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R8 Waveguide Installation and Infrastructure

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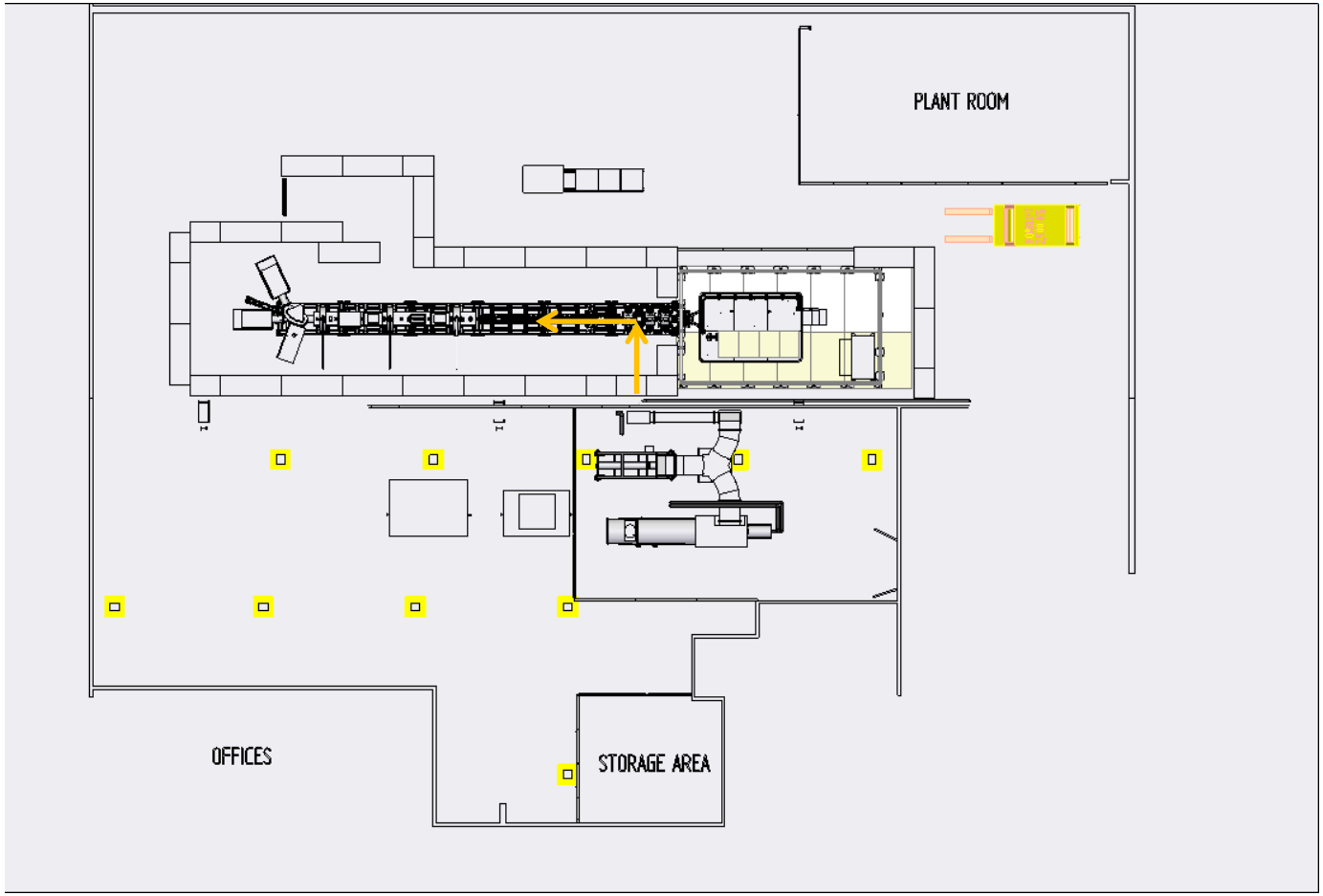
12th June 2013

Waveguide Questions

- What is the best option for waveguide route
- How will entry through shielding be achieved in either option, does this impact on NELCO's Design
- How will the transition from waveguide to RFQ be done, do we have the height?

