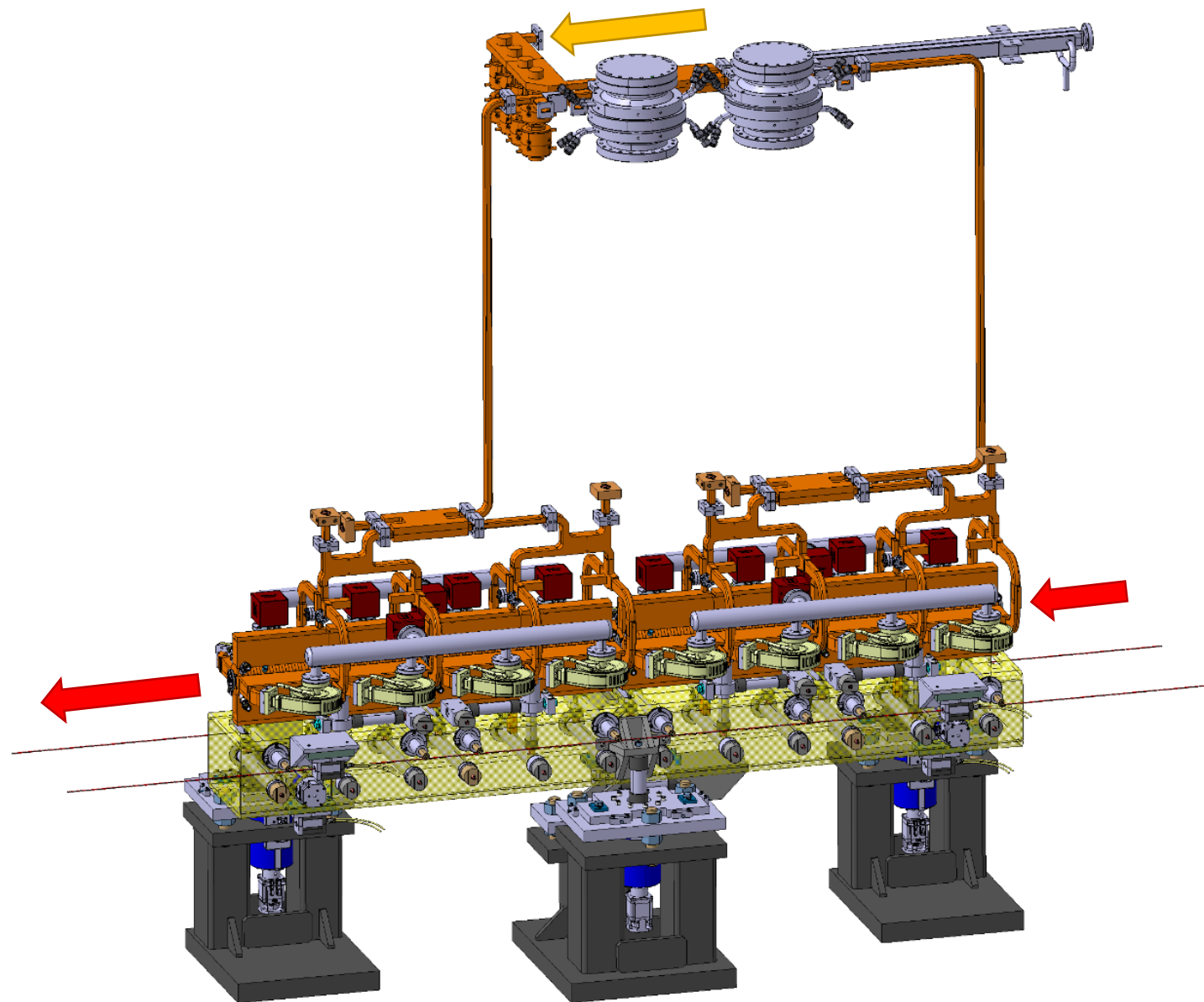


RF Power Network – Draft Slides

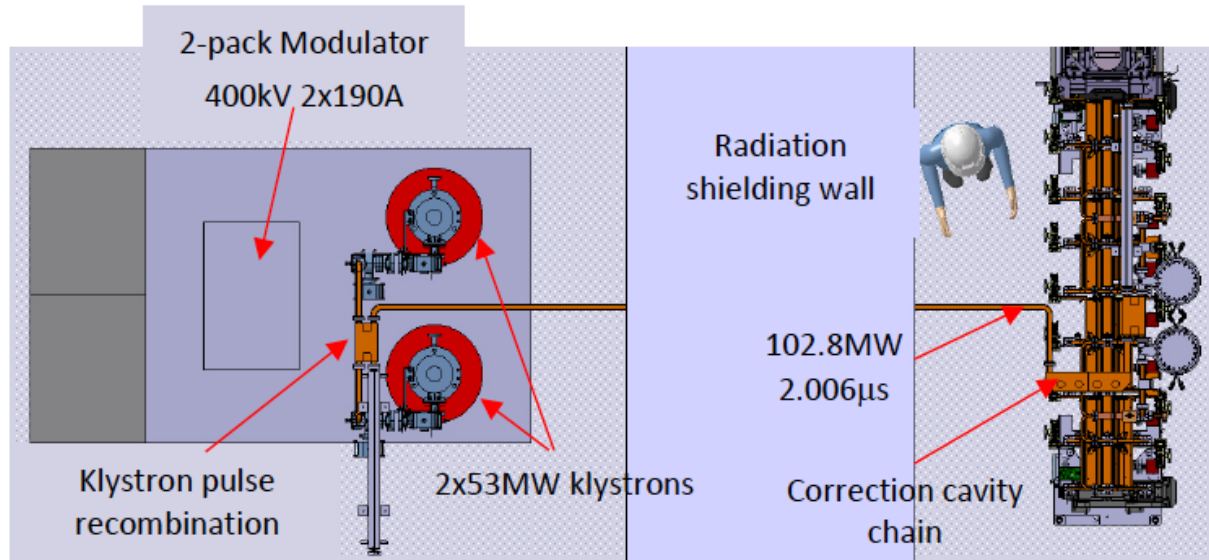
Matthew Capstick

26-01-2021

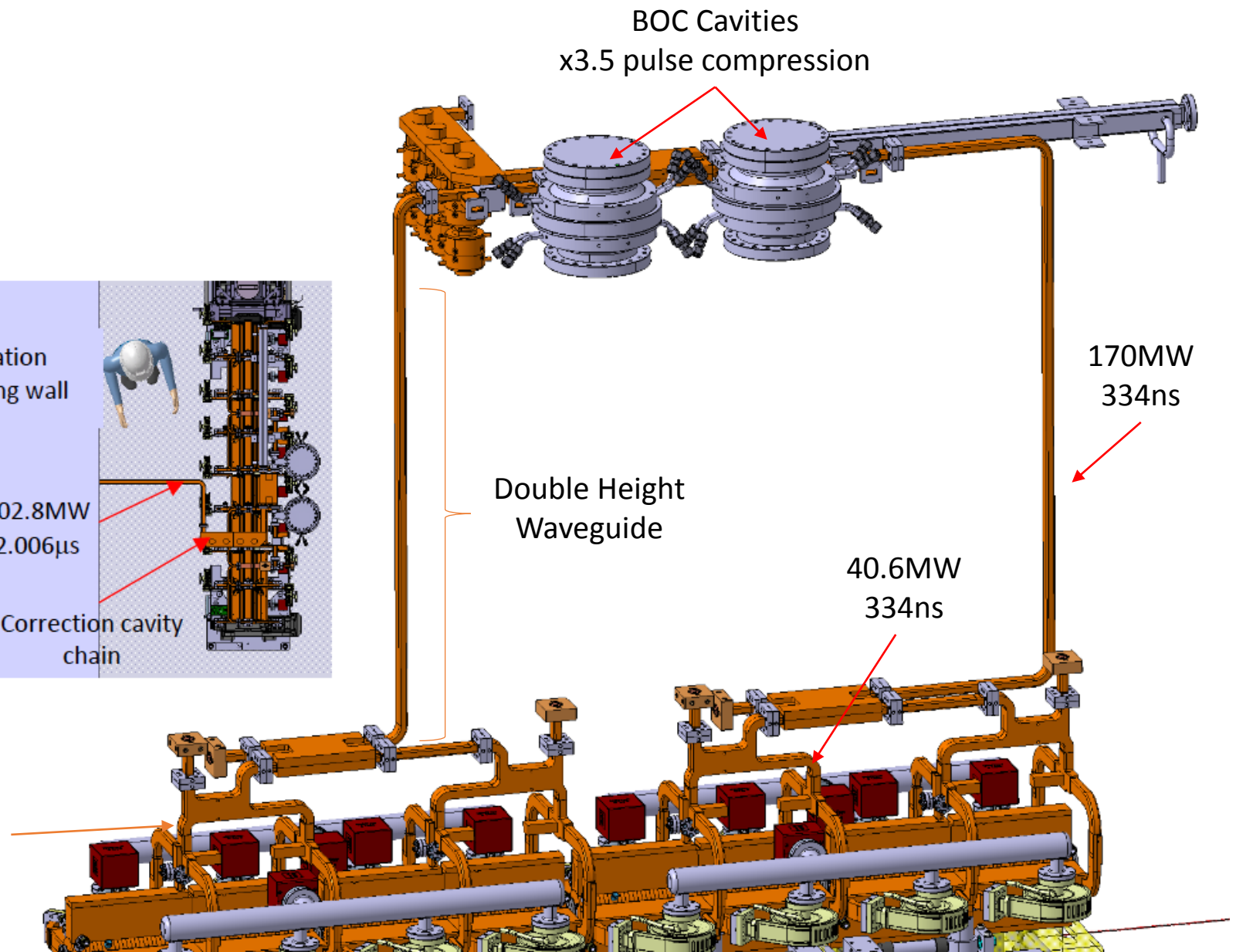
Module



RF Unit



Single Height
WR90
Waveguide



RF Components

New components required for the RF unit and waveguide network

- Double height waveguide
- Double height waveguide flanges
 - Rectangular X-band WR90 – Bolted
 - Rectangular X-band WR90 – Clamped
 - Choke mode circular – Clamped
- Bends for DHWG
- DH Hybrids

