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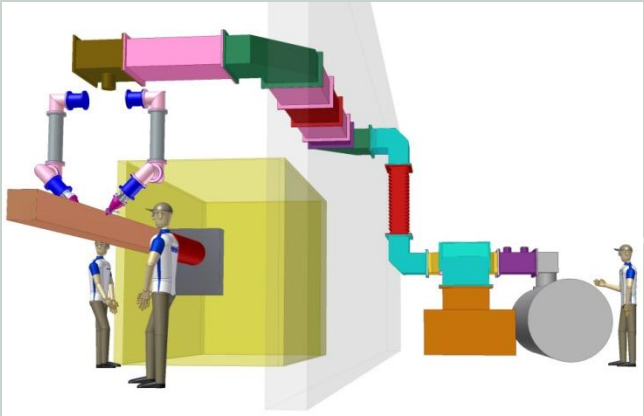
R8 Waveguide Design

3rd August 2011

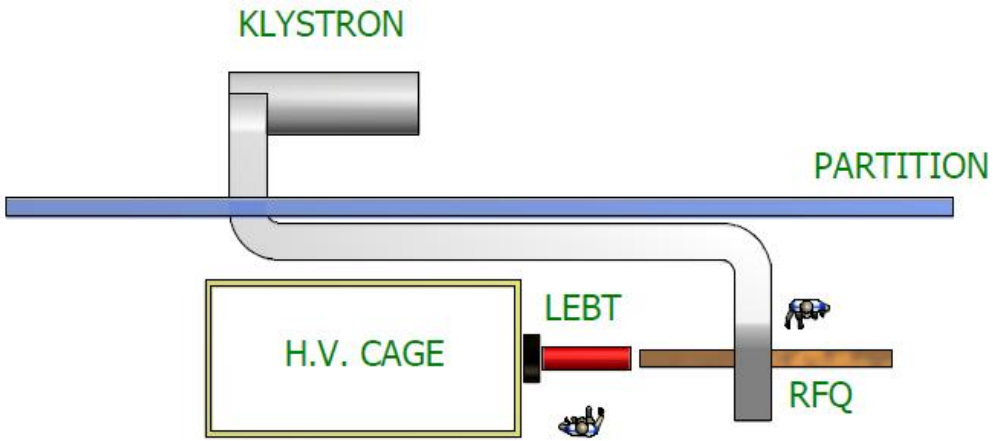
by Peter Savage & Saad Alsari

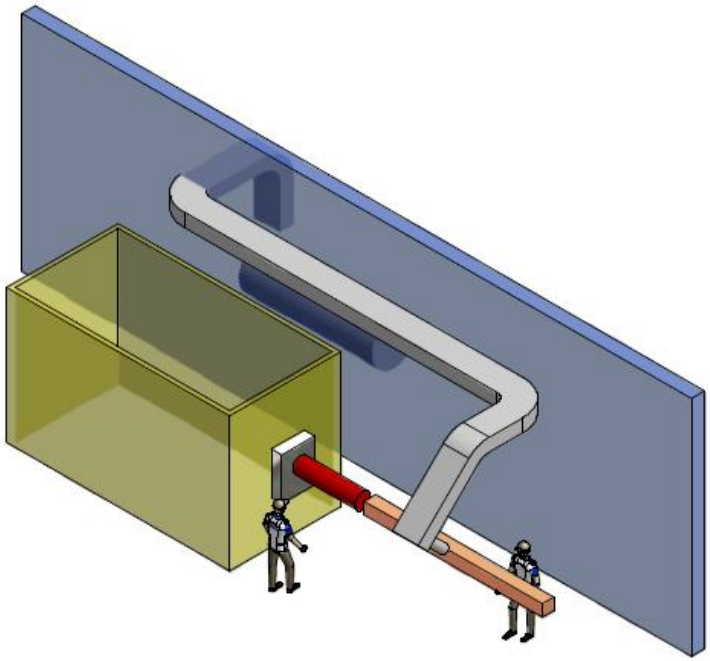


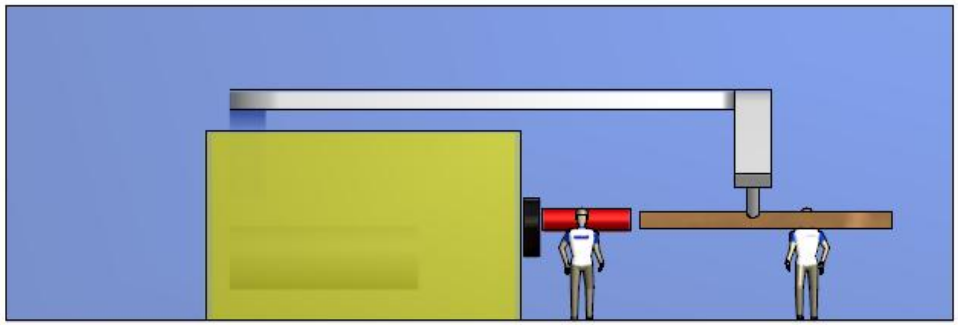
Waveguide for R8

