

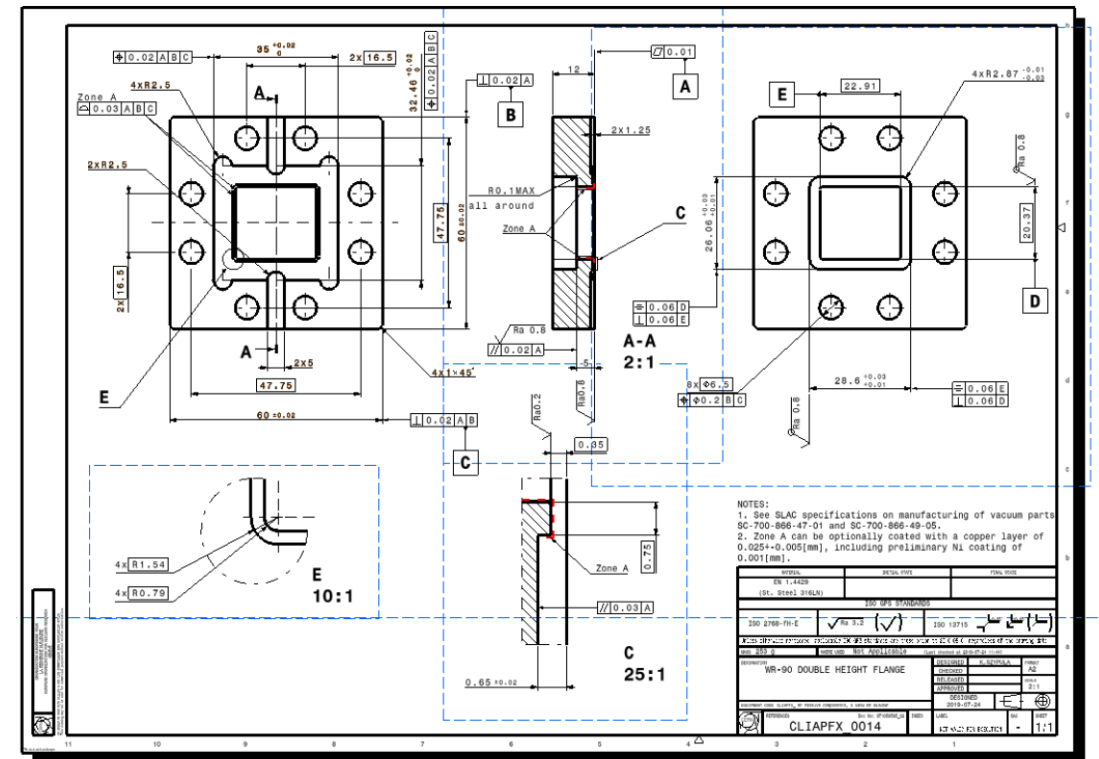
Double Height Waveguide Flange

Matthew Capstick

10-02-2021

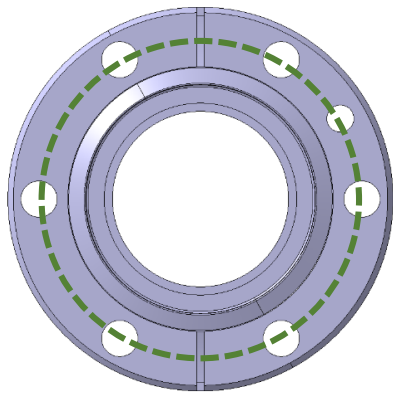
Double Height WR90 Flange

- A design and drawing was already put together Kamil
 - The drawing is still in-work
- Essentially identical to the previous WR90 rectangular flange
- Doubling the width slightly changes the bolt spacing
 - Might effect the sealing pressure