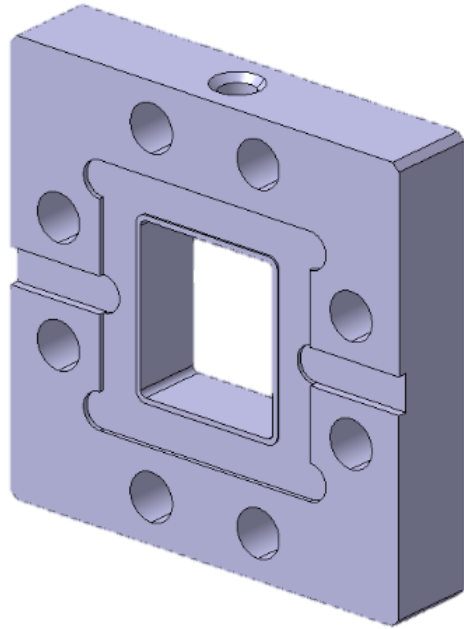
RF Components

New components required for the RF unit and waveguide network

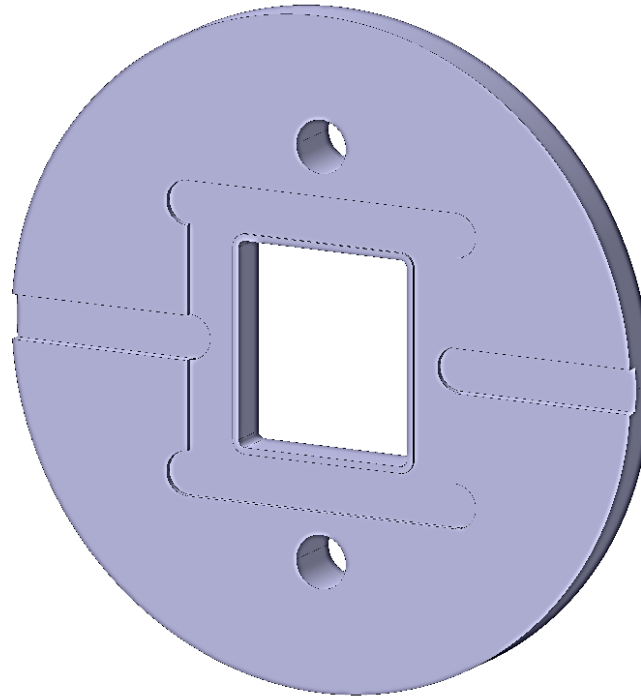
- Double height waveguide
- **Double height waveguide flanges**
 - Rectangular X-band WR90 – Bolted
 - Rectangular X-band WR90 – Clamped
 - Choke mode circular – Clamped
- Bends for DHWG
- DH Hybrids