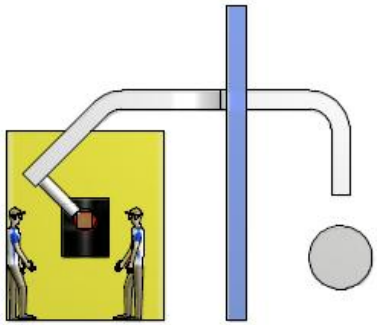
Design #1

Starting point for discussion.....









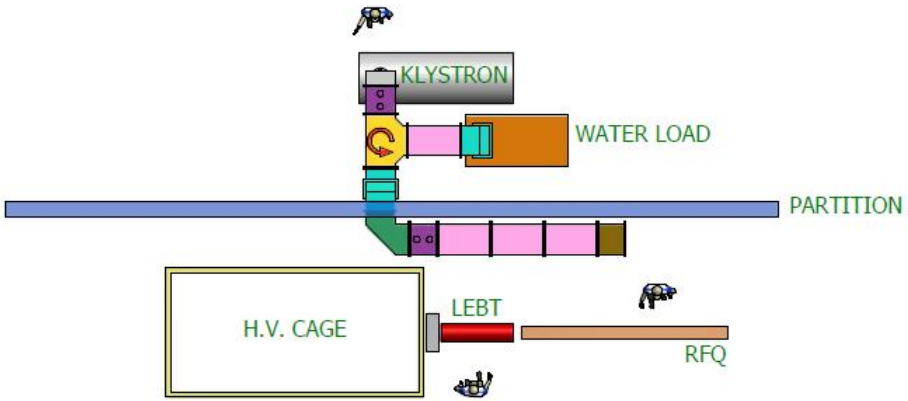
Waveguide for R8

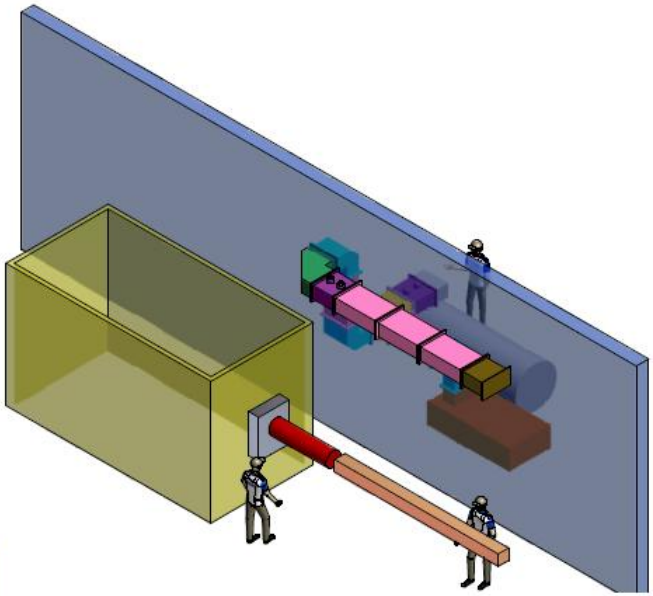
Design #2

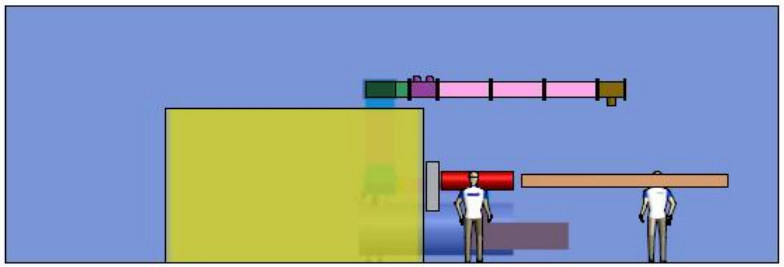
Waveguide design meeting – 22nd July 2011, Imperial

