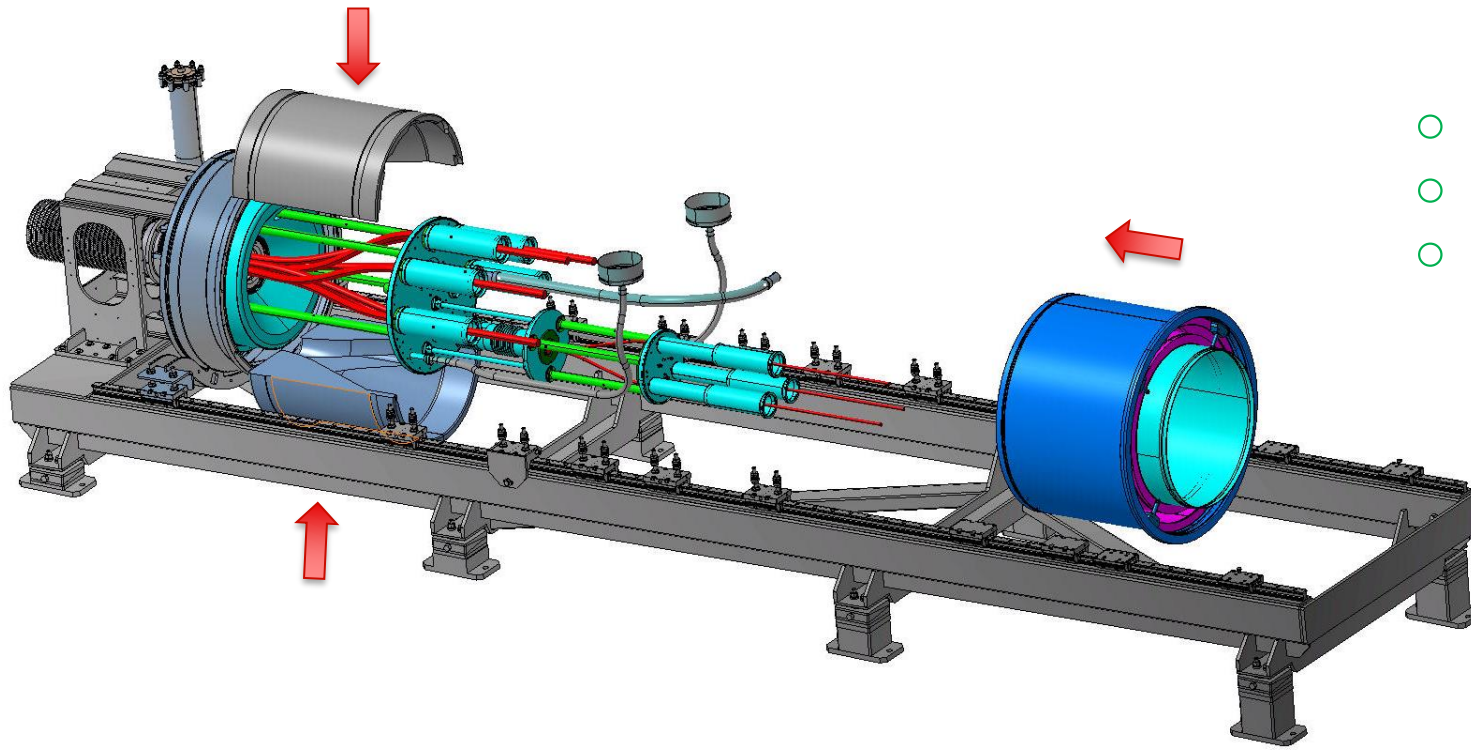


# Step 7 : IFS & safety installation

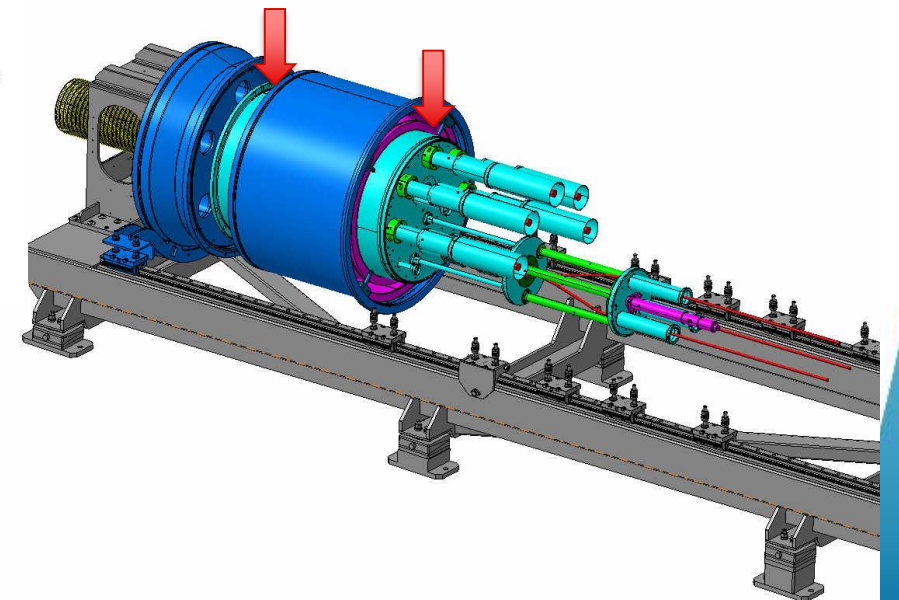
- Installation of the IFS & weld



# Step 8 : First vacuum chamber

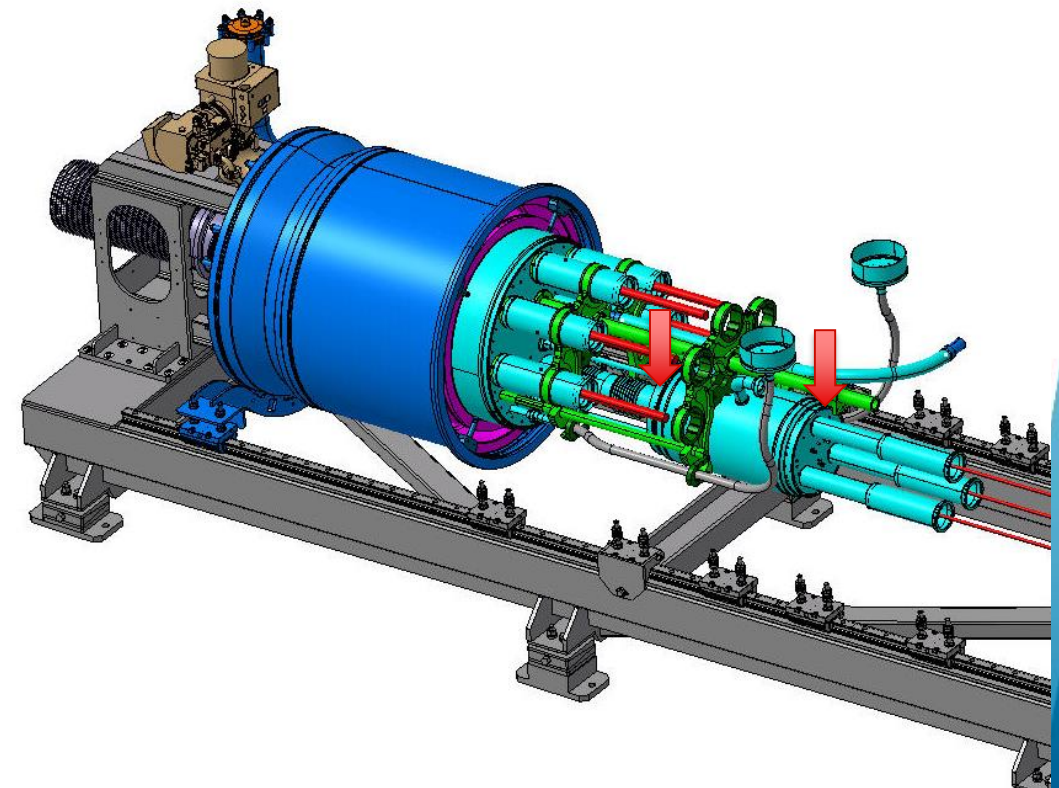
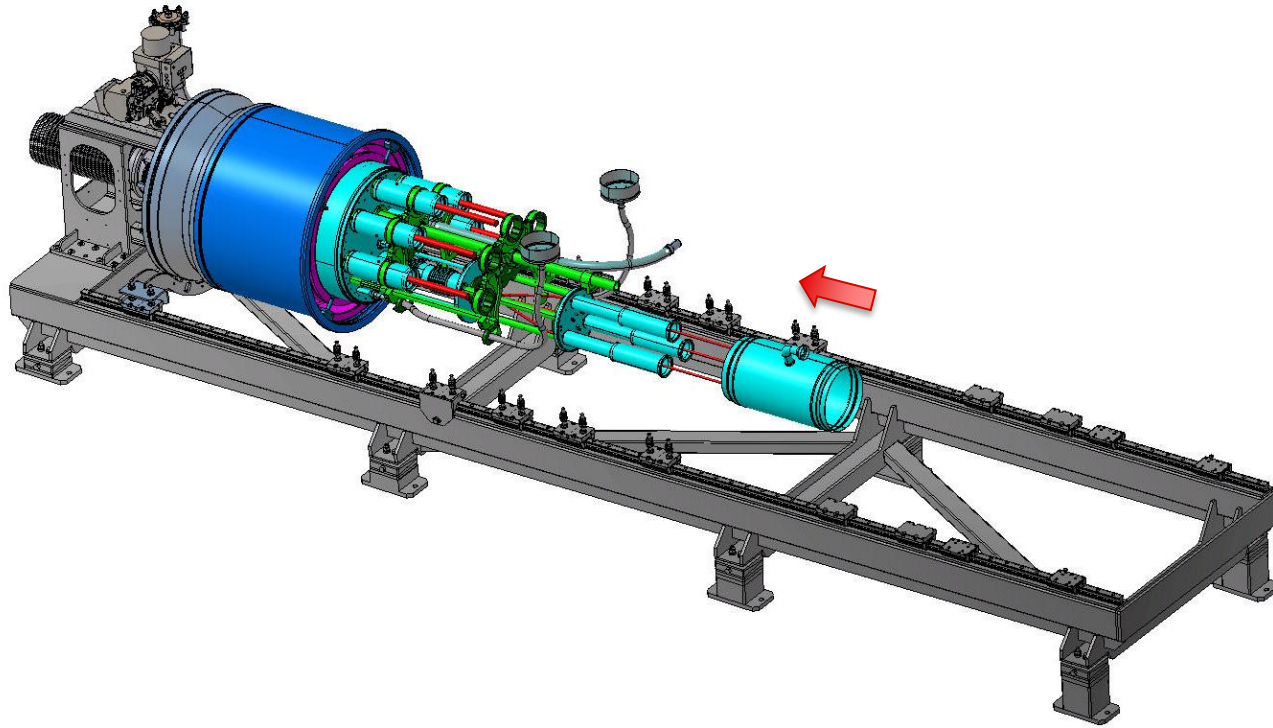


- Filling and fixation shuffling module1
- Assembly the vacuum barrier chamber
- Cable support & protection