Flanges

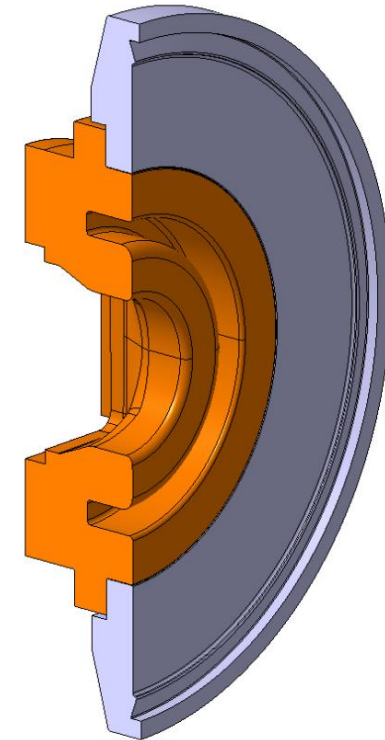
DH X-band WR90 – Bolted



DH X-band WR90 – Clamped



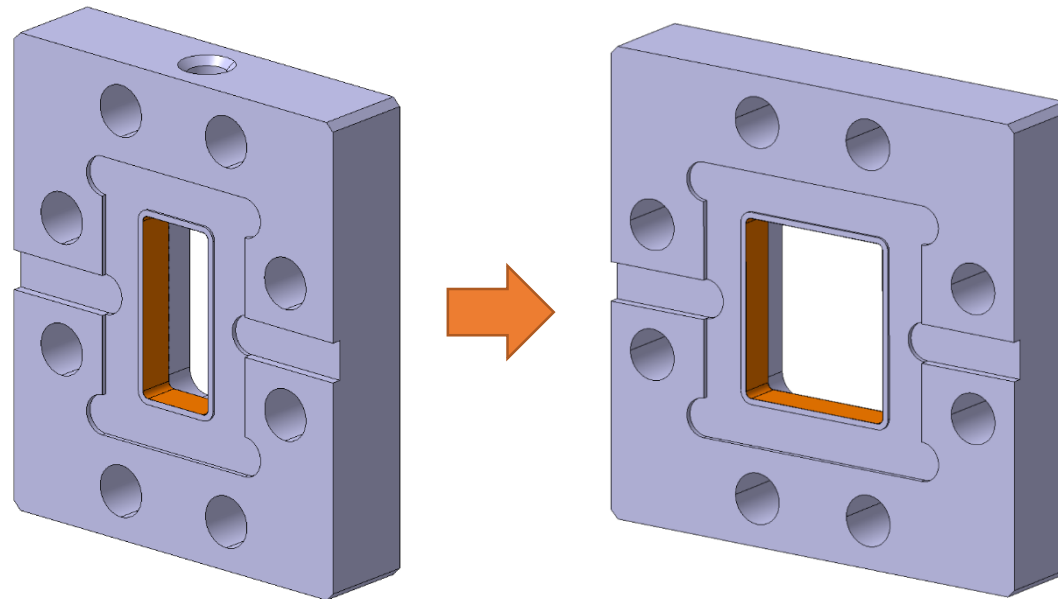
Double Height Choke Mode



DH X-band WR90 – Bolted

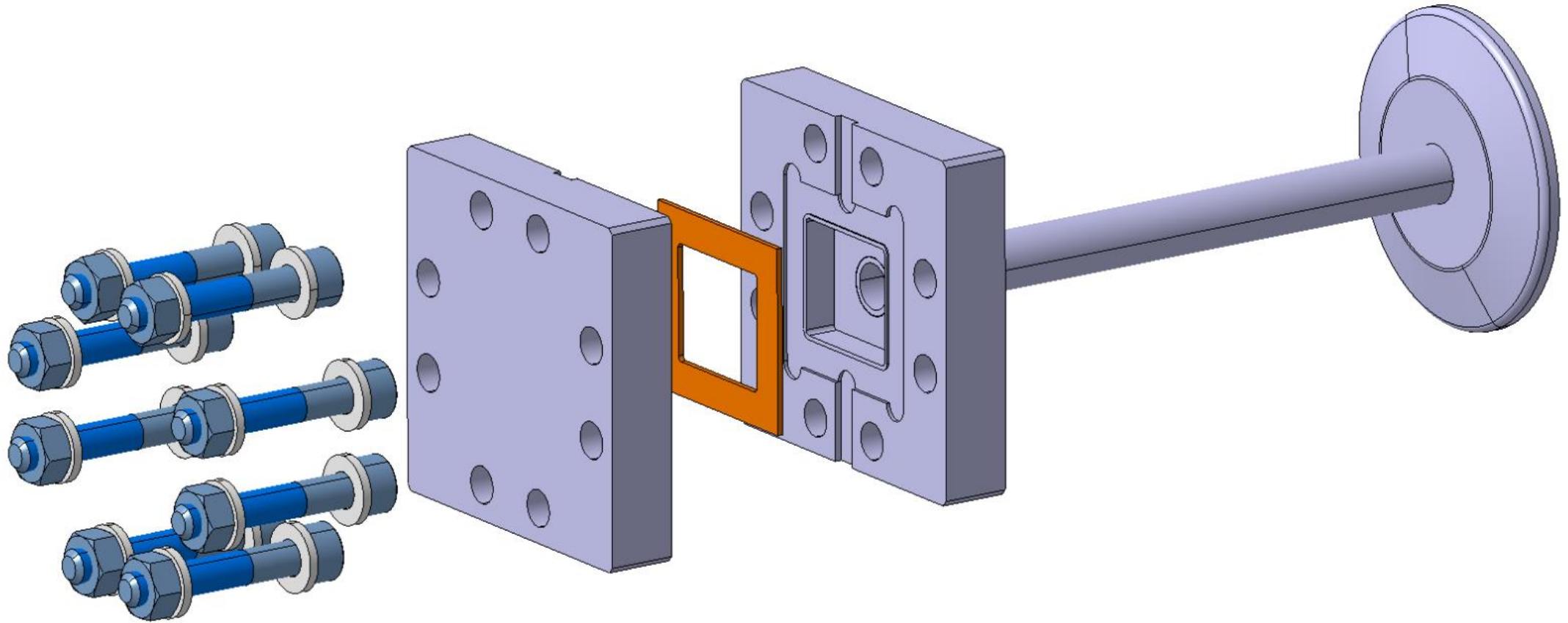
Rectangular Flange design:

- Adapted from the current X-band WR90 flange:
 - Assumes the current 'square knife edge' geometry will still work
 - Assumes that 8 bolts will still provide enough gasket sealing pressure



