Science & Technology Facilities Council

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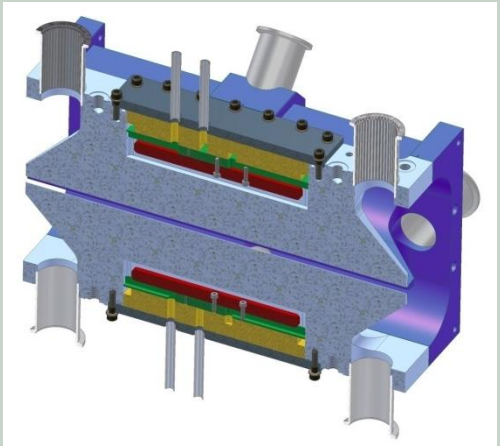
FETS meeting

9th February 2011

Engineering Update

by Peter Savage

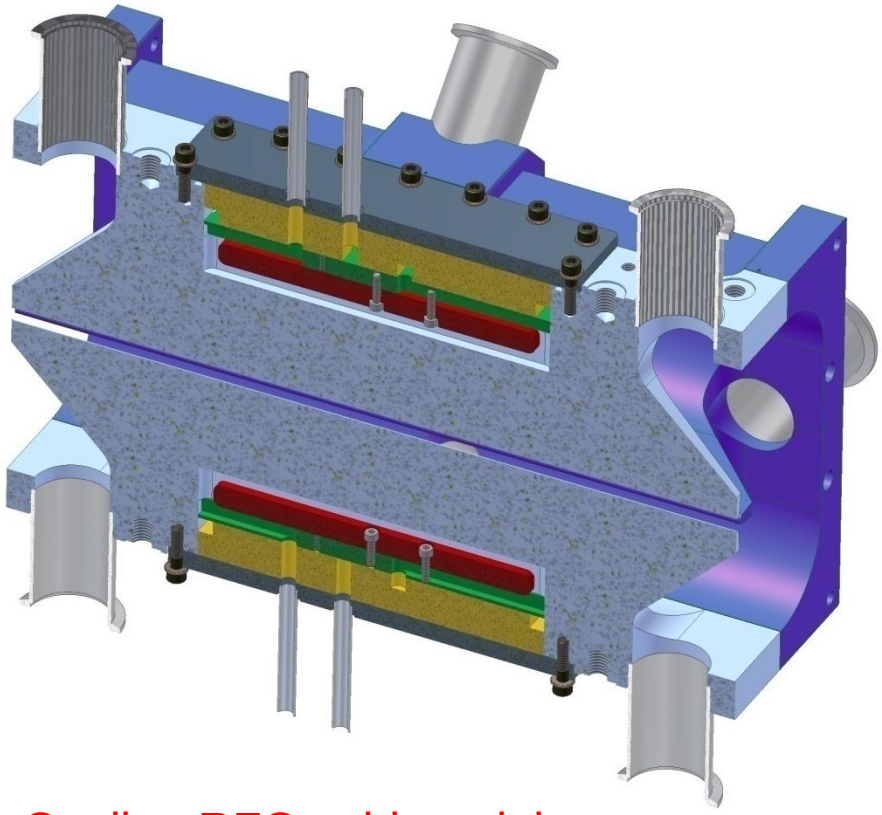


Engineering Update

1. Cooling the RFQ cold model
2. 3D ‘O’ ring test
3. Weld model inspection at RAL
4. Buying copper for the RFQ
5. Spending remaining (Imperial) RFQ budget
6. Manufacturing vacuum port cooling manifolds
7. RFQ End Design

One slide on each.....

Cooling the RFQ cold model



1. Mill cooling pockets into RFQ cold model. Provide thermocouple holes.
2. Not identical to those in full RFQ but representative.
3. Planned start date: Mon 21st Feb 2011
4. Duration: 2 weeks
5. Status: Design complete. Engineering drawings 50% complete.
6. Strain gauges?