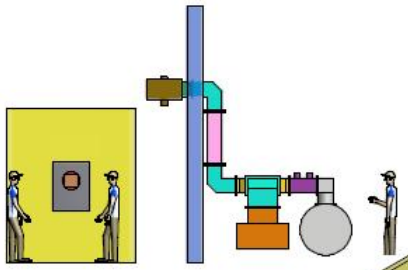
Present: Saad, Juergen, Pete

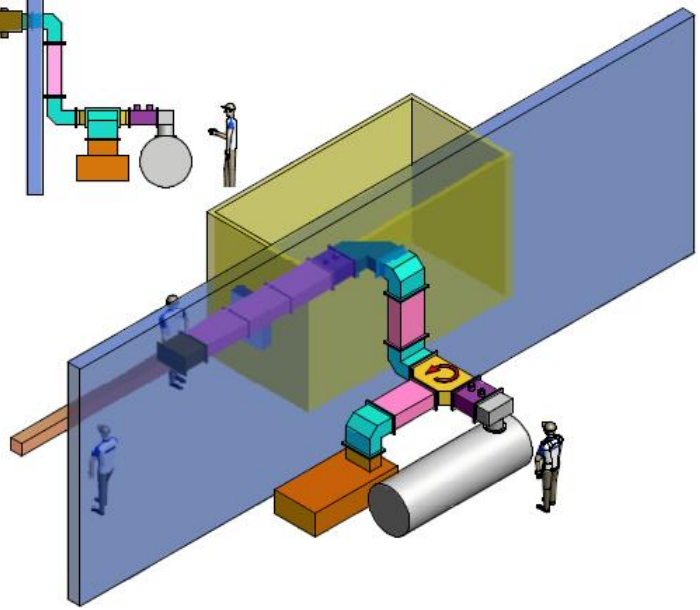
Make measurements in R8 on 3rd August:	Position of FETS to partition. Position of windows in partition Where are existing services, crane and support pillars?
Circulator included:	Direction of CCW is shown.
2 directional couplers are shown (in purple):	One to check power to RFQ (compulsory) One to check power returned to the Klystron (optional)
Coax:	Coax to be as short as possible to reduce attenuation. Saad to check attenuation values for coax and waveguide.
Support structure:	Wall not structural Support framework required - MiniTec Designed through RAL estates – Alberto to advise / manage
Spark detection:	Looking in both directions from 90^0 section (shown in green)
Couplers:	Ibon to update on design progress. Assumed coupling into RFQ in 2 places in either section 2 or 3.
MICE:	Have installed waveguide Arrange visit to take photos and discuss. Pete to arrange with Geoff.
Power:	Waveguide 2300 can take 2MW peak and 70kW average power. FETS needs 500kW peak and 50kW average power. Should not need filling with inert gas to suppress breakdown.
Goals	Delivery by mid November Installation to start before year end.