Vacuum Test Pieces

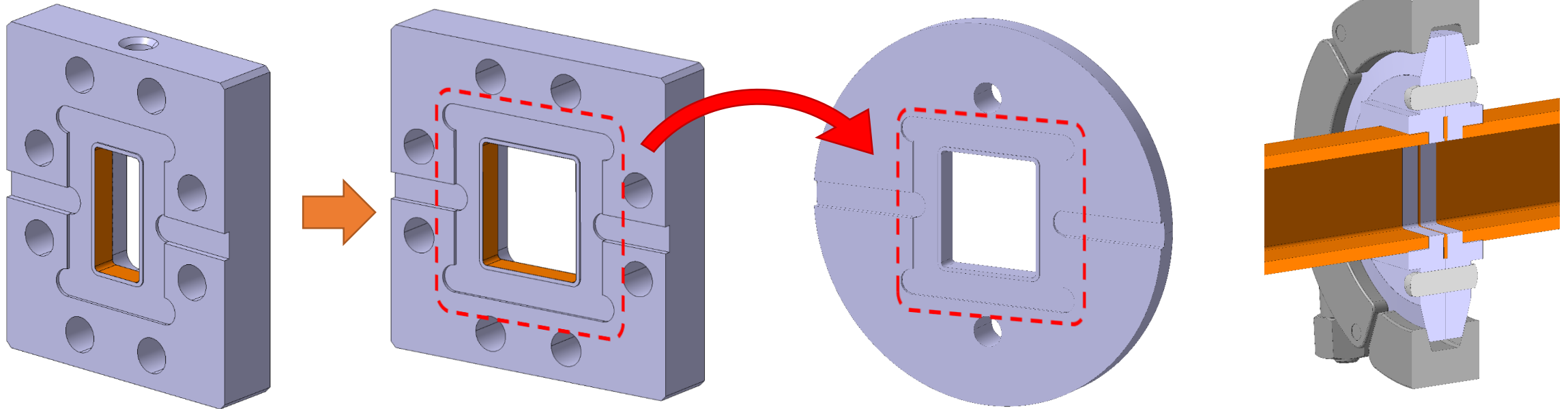
Currently in manufacture for testing:



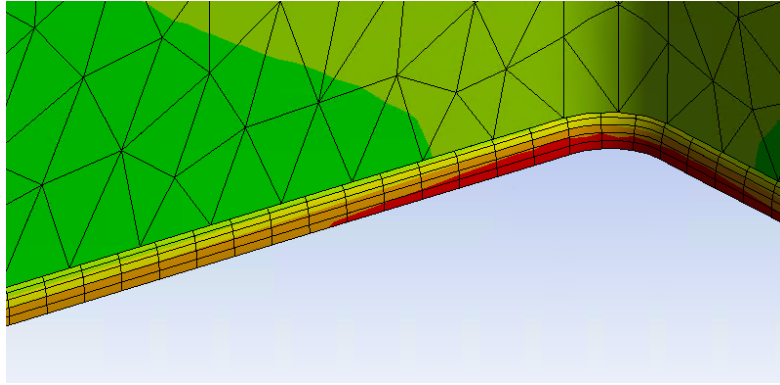
DH X-band WR90 – Clamped

Markus suggested an alternative flange based around the:

- IUWR90 gasket RF connection and vacuum seal
- ~~KF50~~ equivalent external geometry
- It would require alignment features (pins or dowels) to fix rotation
- **Whether the KF50 clamp would produce enough clamping force is unknown**