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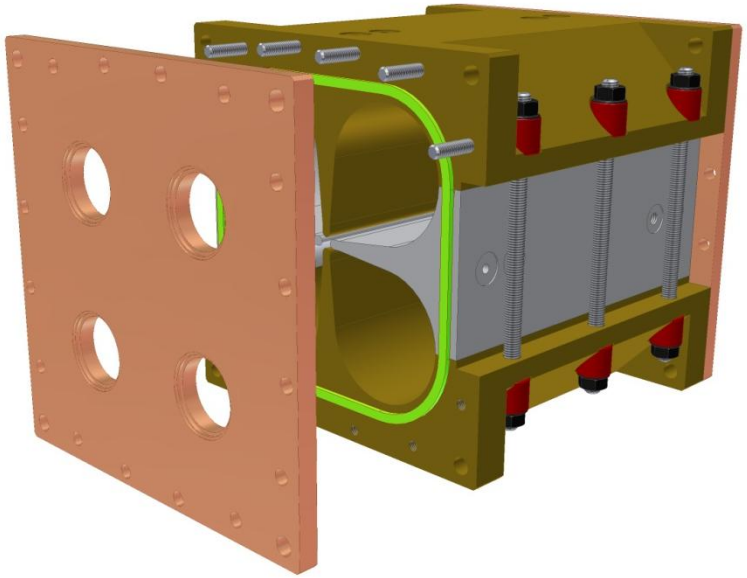
3D ‘O’ ring test



1. Full (transverse) scale representative test of 3D ‘O’ ring
2. Ready(ish) now.
3. Ring bonded with ‘superglue’
4. Need Viton based adhesive.

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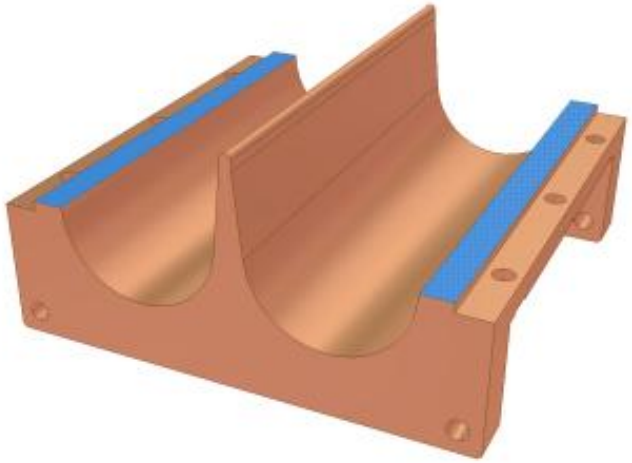
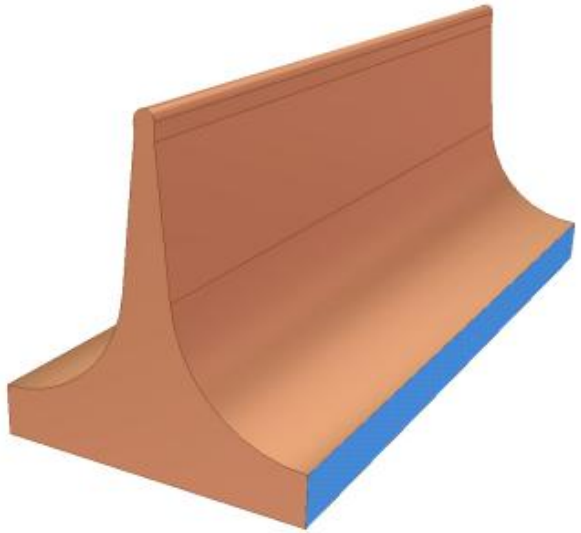
Weld model inspection at RAL



1. Meeting set up through Phil
2. Inspection of: 6 major + 6 minor vanes
3. Document (#55) describing inspection: http://www.hep.ph.ic.ac.uk/cad/Pete/MyTalks/
4. Parts brought to RAL today



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Buying copper for the RFQ

Order for the copper was placed yesterday (8th Feb 2011):

6 off	2140 kilos total	approx 137 x 270 x 1050 mm
6 off	890 kilos total	approx 137 x 113 x 1050 mm
2 off	750 kilos total	approx 137 x 270 x 1100 mm
2 off	310 kilos total	approx 137 x 113 x 1100 mm

Total weight is 4090 kg.