Layout decided at last FETS meeting



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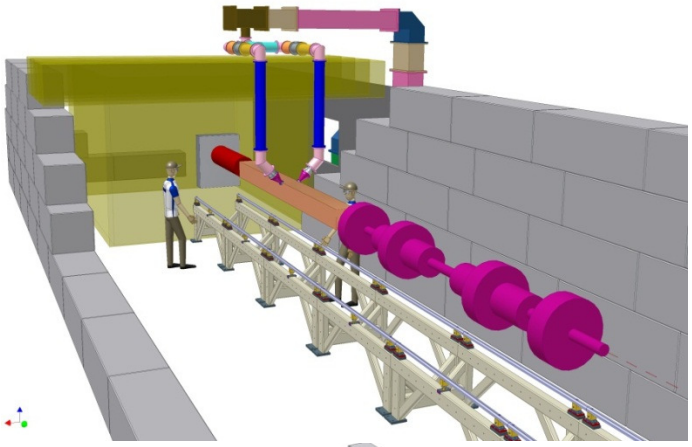
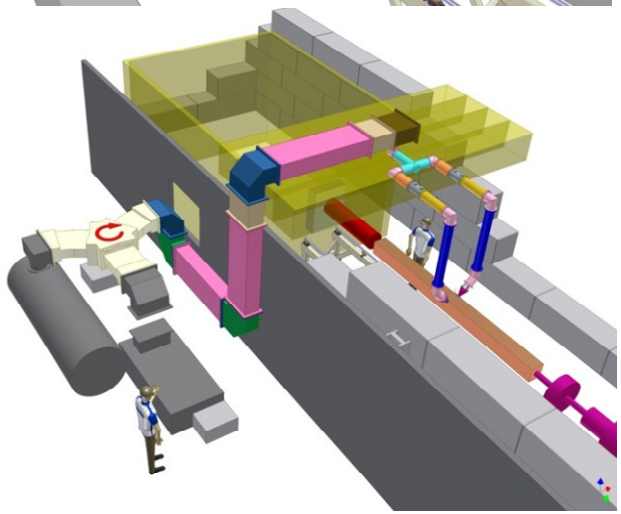
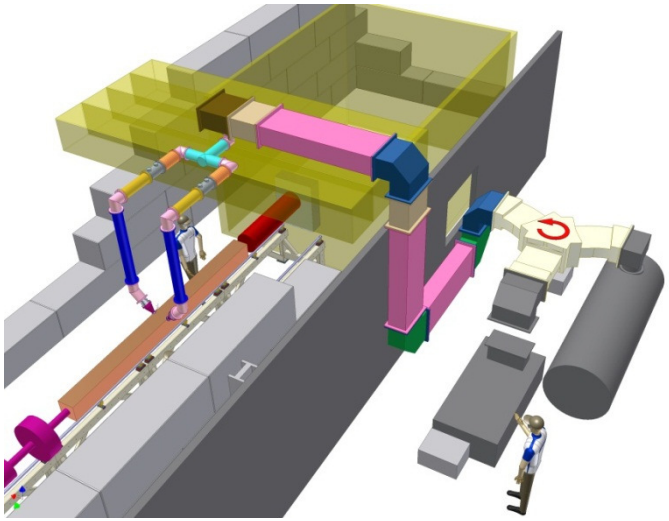
Wave Guide Route 3 Requirements

- Minimal Klystron move
- No need for dummy load modifications
- Waveguide run inside partition wall
- Access through partition at shield roof level
- Minimal / no coax run reducing RF losses
- Transition between waveguide and Tee completed on roof reducing internal height and therefore cost
- Two points of entry through shield incorporated in NELCO's design