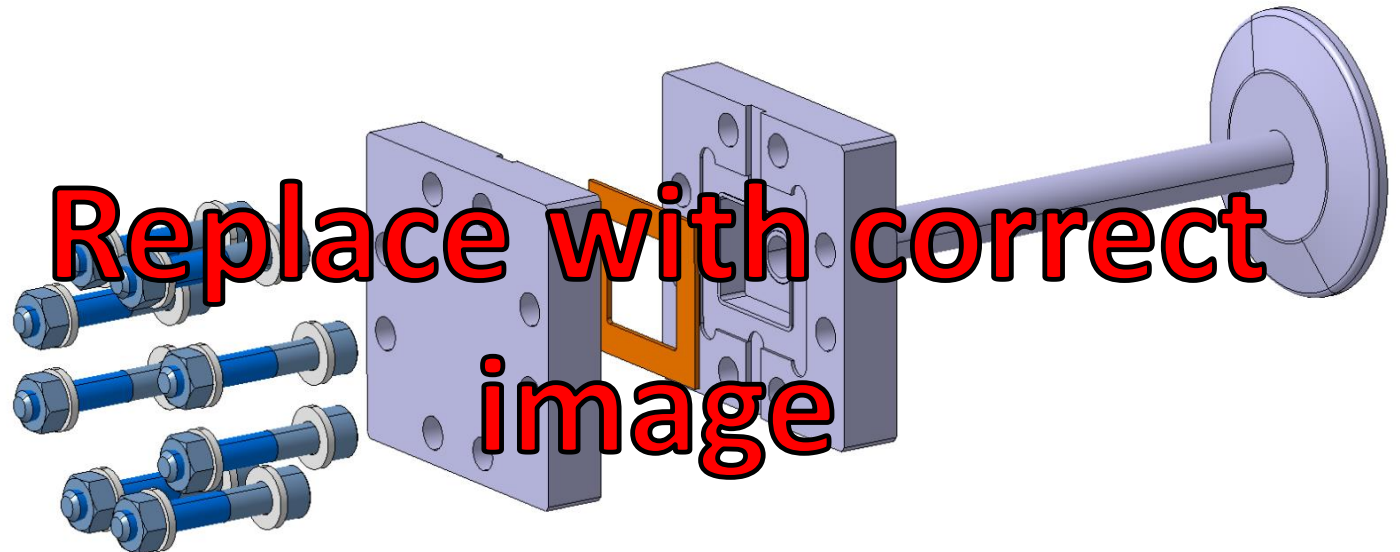
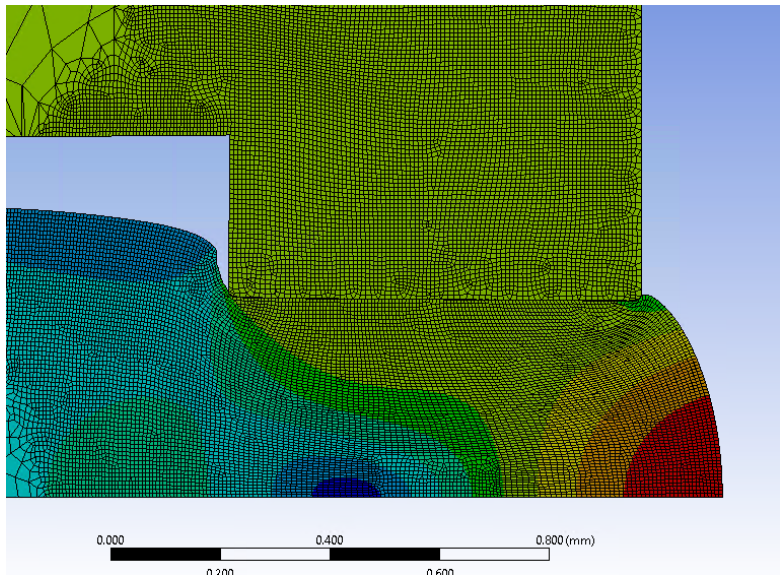
Vacuum Test Pieces



Whether chain clamps can provide the required sealing force is unclear.

In analysis the gasket reaches maximum deformation at 60% of the maximum QCF DN63 Clamp pressure

Currently in manufacture for testing:



Choke Mode

- Advantages
 - Uses standard CF DN64 Copper gaskets and chain clamps
 - Vacuum sealing unlikely to be a problem
 - Separates the RF and Vacuum connections
 - Axially rotatable
- Complications:
 - Relatively complicated geometry
 - Introduces additional brazing operations
- Status:
 - Required for waveguide pumping ports
 - RF Geometry not final