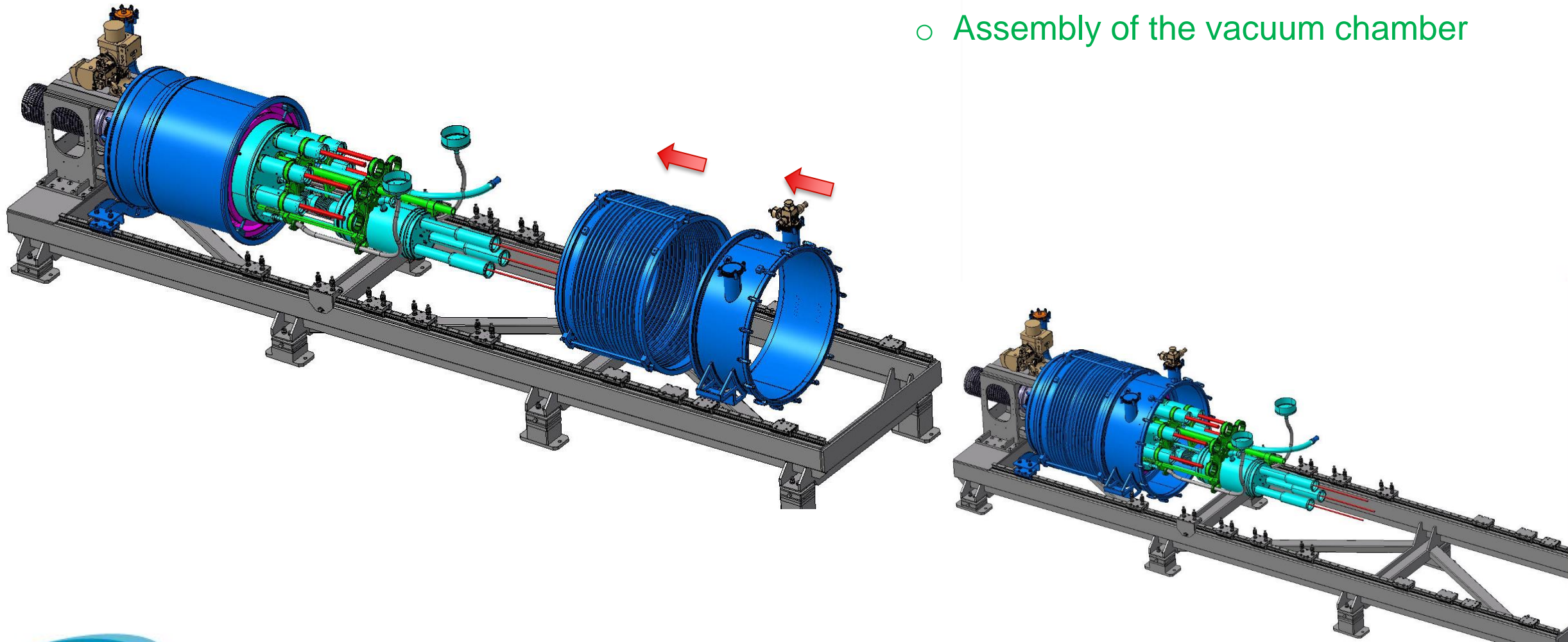
# Step 9 : shuffling chamber 2

- Assembly of the shuffling chamber 2
- Weld the chamber
- Add the support



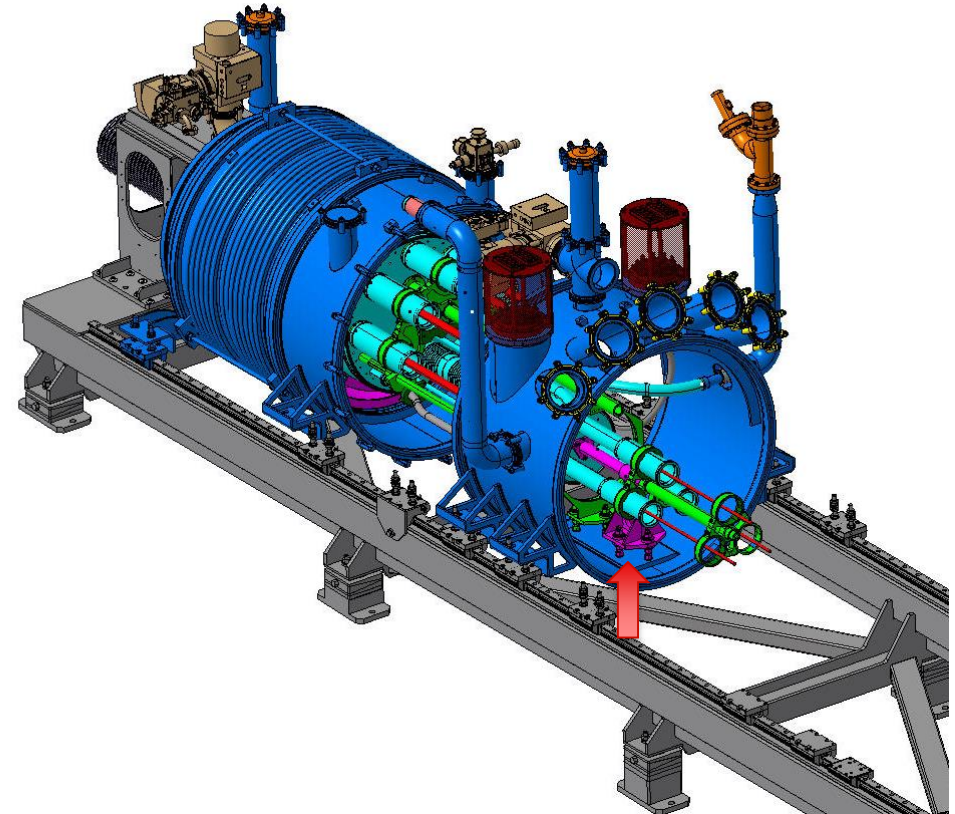
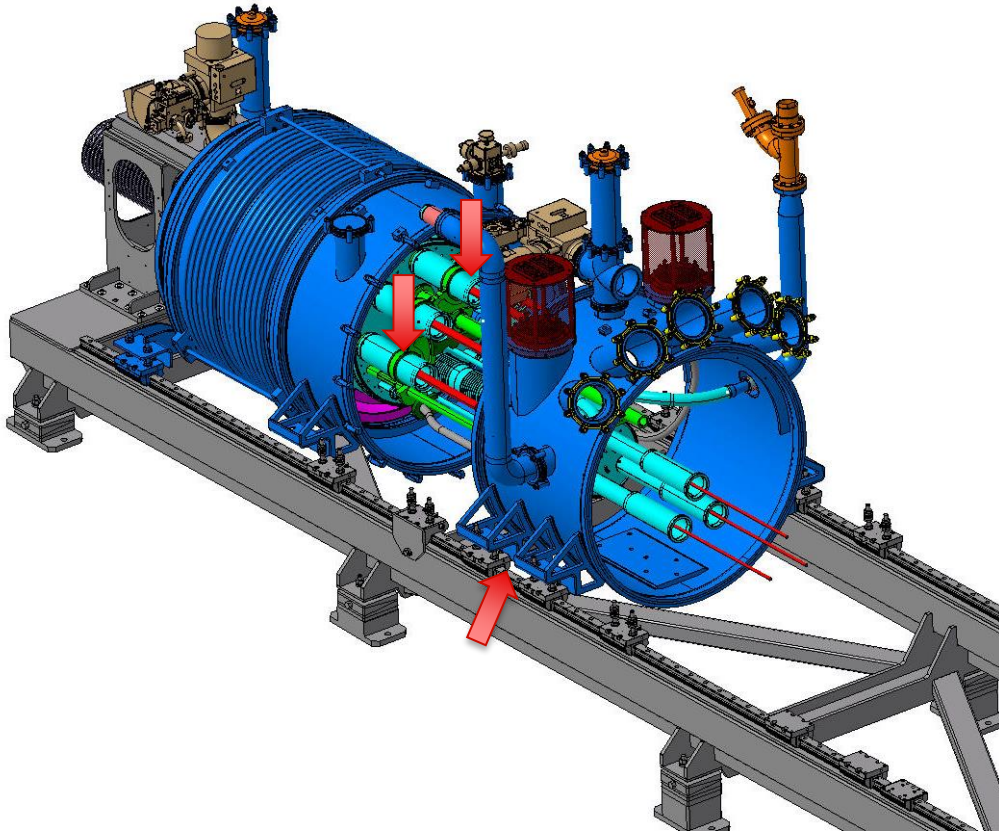