Waveguide route







CAD Models by P. Savage

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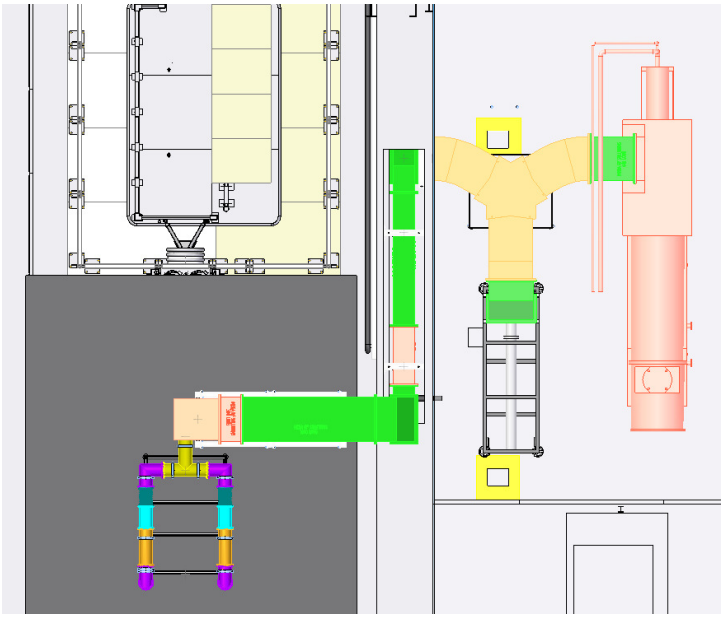
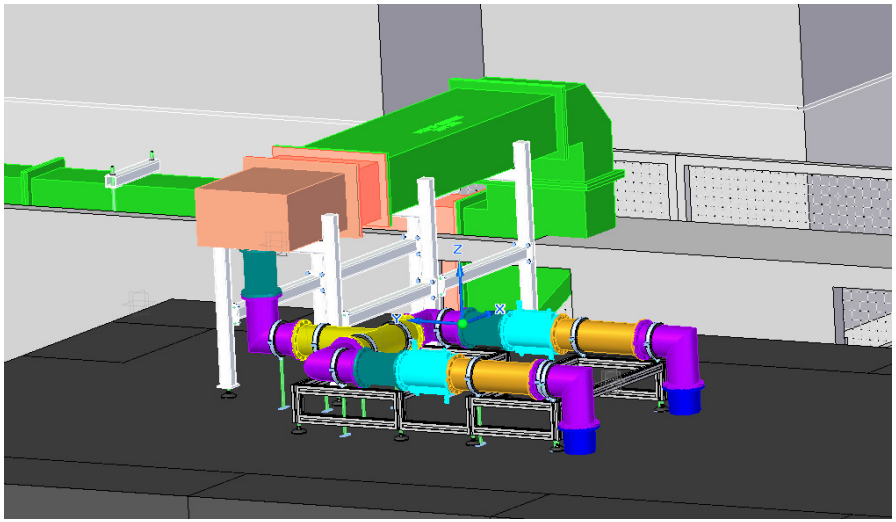
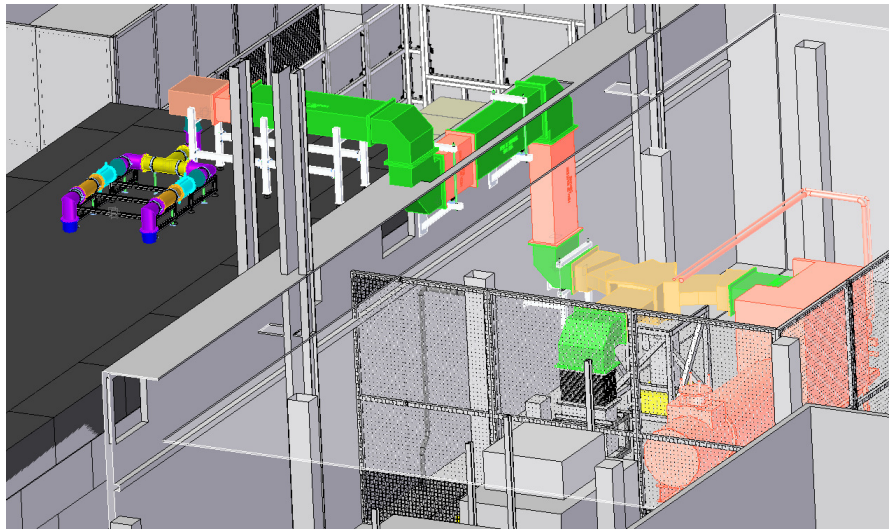


- Route through false ceiling
- Requires support structure on partition wall and roof
- Adjustment required for tuning and positioning