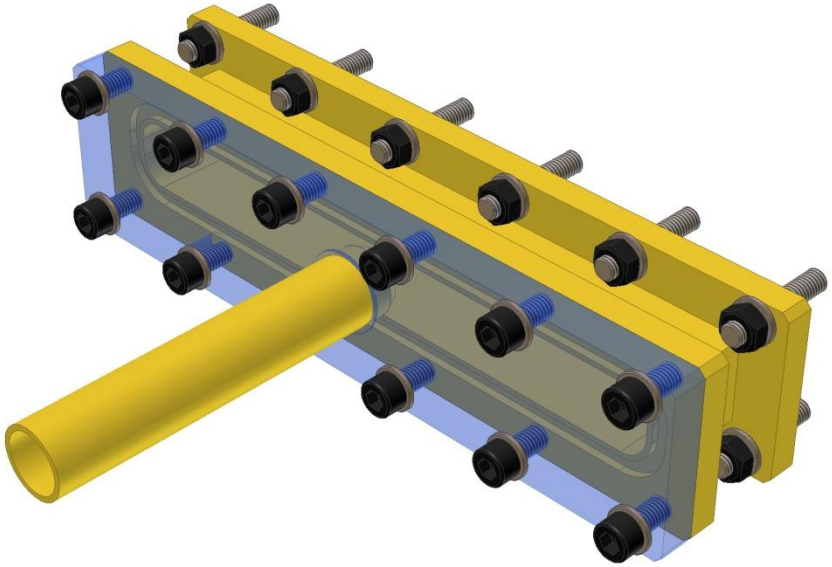
Total cost of **£41774** on London Metal Exchange price on 25th Jan 2011.

Spending the remaining (Imperial) RFQ budget

After £42K spend on (RFQ) copper, estimated balance = £20K

1. Tuner drives (x3) =	£6,000
2. Vacuum valve (x2) =	£2,600
3. LEBT beam pipe section 3 + bellows =	£1,500
4. Laptop for tuner system =	£1,500
5. DN40CF blank flanges (x64) =	£1,200
6. DN40CF bored flanges (x64) =	£1,200
7. Workshop consumables =	£1,000
8. Total =	**£15,000**

Manufacturing vacuum port cooling manifolds



1. Design ready.
2. Engineering drawings to be made.
3. Planned start date: March
4. Duration: 2 weeks
5. Plan: make 2 assemblies & test.
6. If design is okay - make remaining 14 assemblies.

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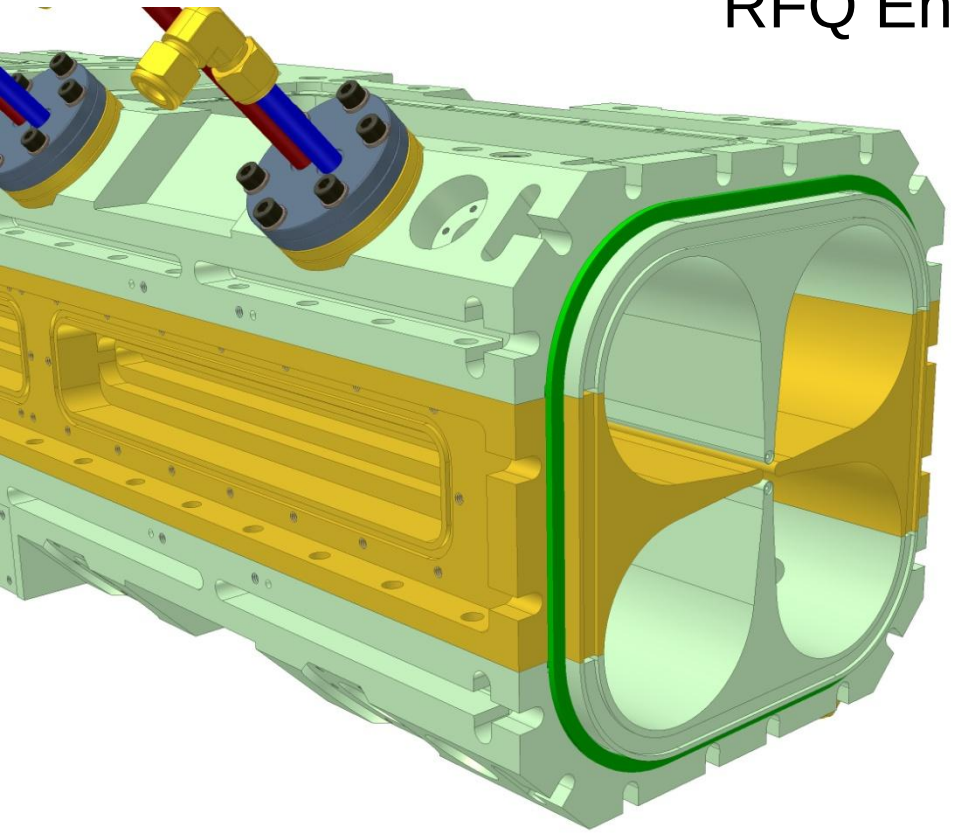
RFQ End Design



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At the operating temperature the RFQ grows longitudinally by approx 200 microns. We need:

1. Vane to vane contact if possible (or a *very* small gap).
2. Electrical contact between vane tips close to the surfaces.
3. Not over-constrained.
4. Maintain vacuum seal.

Thank you.