# Step 10 : assembly of the vacuum chamber

- Assembly of the vacuum chamber

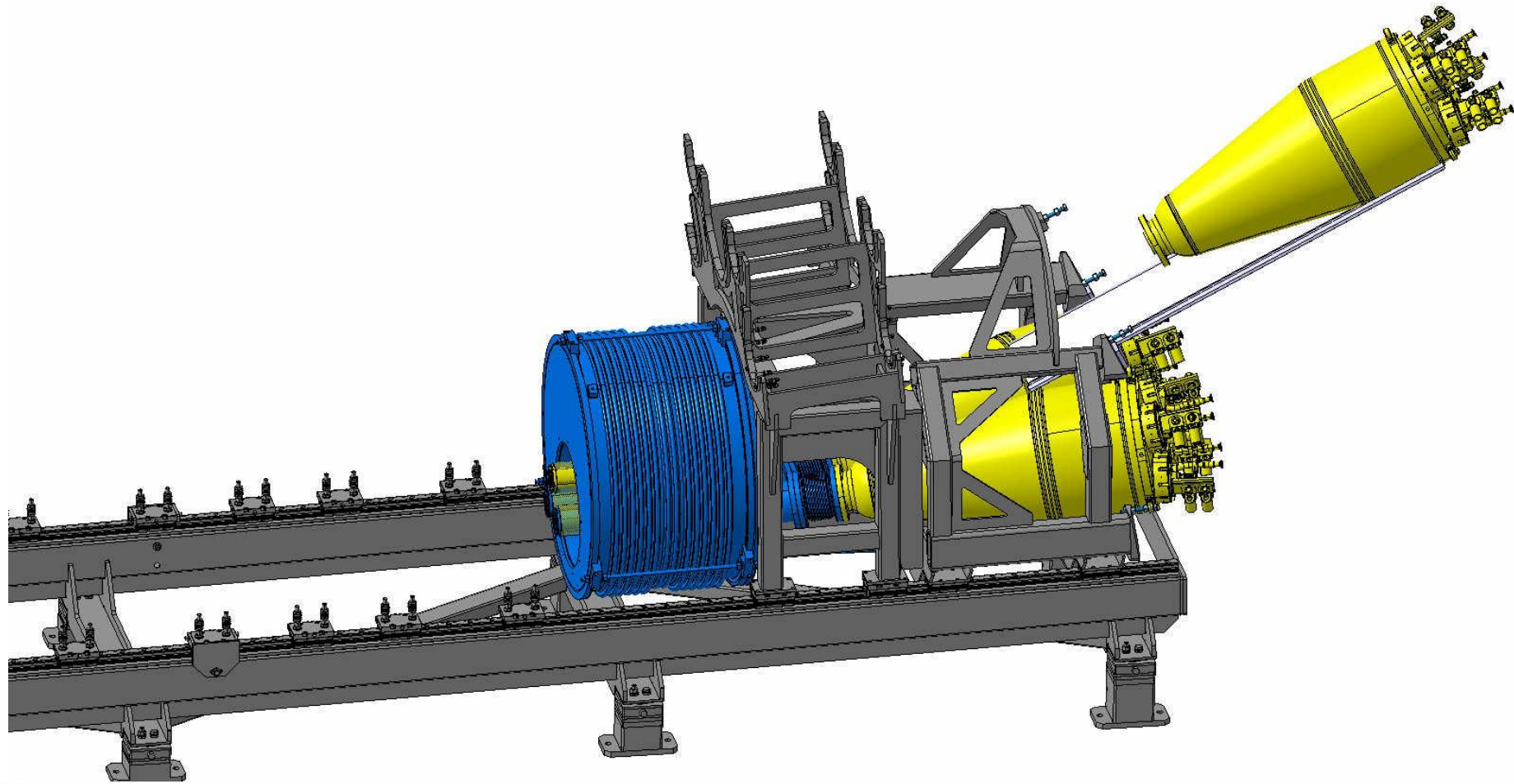


# Step 11 : assembly of the vacuum chamber

- Assembly of the central vacuum chamber
- Assembly of the fixe point
- Welding Safety tube and gaz outlet