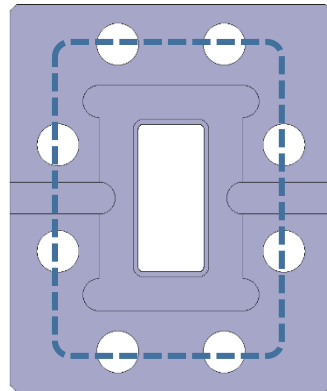


Gasket Sealing Pressure

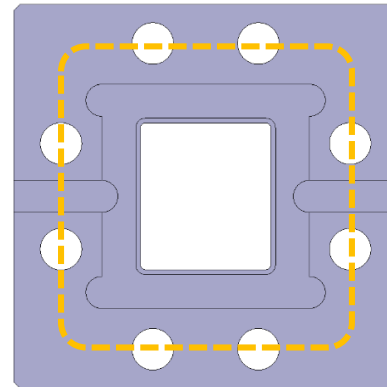
- Standard CF50 sealing = 6 x M6 (10.9) @ 16Nm [Kurt Lesker](#)
- Copper CF Gaskets require a sealing pressure greater than 200N/mm (range 150N/mm – 600N/m) [Pfeiffer Vacuum](#)
- Calculated sealing pressures:
 - Standard round CF: 444.44 N/mm
 - Current WR90: 535.48 N/mm
 - Double Height WR90 [8 bolts holes]: 444.89 N/mm
 - Double Height WR90 [10 bolts holes]: 654.04 N/mm



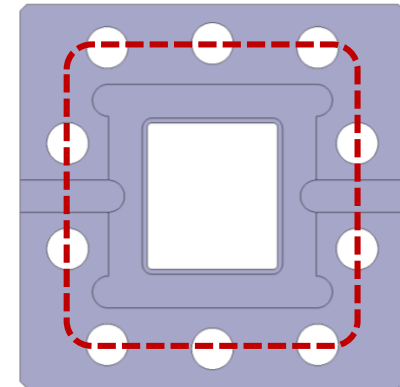
*Standard Round CF
50 [6 bolts holes]*



*Current WR90
[8 bolts holes]*



*Double Height WR90
[8 bolts holes]*

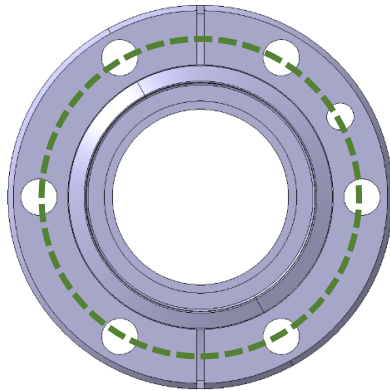


*Double Height WR90
[10 bolts holes]*

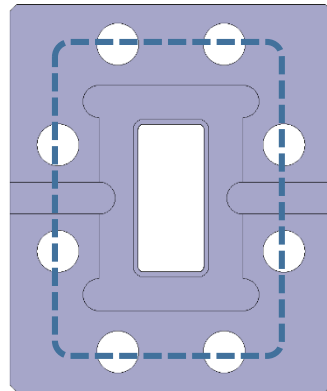
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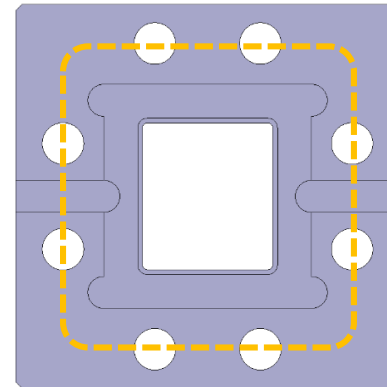
8 Bolt Double Height:
Gasket sealing pressure less than the current WR90 flange, but comparable to a standard round CF50 flange