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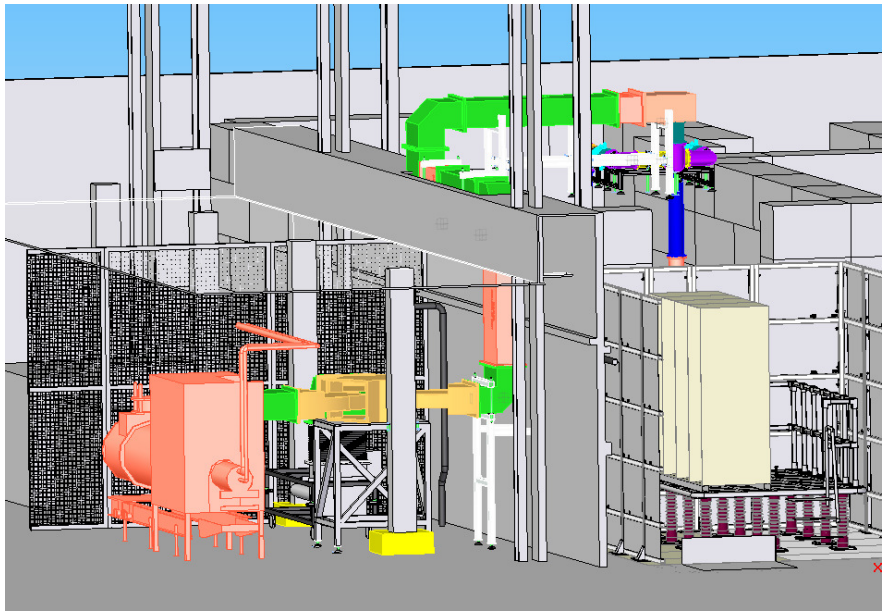
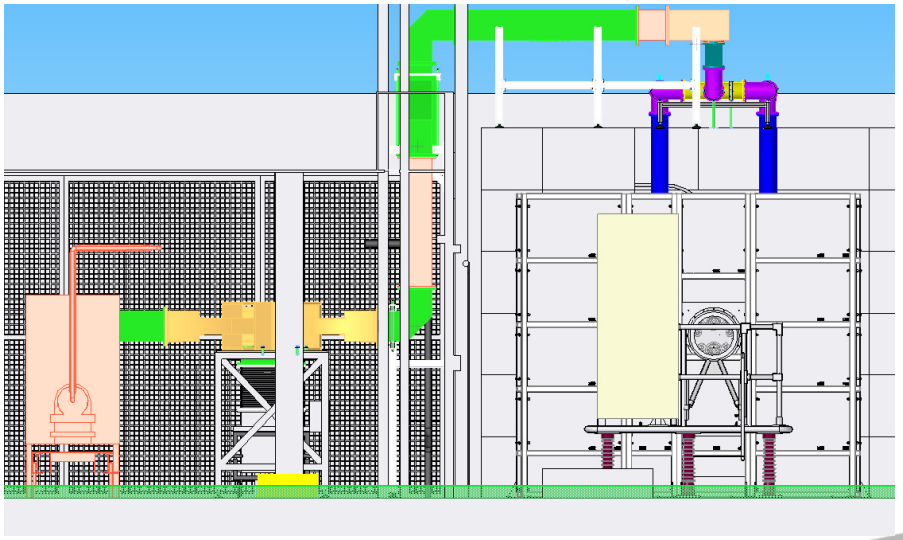
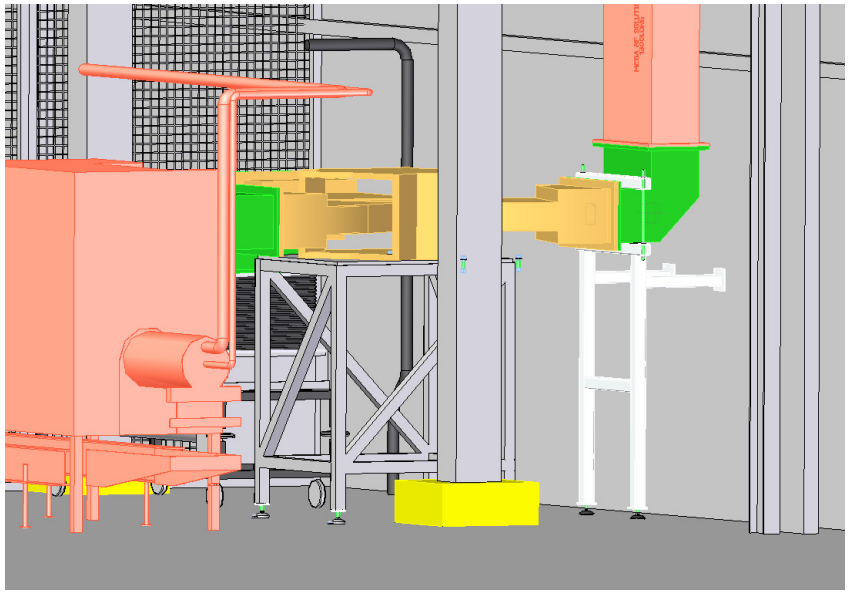
Support structure for circulator and waveguide