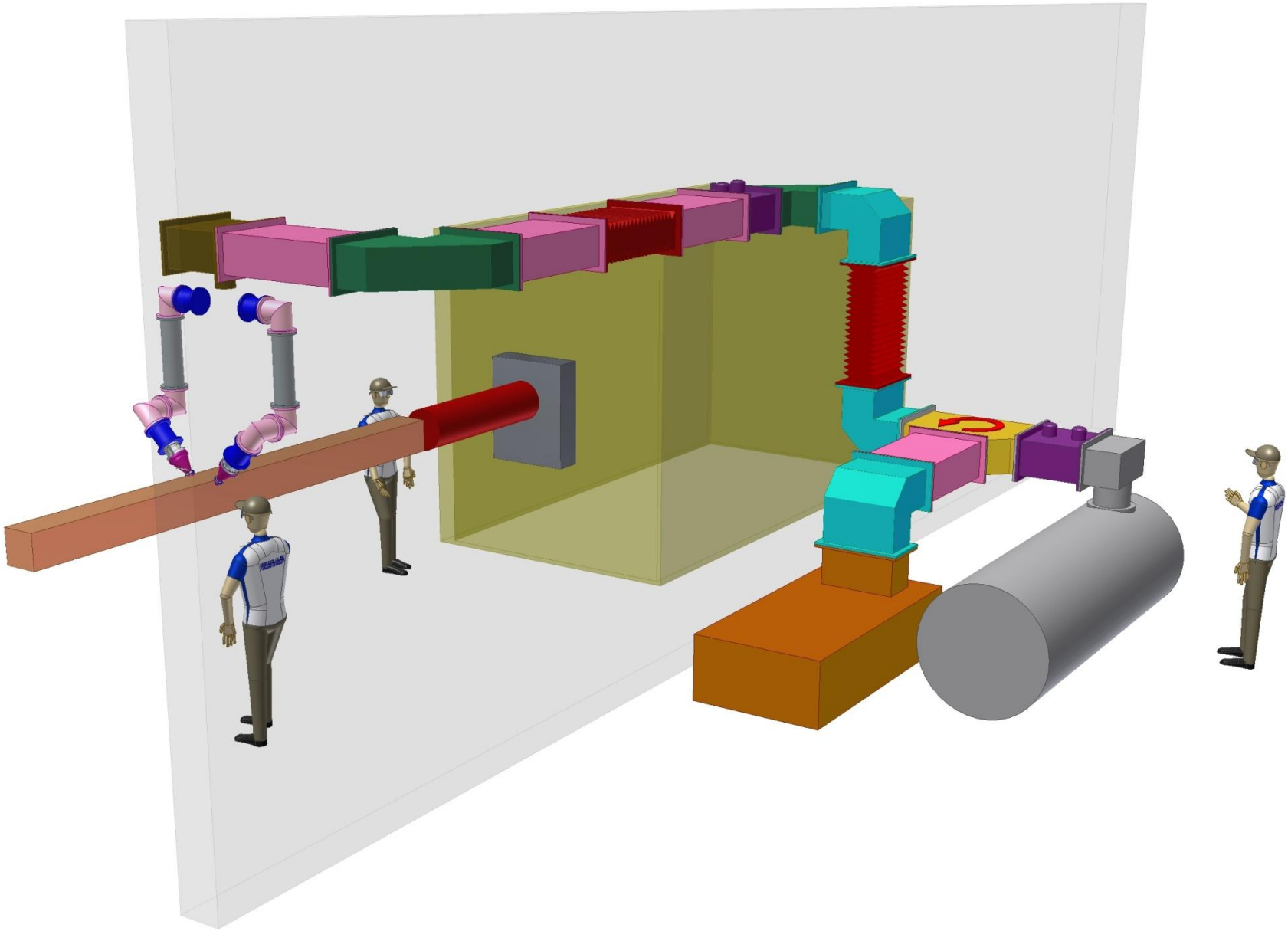

KLYSTRON
WATER LOAD
PARTITION
H.V. CAGE
LEBT
RFQ