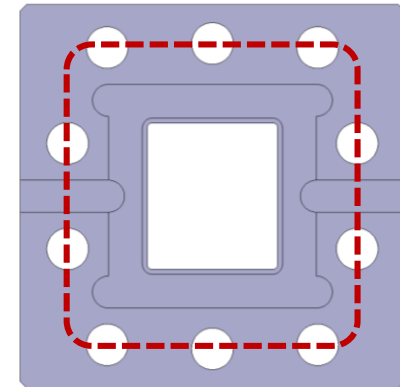
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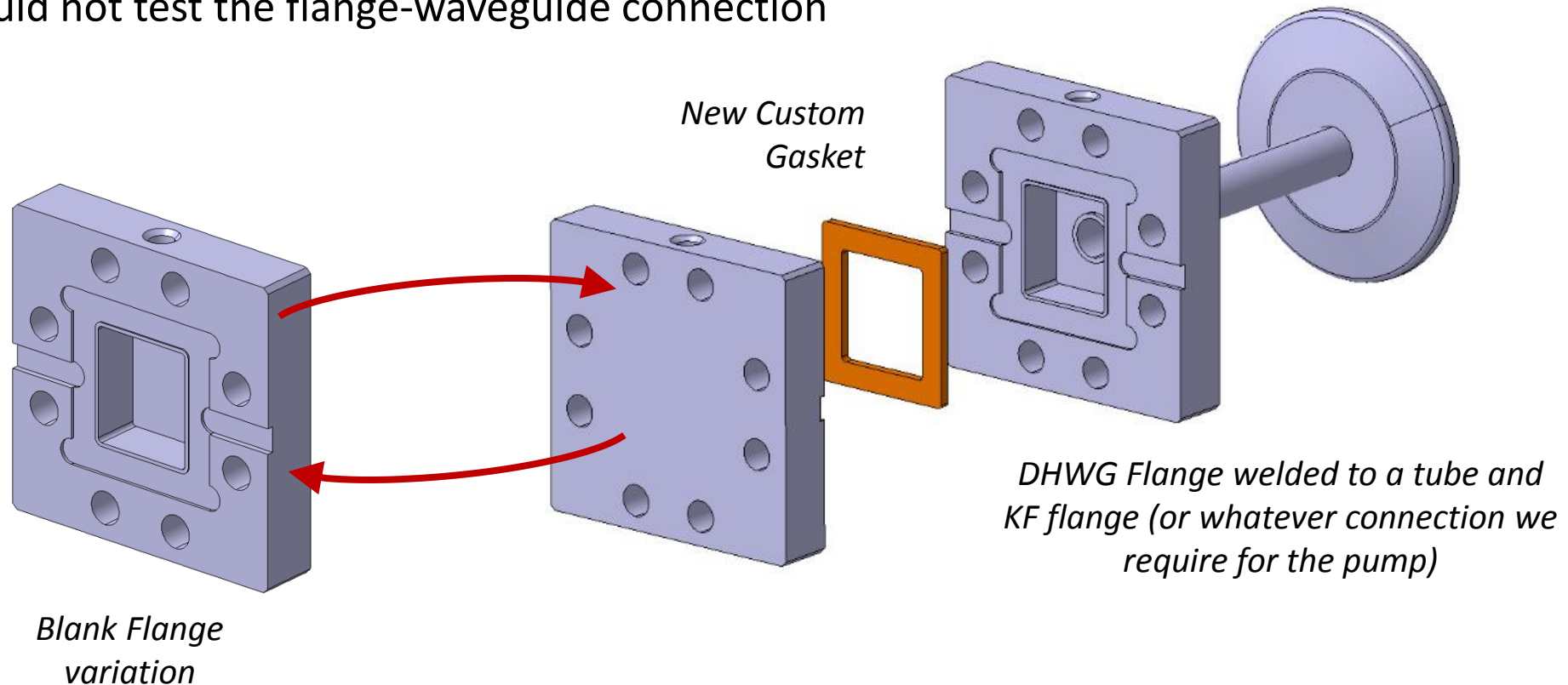
*Double Height WR90
[8 bolts holes]*