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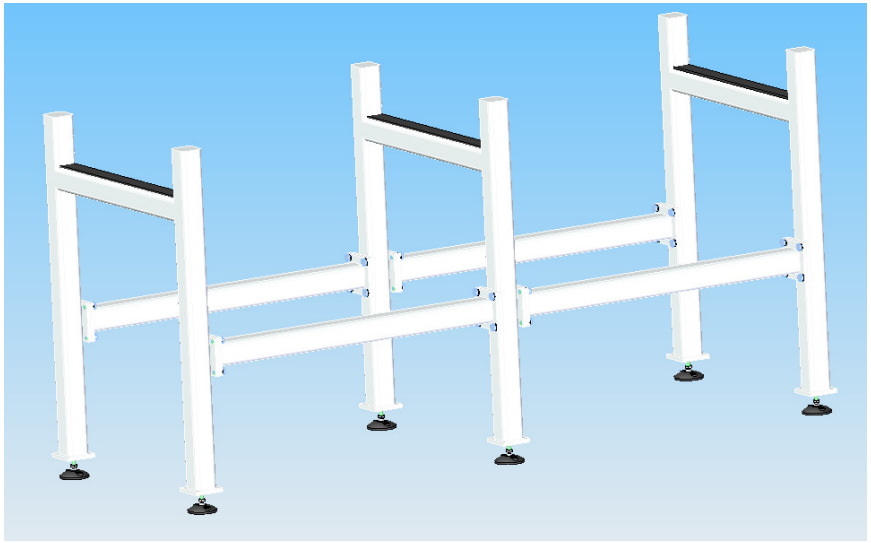
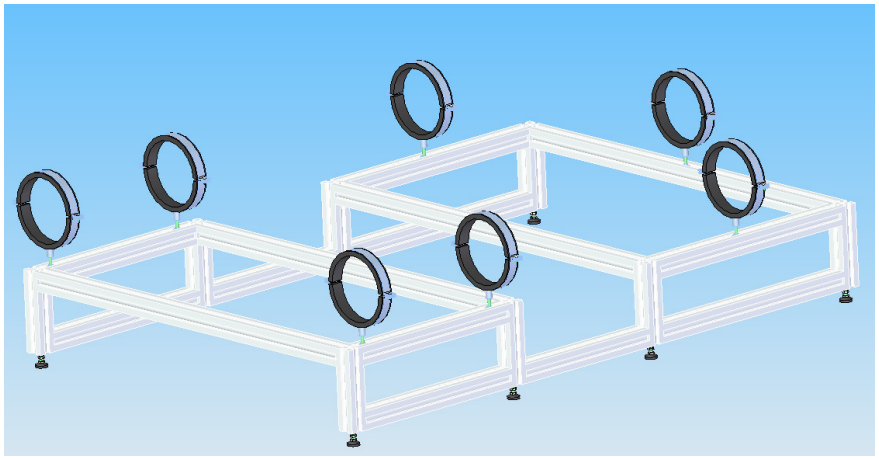
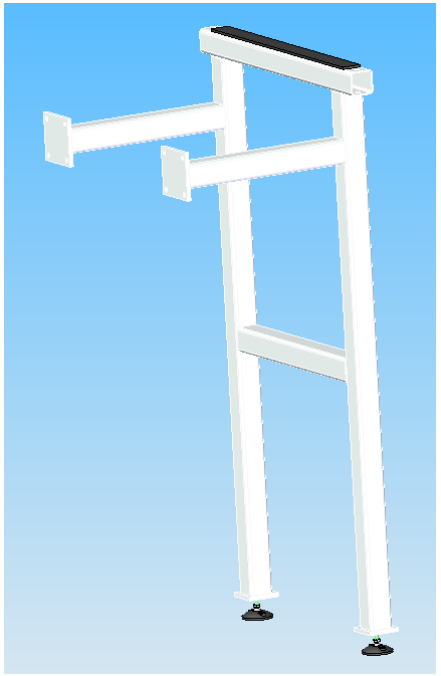
Welded box and Bosch aluminium extrusion frames