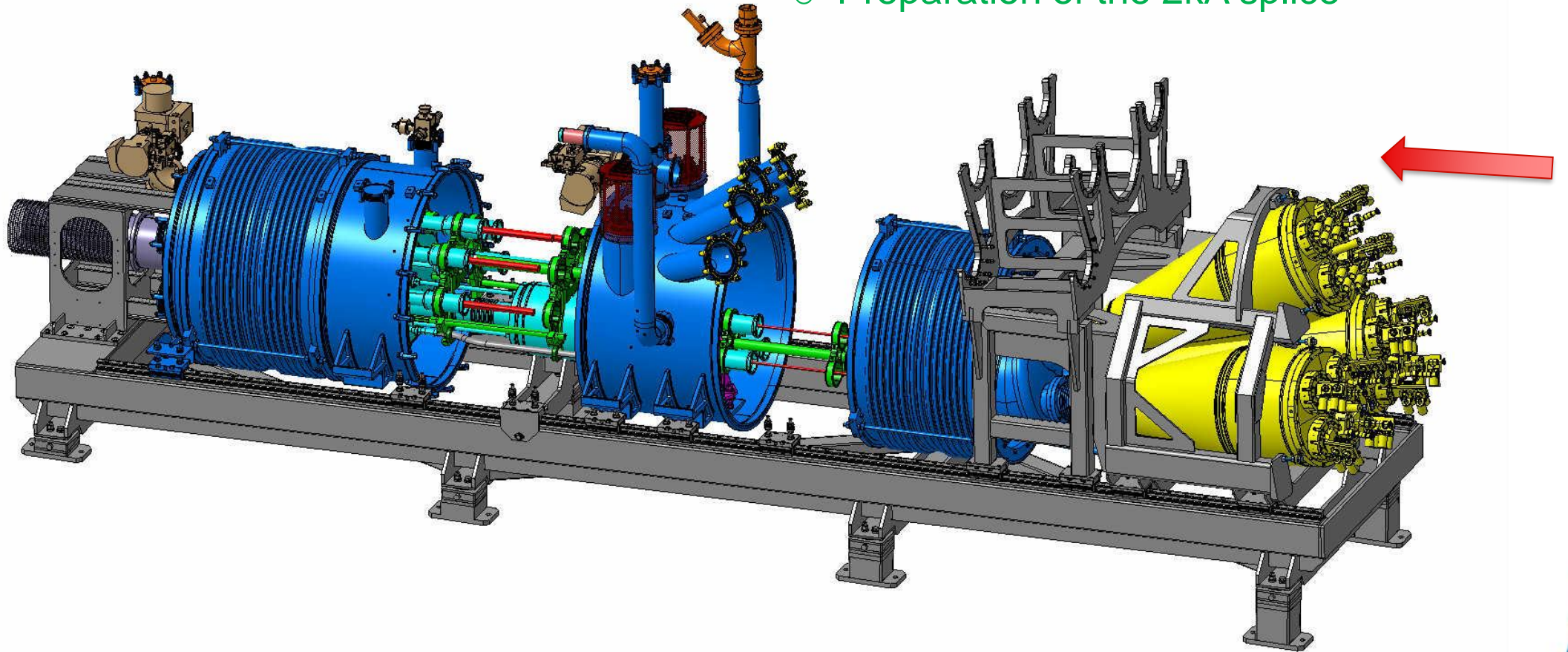


# Step 12 : 2kA Module preparation



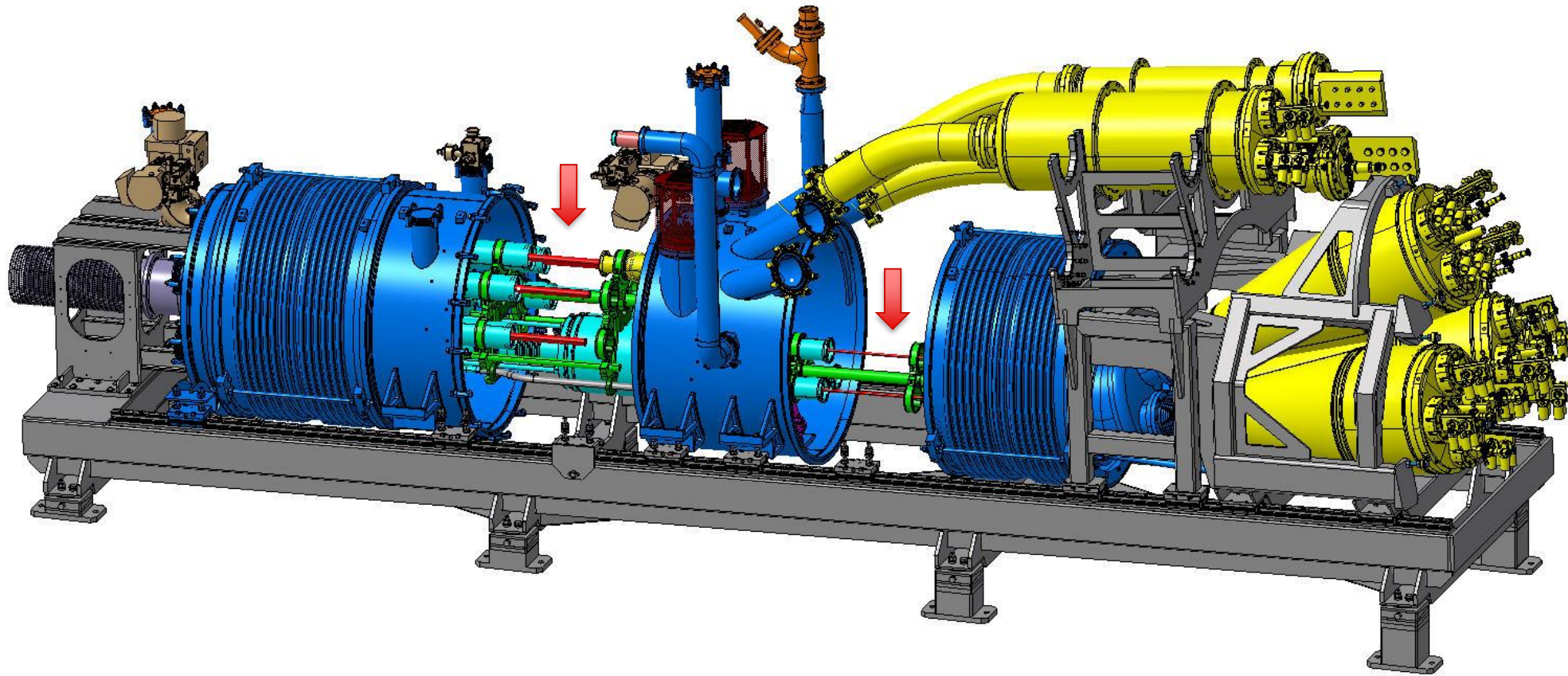
# Step 13 : assembly of 2kA Module

- Assembly of the 2kA module
- Preparation of the 2kA splice



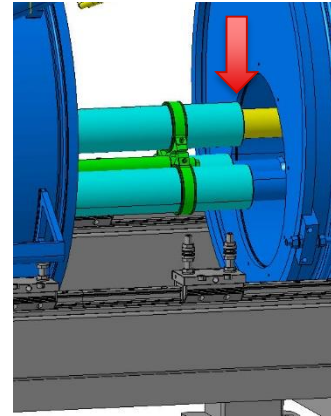
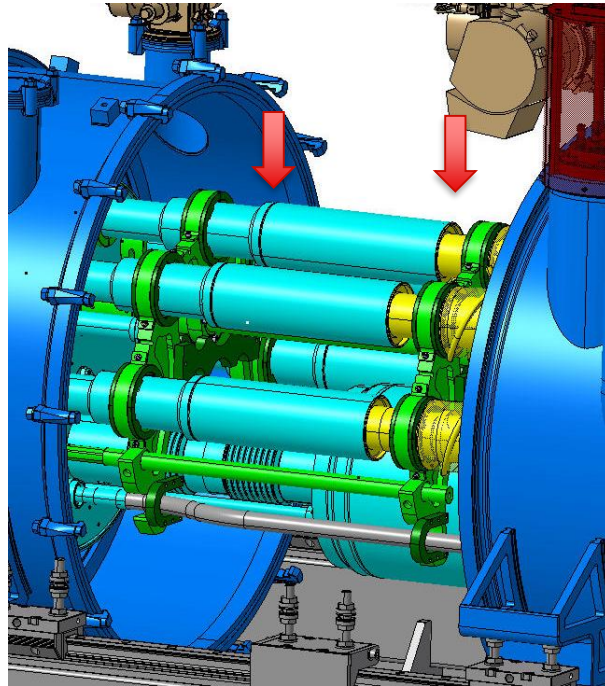
# Step 14 : splice and Current lead installation