*Double Height WR90
[10 bolts holes]*

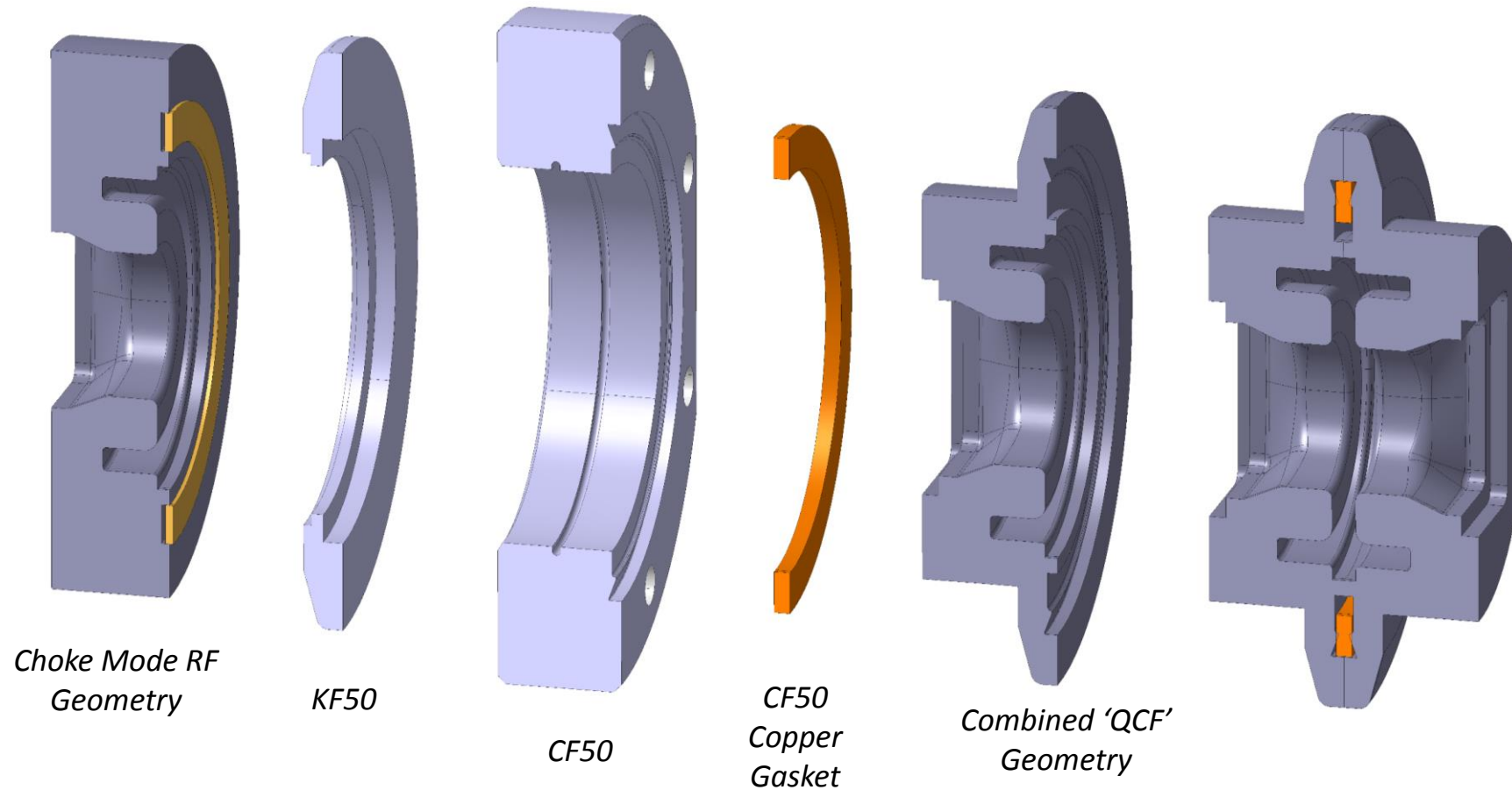
Vacuum Testing Possibility

- The design means the gasket should be relatively easy to vacuum test
- This would not test the flange-waveguide connection