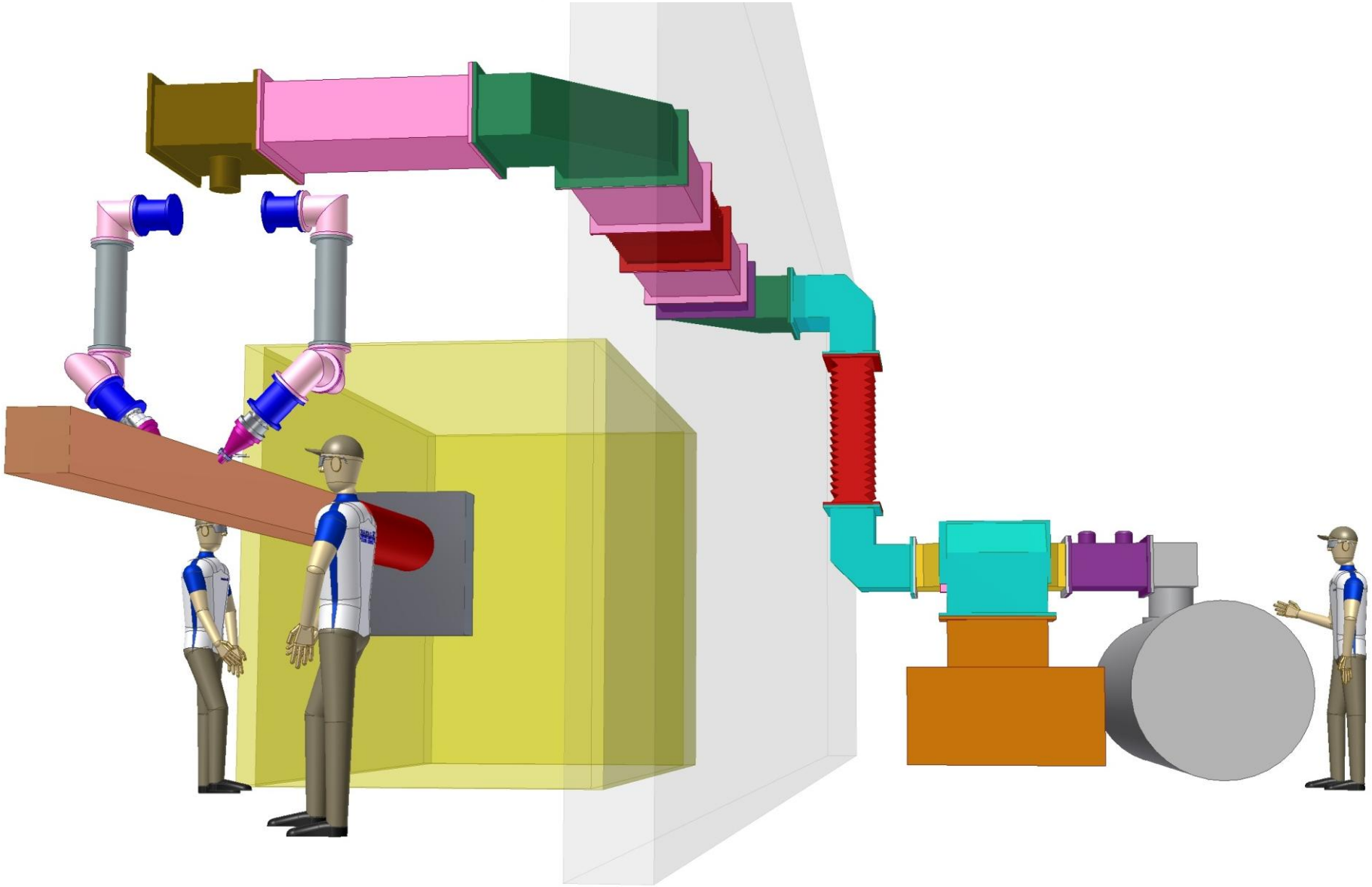


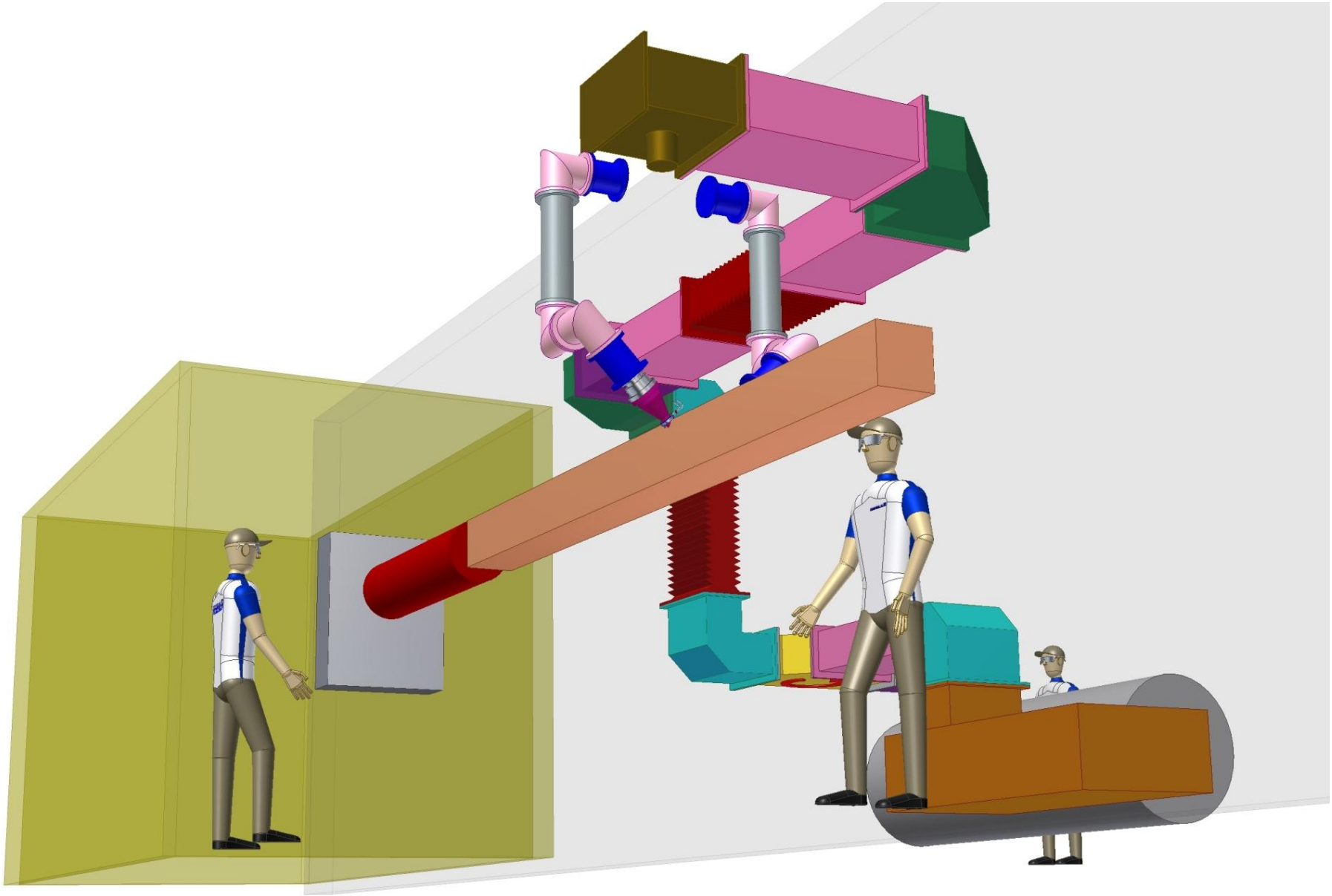


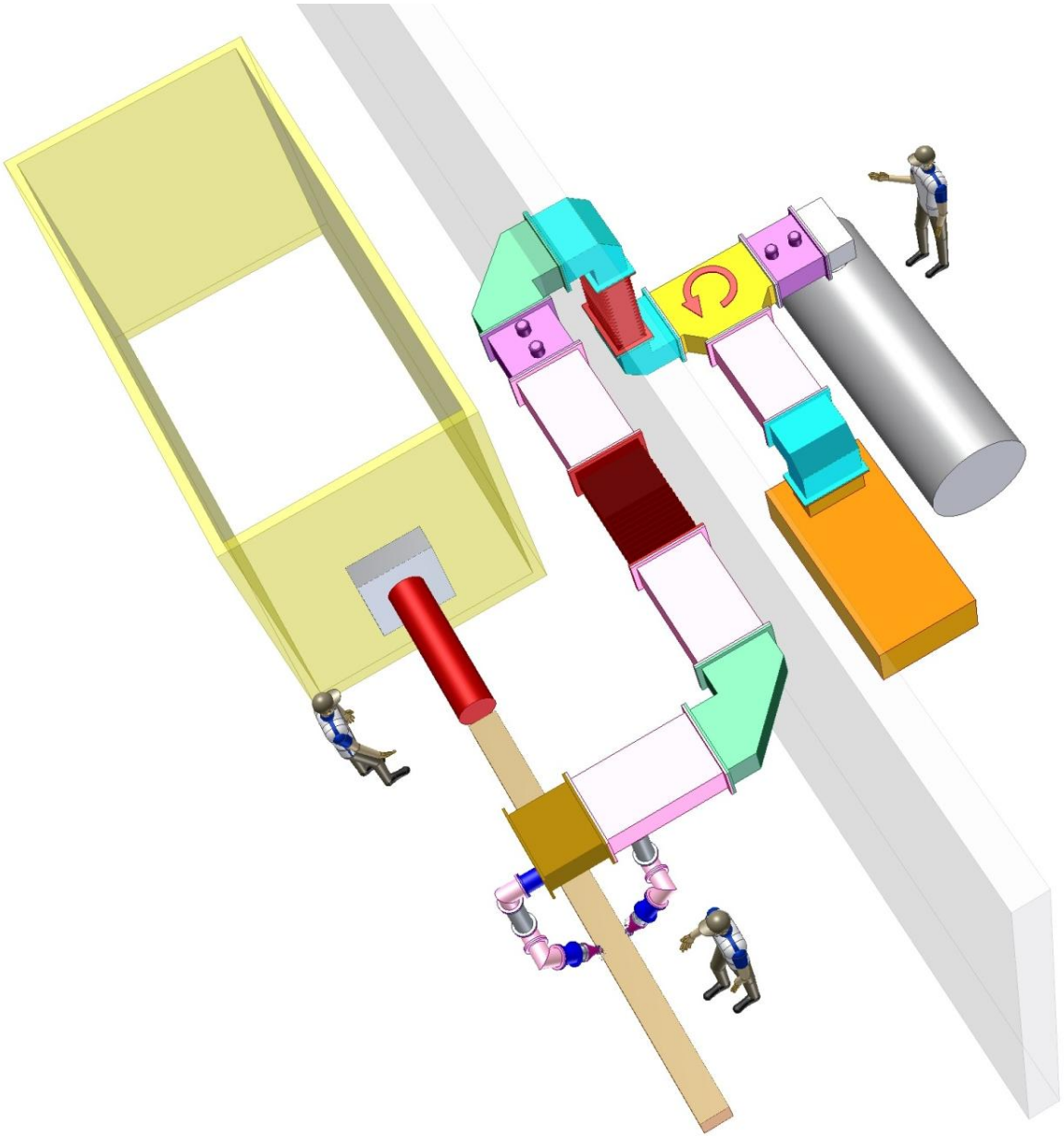