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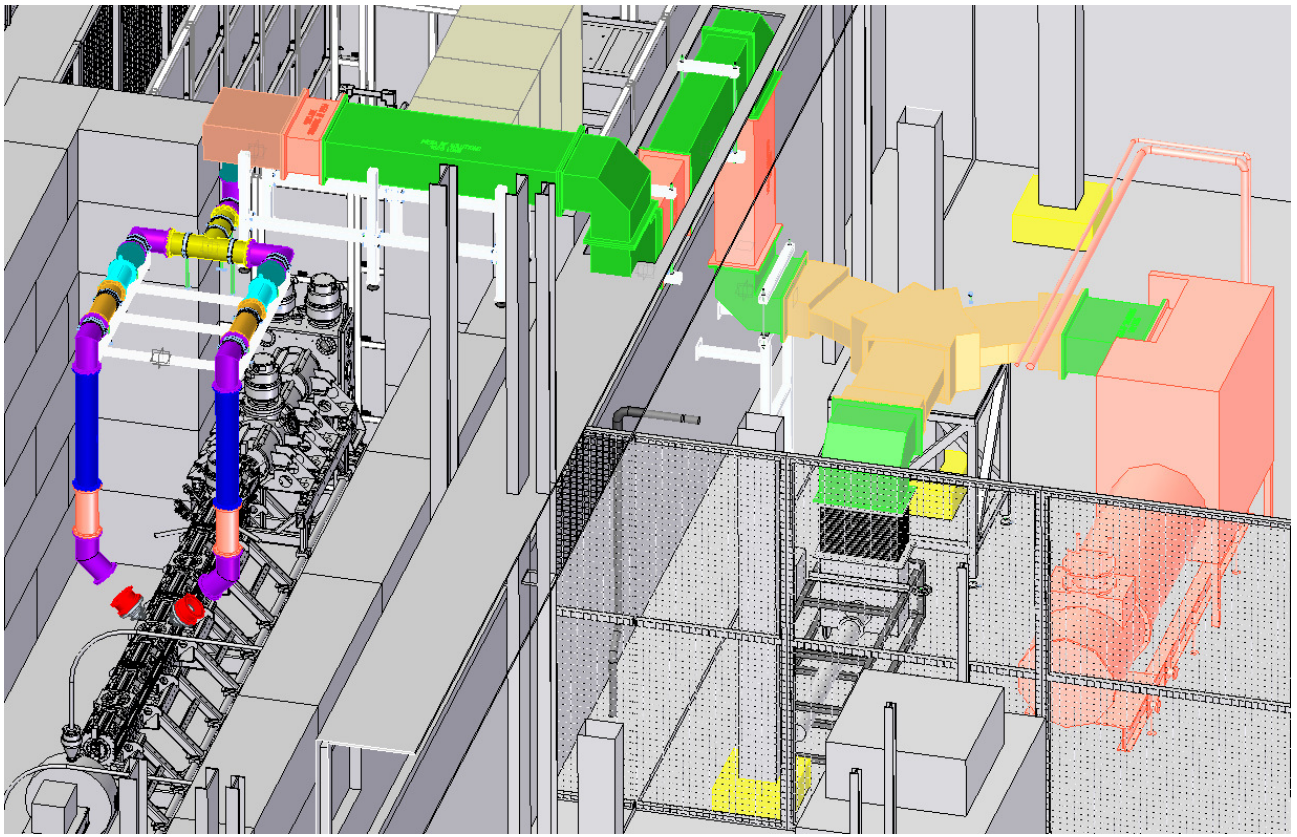
Considerations

- Minimise components required to finish run
- Positioning of components inside blockhouse for ease of operation / reach
- Access required to roof may necessitate inclusion of safety features like rails, permanent stairs and interlocks
- Which ports are used on the RFQ
- The amount of couplers required and therefore the RF routing options