- Splice and current lead installation

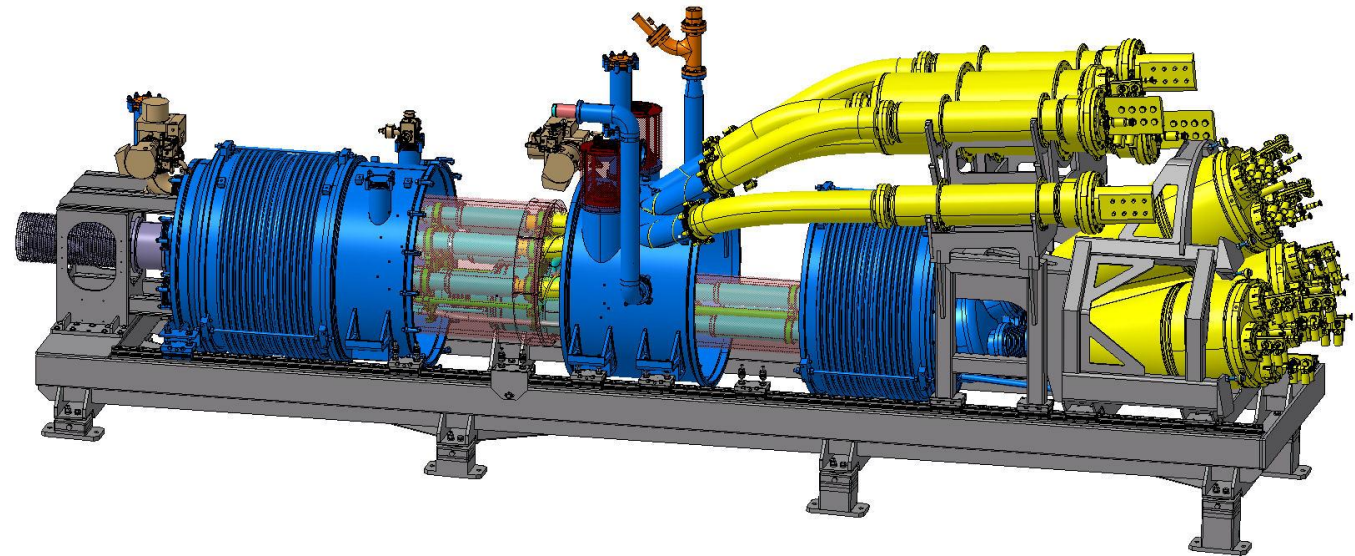




# Step 15 : close the sleeve & MLI

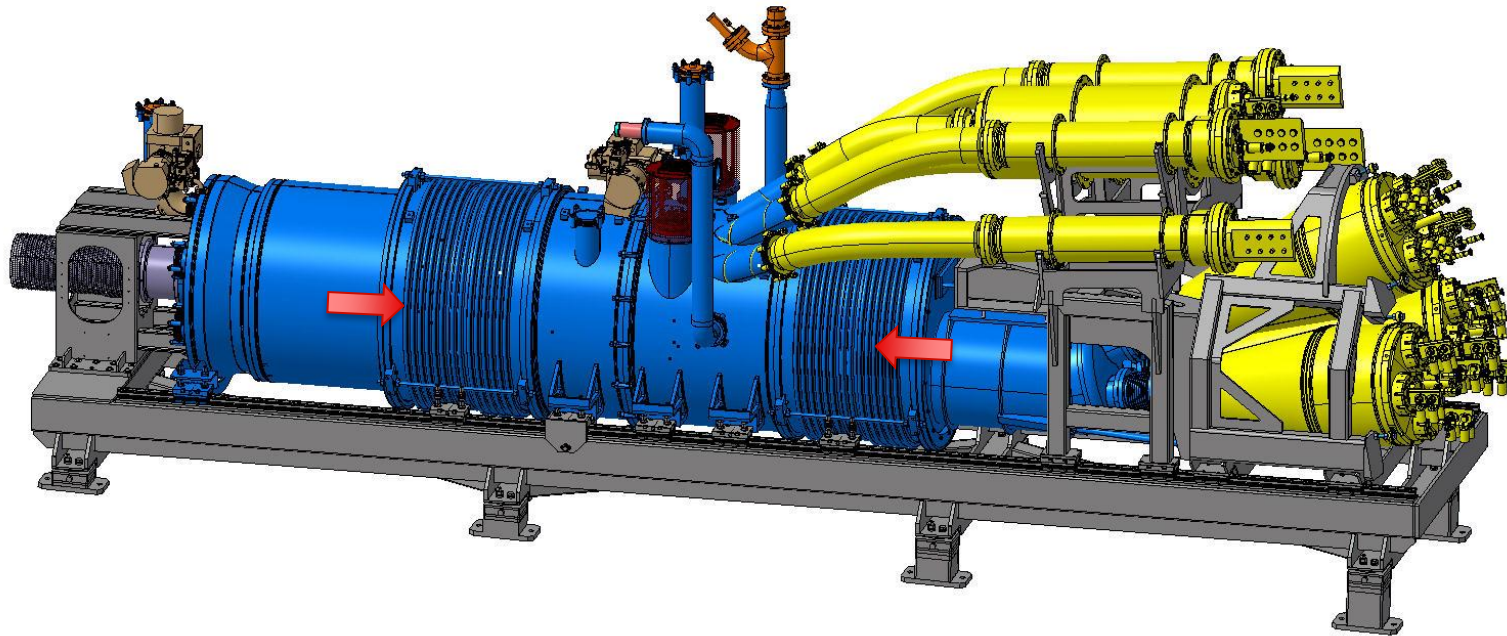


- Weld the sleeve
- MLI in place