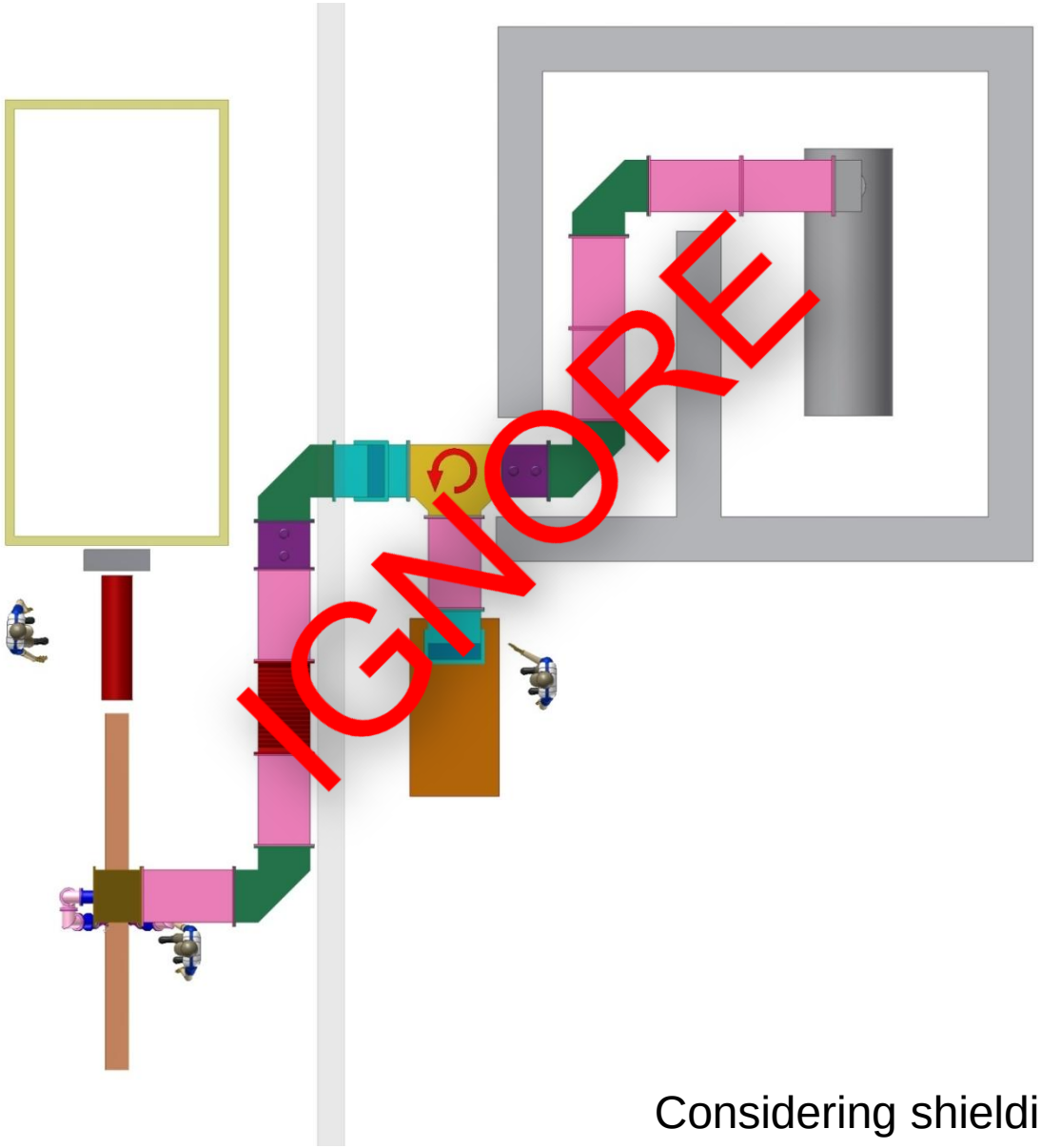


Conclusions

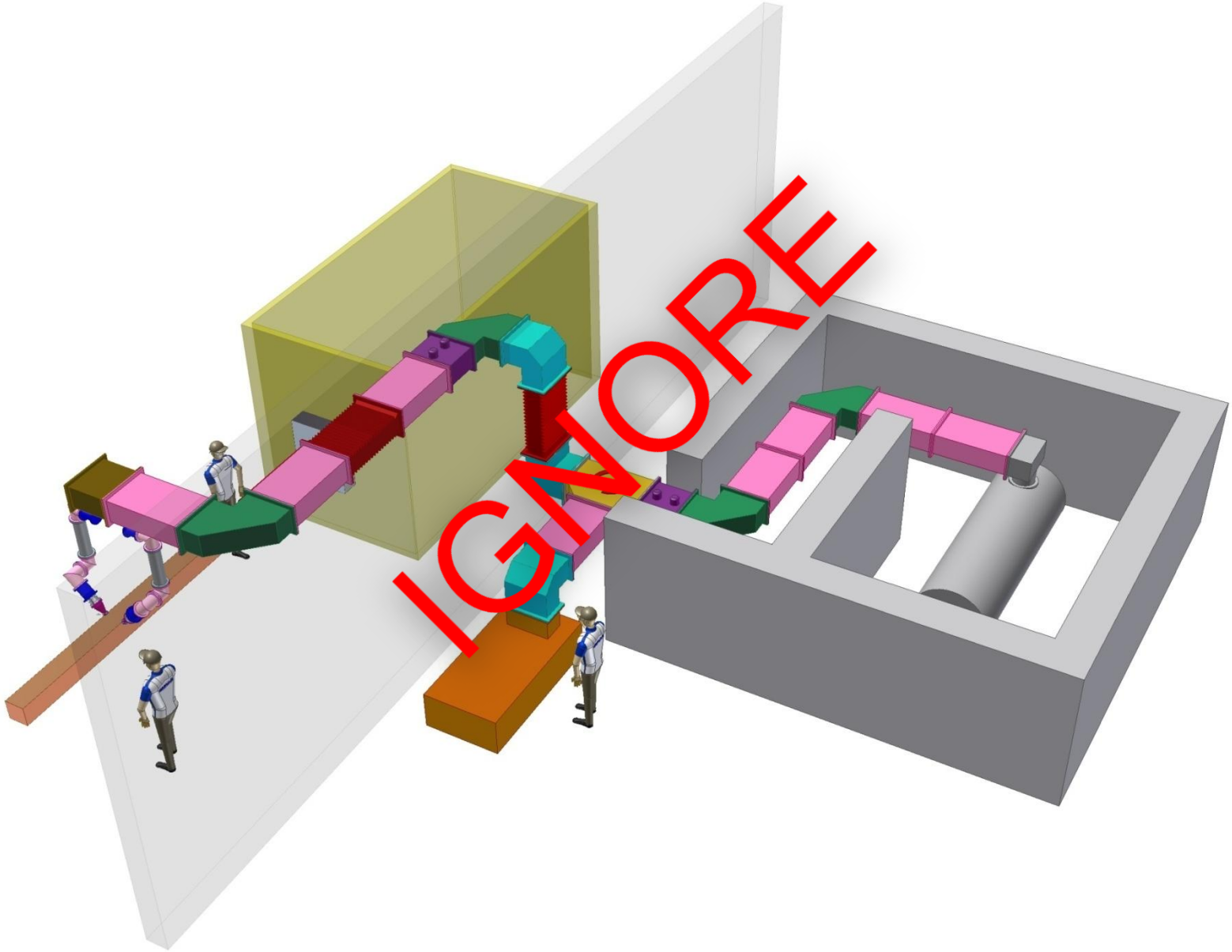
- We need to order some of the waveguide components ASAP
- Should be able to quickly identify parts that can be ordered.

Waveguide for R8

Design #3



Considering shielding.....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