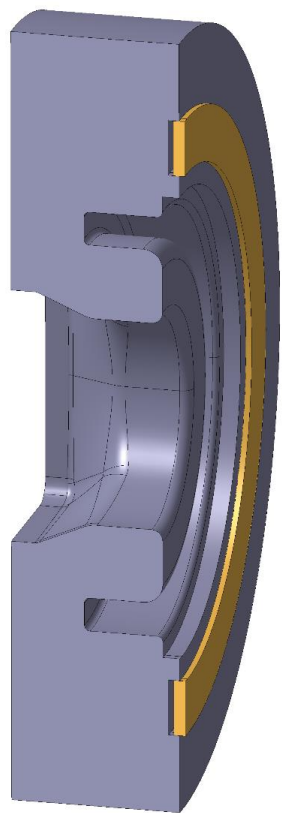


Choke Mode Flange

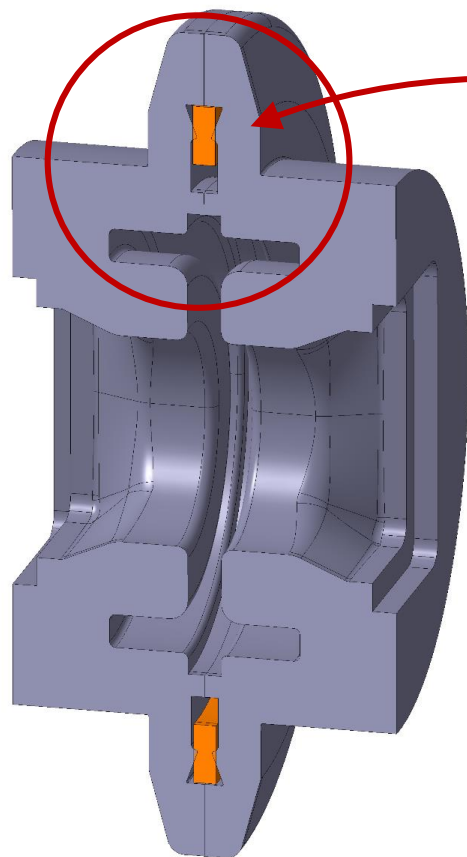
- Alternative round choke-mode flange with a standard gasket and external taper for chain clamps