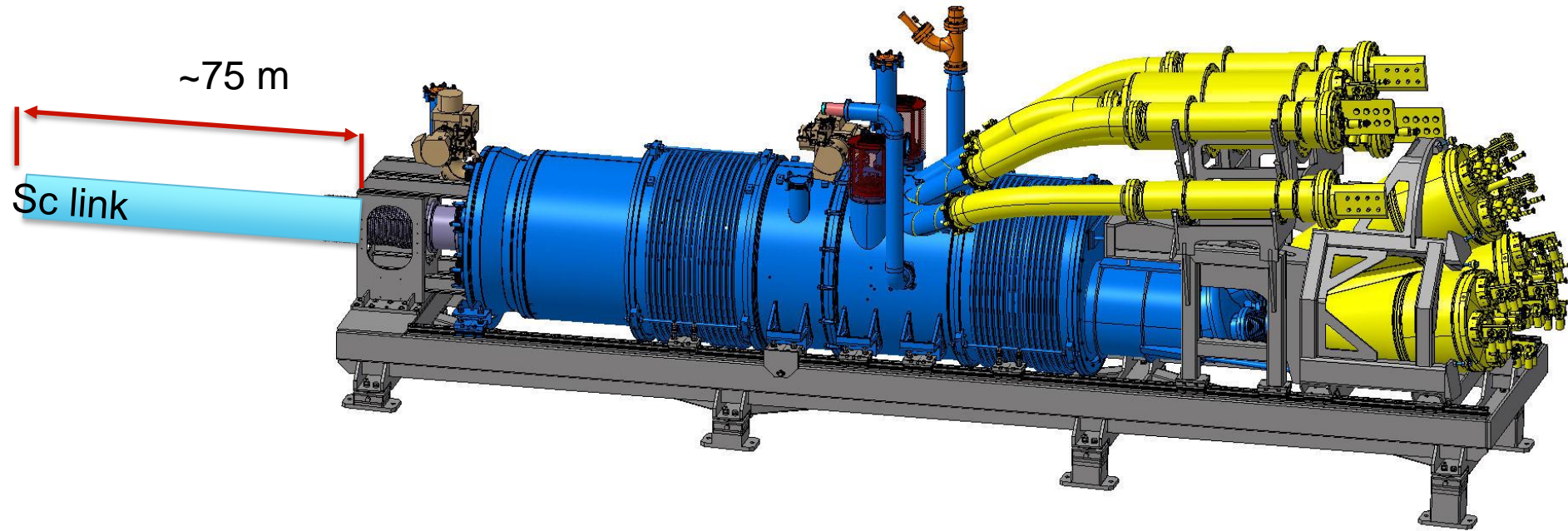
# Step 16 : close the sleeve & MLI

- Close the vacuum chamber

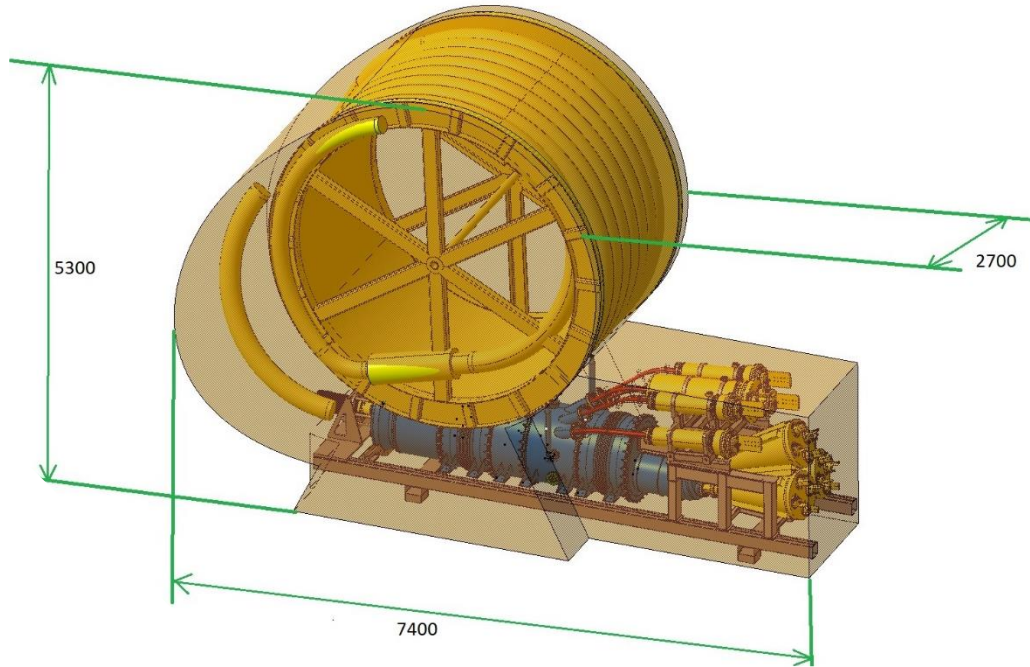


# Tunnel transport aspects

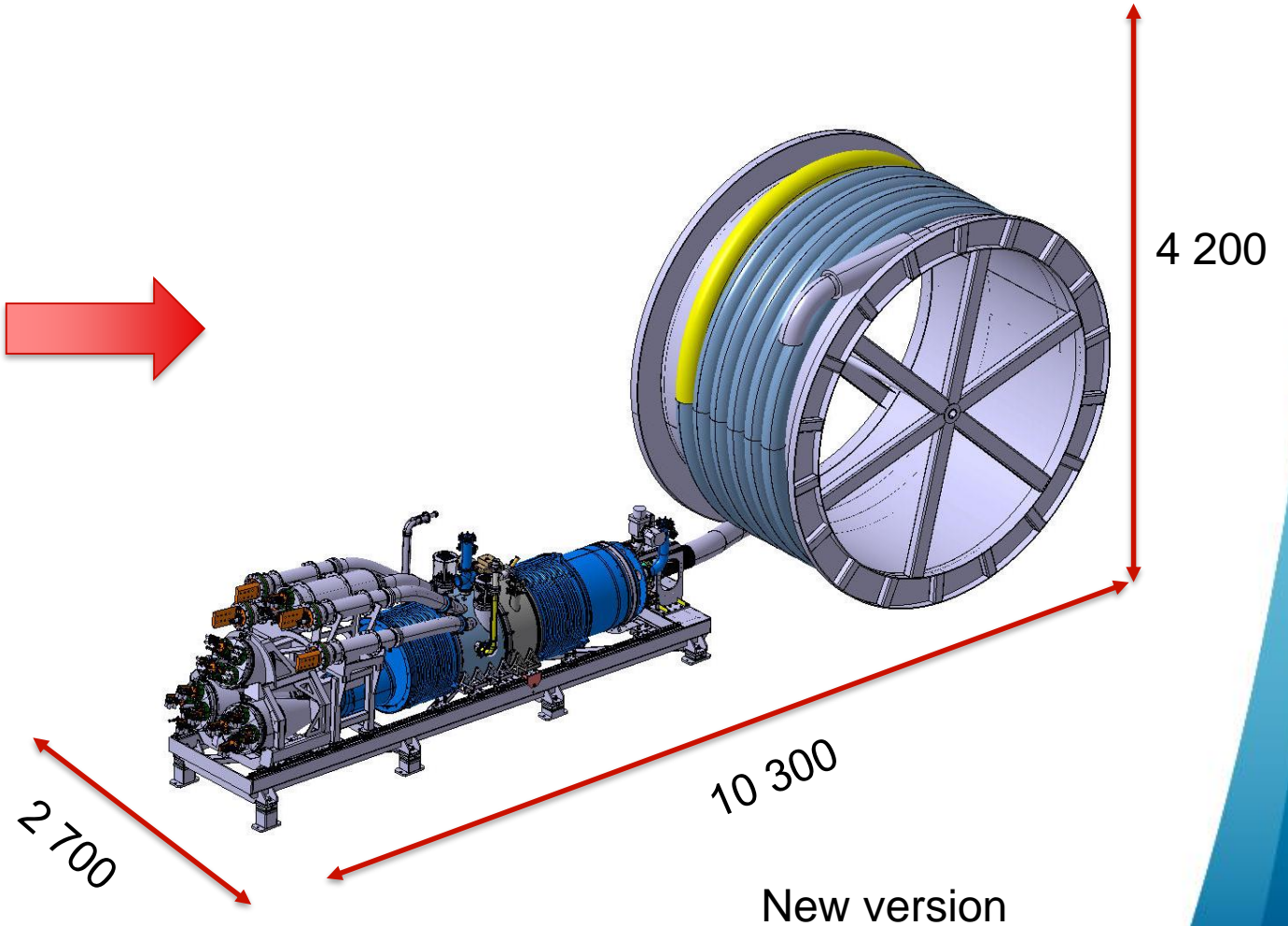