Two Couplers Arrangement



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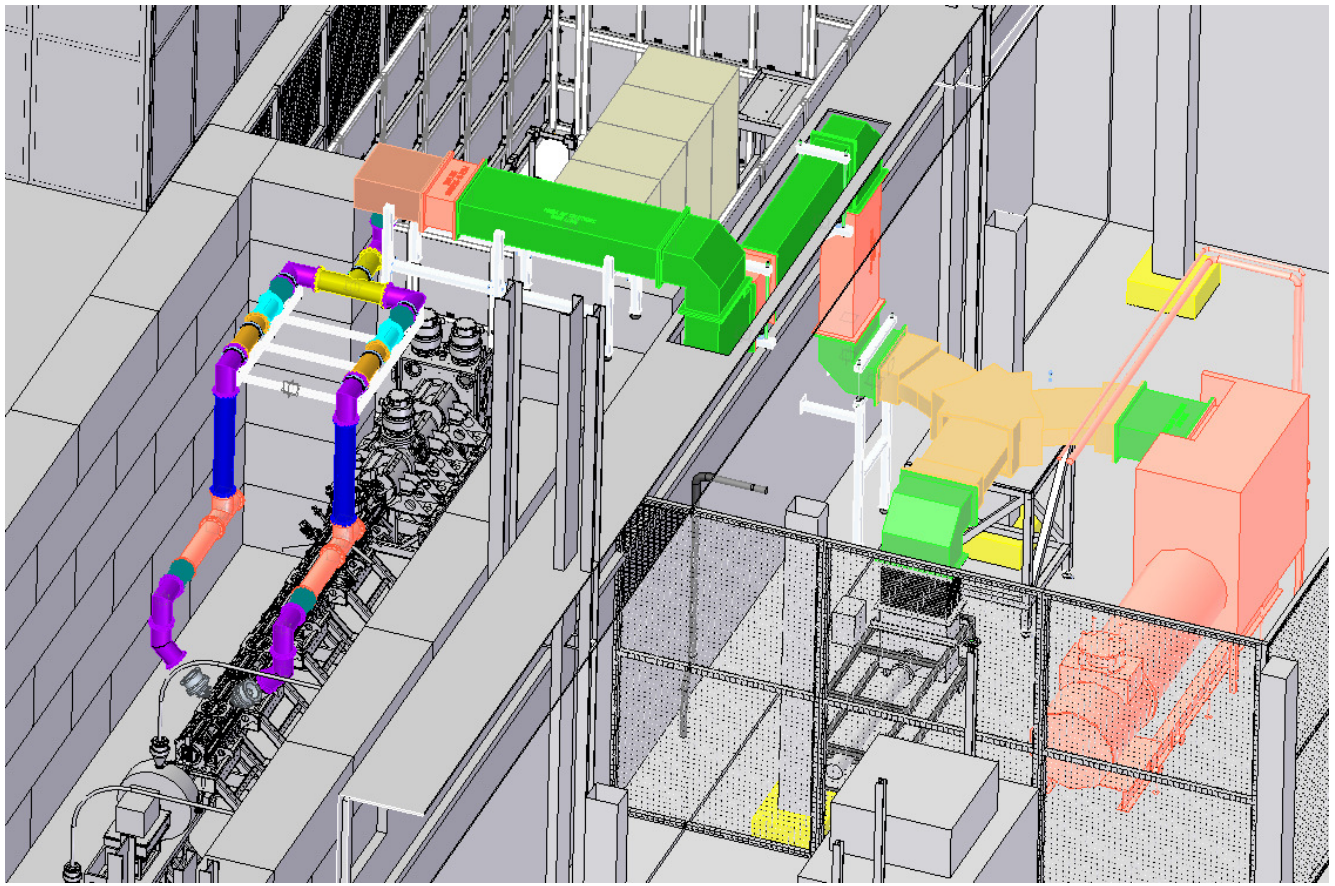
Two Coupler Arrangement (option for four)