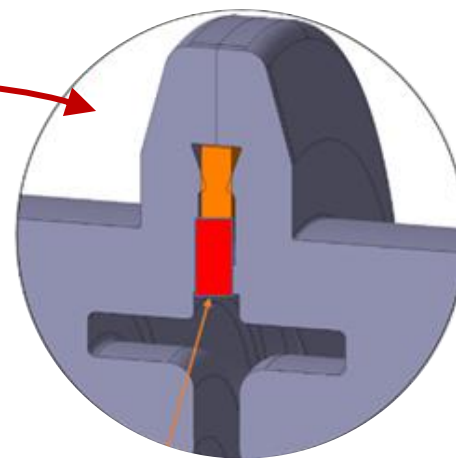
Choke Mode Flange



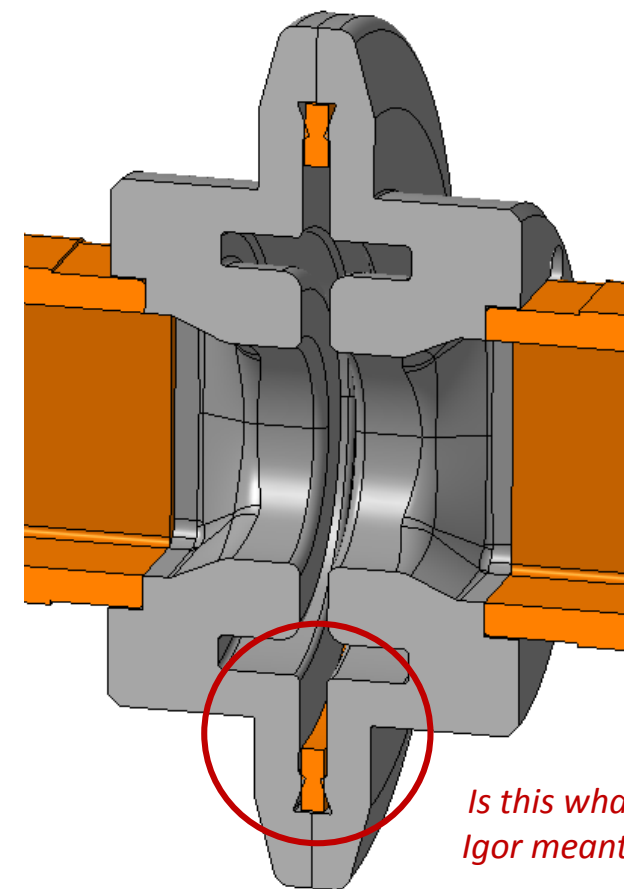
Choke Mode RF
Geometry



1st Mechanical Design



Feedback from Igor:
"you may do something like this
(red square) as well, that will
also make design simpler (but
gasket thickness shall be fixed)"

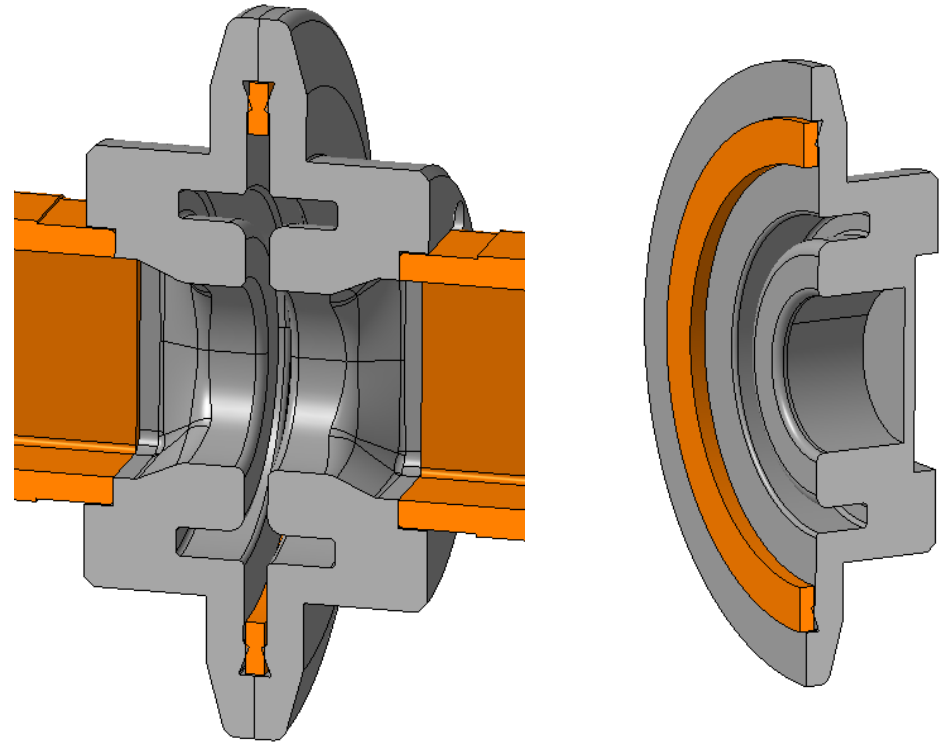


Is this what
Igor meant?

2nd Mechanical Design

Vacuum Testing Possibility

- The choke-mode rf geometry is no final, it is designed for a 22mm square waveguide
- Possibility to manufacture a blank which does not include the choke-mode geometry to test the gasket/vacuum connection
 - Again this would not test the flange-waveguide connection



*Choke Mode
Flange Blank*