# DFHX Complet



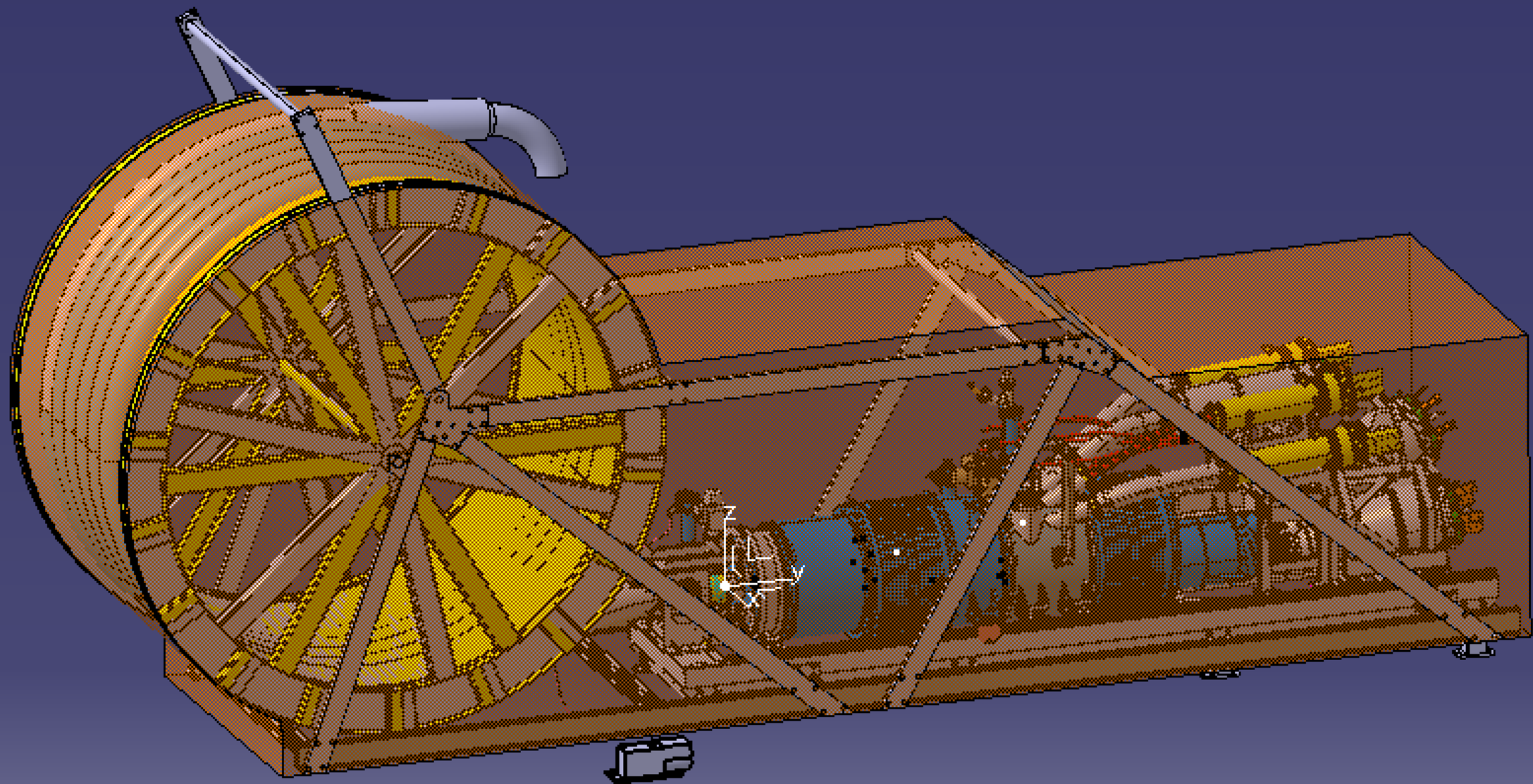
# Assembly with the spool



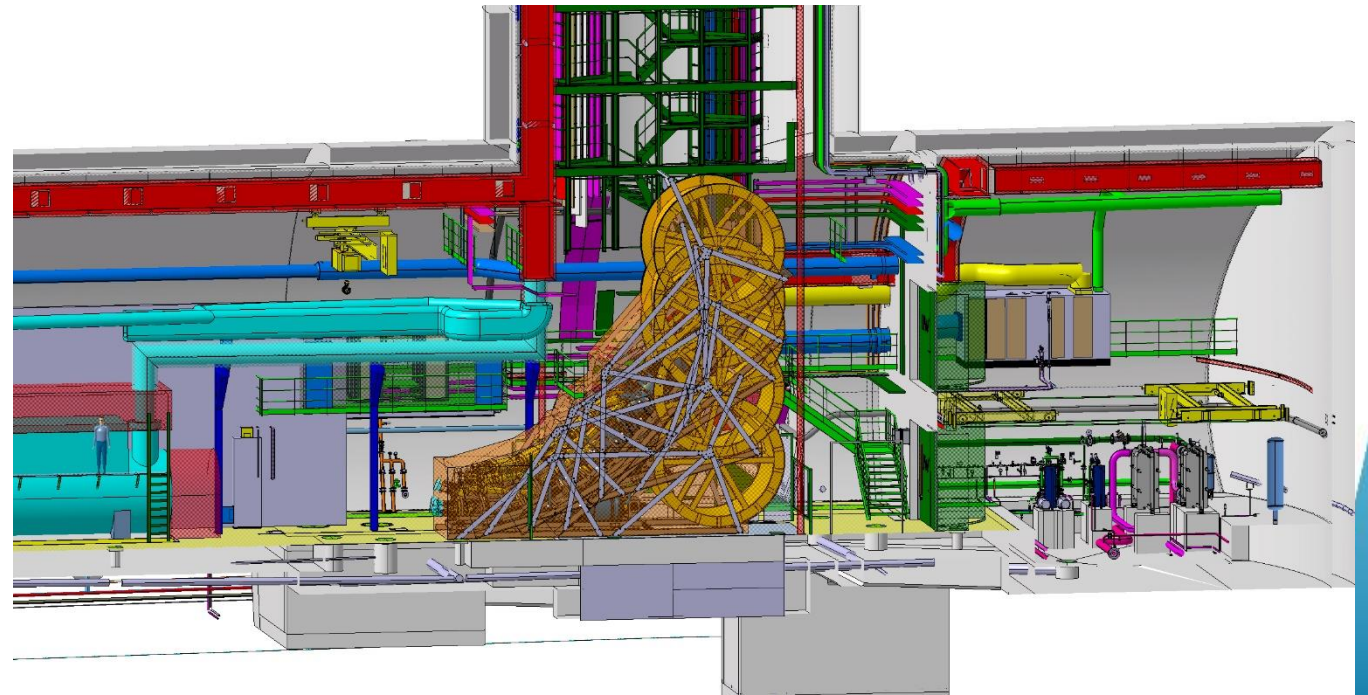
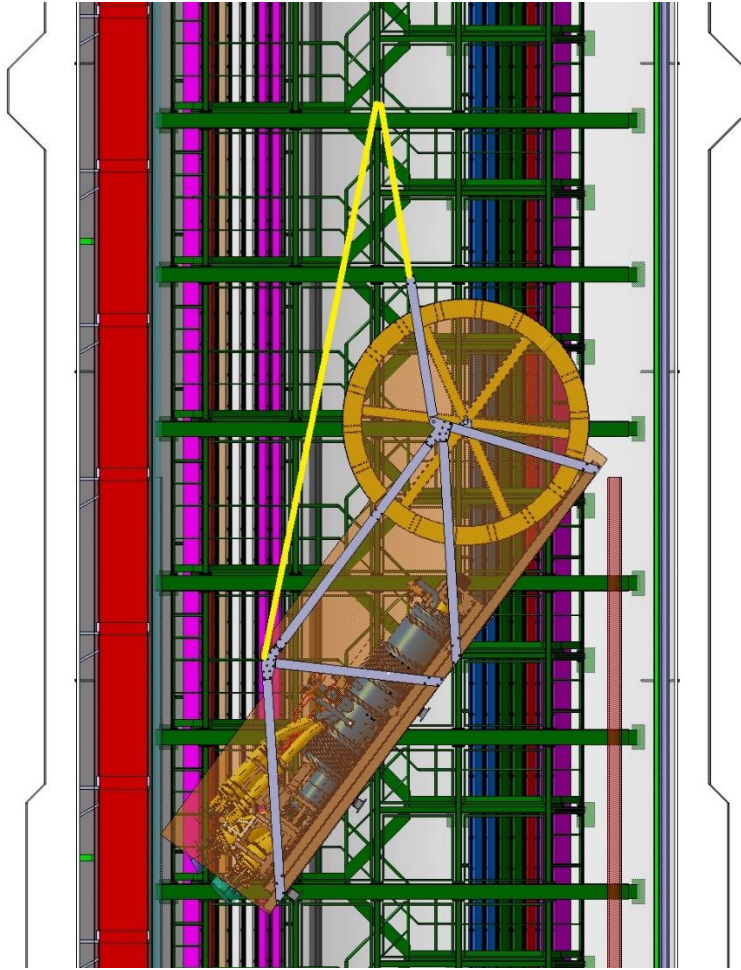
Previous version