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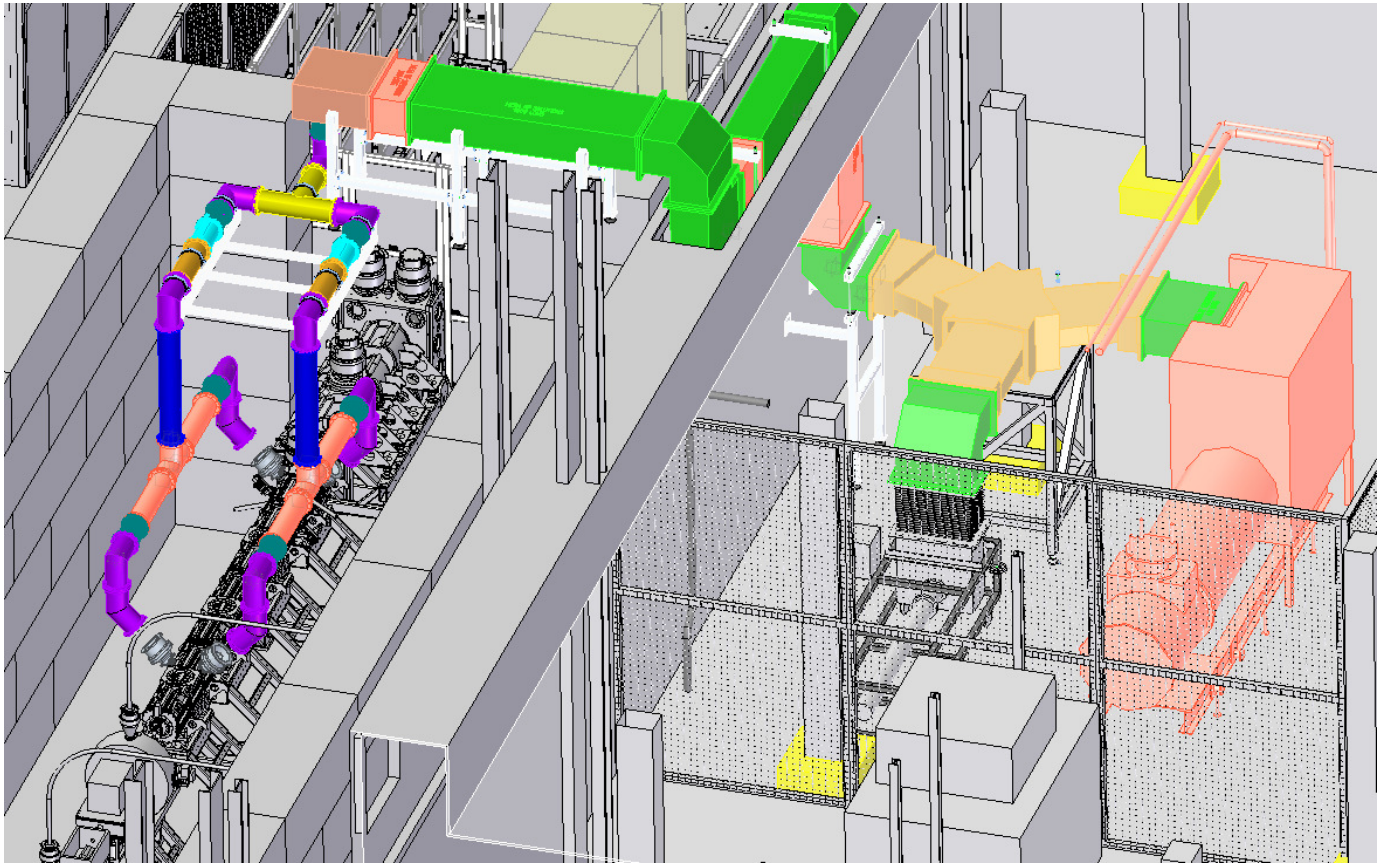
Four Couplers Arrangement



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		The following are required if 2 couplers are used with direct waveguide entry See SI-0937-151_11				
Bought Items Required to be purchased		Waveguide Components	Length	Number Off	Number off needed	Comments
Bought but Not Required		Rigid straight	1800mm	2	2	Both used
Optional			900mm	1	0	Not used
			300mm	1	1	One more to be bought
			800mm	1	1	Can 900mm be used instead of 800mm
			1300mm	1	1	Could be option if
			400mm	1		Use with 900mm instead of ordering 1300mm
		Co-ax / waveguide interface		1	1	Used
		Bellows straight	880mm	1	0	Not used
		Mitre Bend 90 degrees H-Plane		4	2	2 Not used
		Mitre Bend 90 degrees E-Plane		1	2	One more to be bought
		6-1/8 Co-ax Elbows		6	7	One more to be bought
		6-1/8 Co-ax Reflectometer Assy		2	2	Both used
		6-1/8 Co-ax Straight assy	(19.68")	2	2	Both used
		6-1/8 Co-ax Straight assy	(39.37")	2	2	Both used
		6-1/8 Co-ax to type N connector		2	?	
		6-1/8 Co-ax tee		1		
		6-1/8 Co-ax bellows		3		Sized to fit to enable 900mm to be used
		6-1/8 Co-ax straight	400mm ?	2		
		6-1/8 Co-ax 135 degree elbow		2		
		Coupler		2		
		Adaptor between coupler and 135 elbow		2		
		The following components are required if 2 couplers are used but option for four See SI-0937-151_12				
		6-1/8 Co-ax small tee		2		
		6-1/8 Blank		2		
		6-1/8 Co-ax Elbows		2		Only required if tees and blank causes issues
		6-1/8 Co-ax bellows		2		
		Adaptor between coupler and 135 elbow		2		
		6-1/8 Co-ax straight	?	2		May be able to use just bellows
		The following are required if 4 couplers are used See SI-0937-151_13				
		6-1/8 Co-ax small tee		2		
		Coupler		2		
		6-1/8 Co-ax 135 degree elbow		2		
		6-1/8 Co-ax bellows		4		
		Adaptor between coupler and 135 elbow		4		
		6-1/8 Co-ax straight	?	4		May be able to use just bellows

Component list depending on configuration used

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QUESTIONS