New version



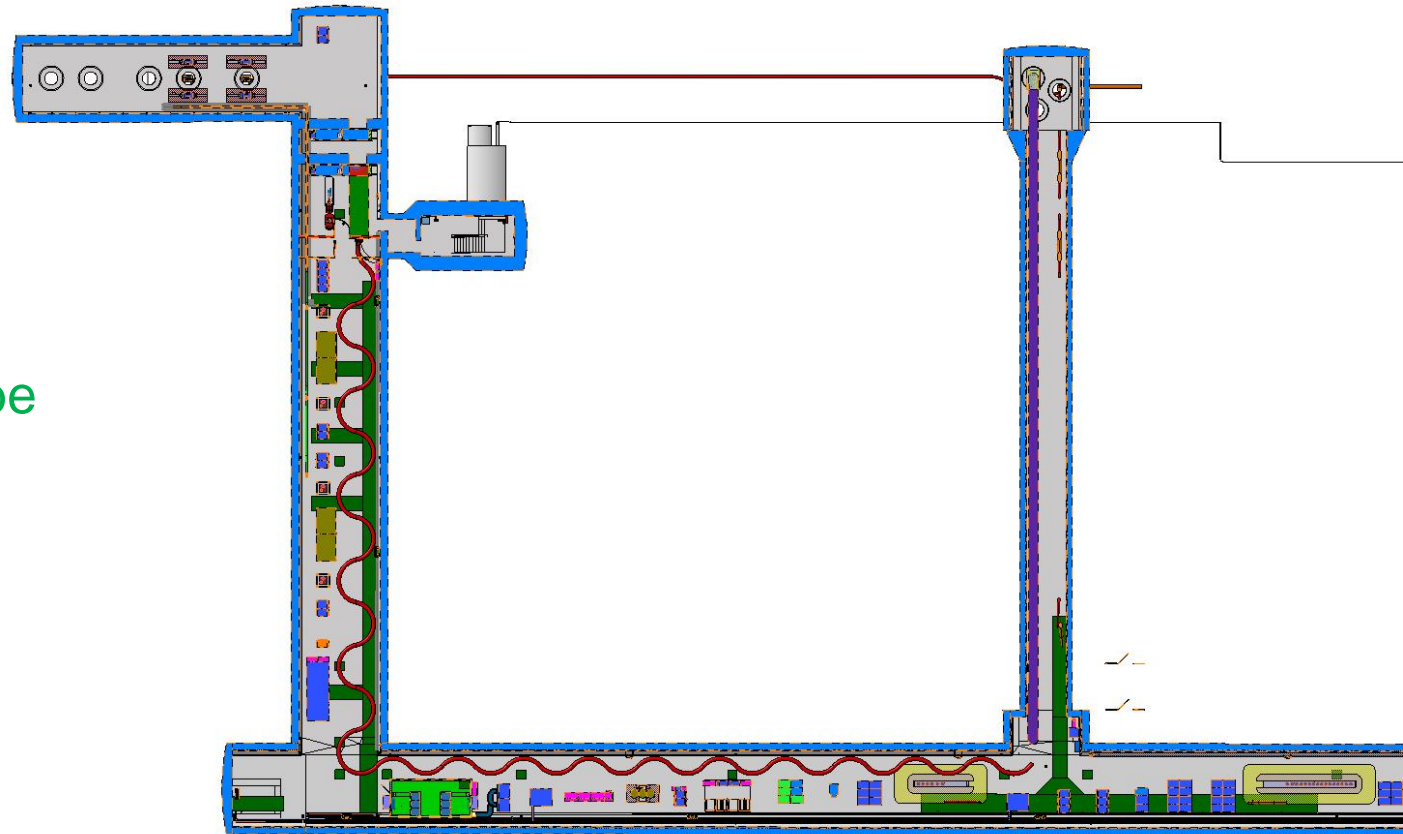
# Handling in the SD building and shaft



# Handling in the tunnel

- No change planned:

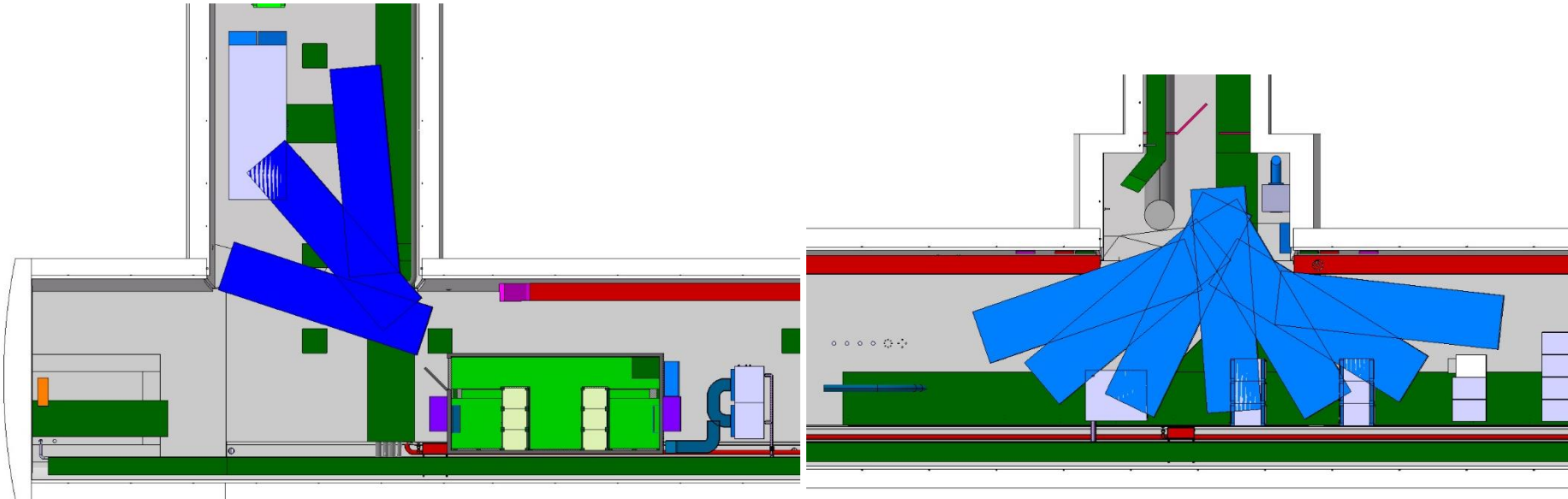
- DFH first on the tunnel
- For 2 units/PT :Turn back to be on the correct orientation





# Turn back studies of DFH

- No change planned:



# Planning requirements

- All this gymnastic is possible only with (rather) empty tunnel
- The SC link shall go on trenches so nothing is standing on them at the time of installation (Turn back area)
- The DFH and the SC link should come at the beginning of the installation

# Conclusion for transport

- Installation and transport possible and challenging
- Intensive test to be done with the SC link to test the tools and assure safe manipulation



Planned using the DEMO 2 unit after the electrical tests