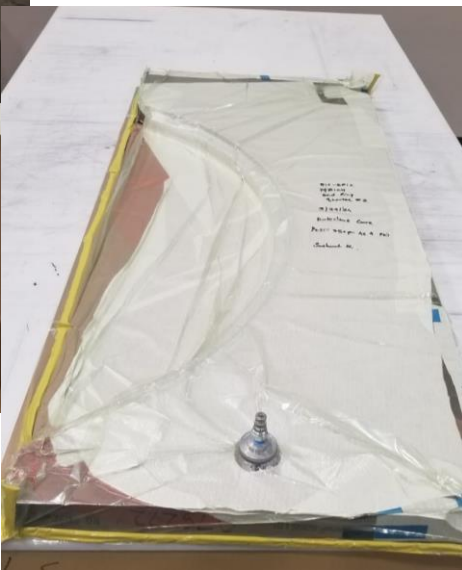
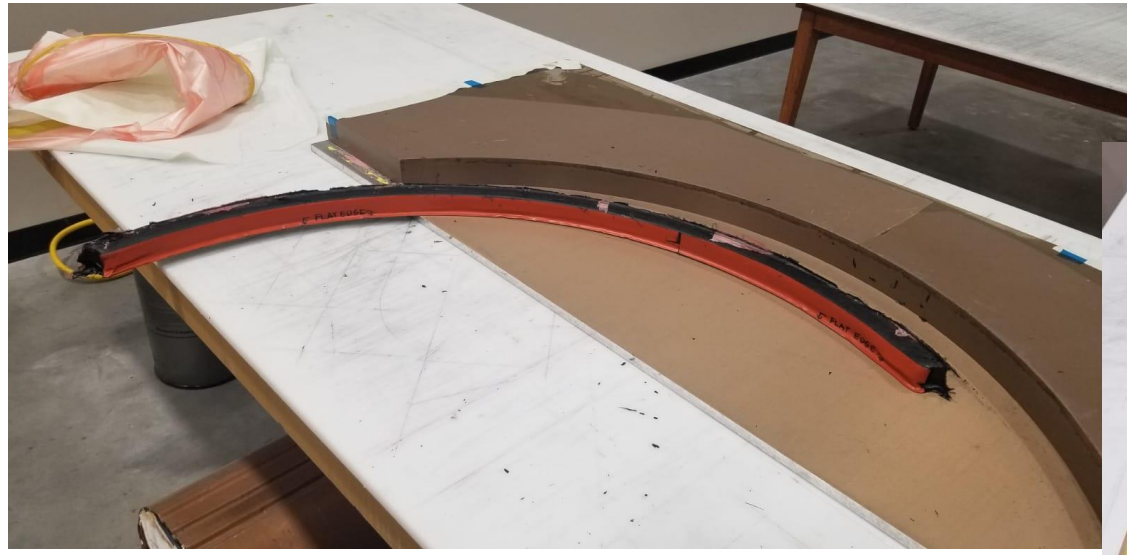
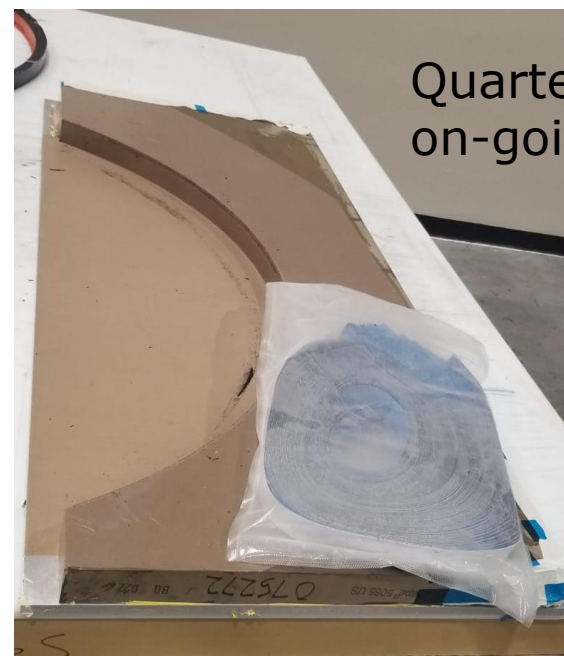
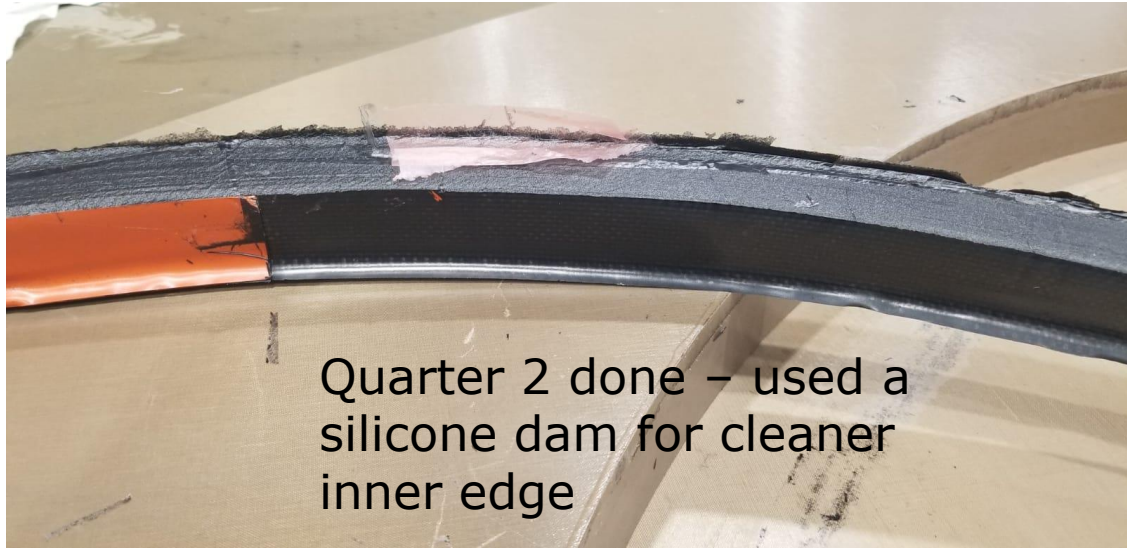
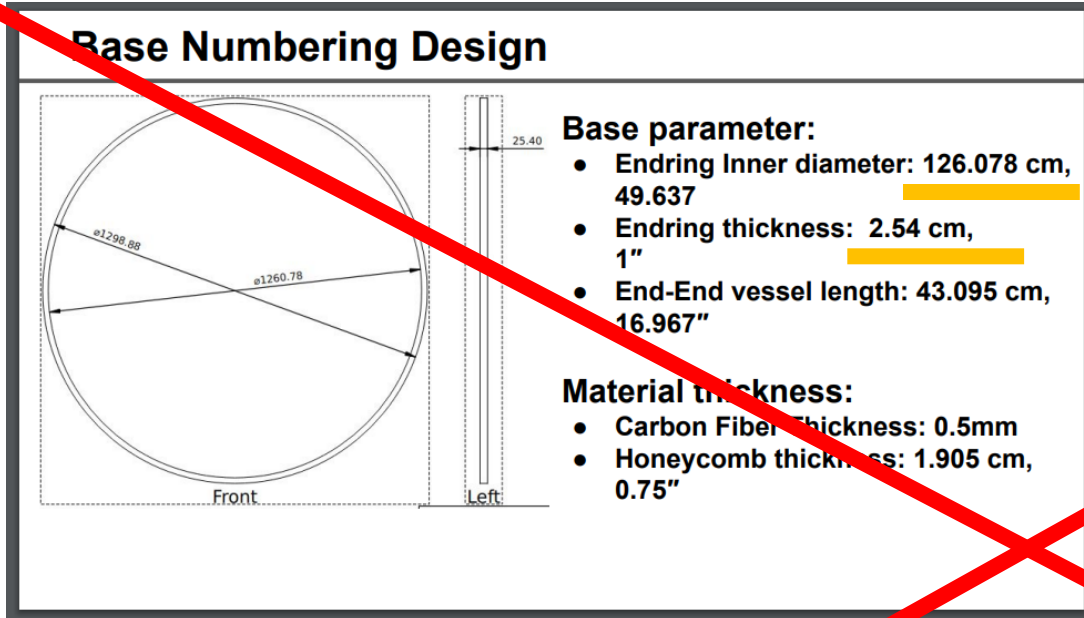


pfRICH End Ring and Cobonding updates

Sushrut Karmarkar, Andy Jung

01 April 2024





Dimensions from Alex / Bill's presentation on 8th Jan.

https://indico.bnl.gov/event/21695/contributions/85325/attachments/51825/88619/2024_1_4_%20pfRICH_dimension.pdf

⬡ Confirming these parameters one last time before starting machining design / CAM work

⬡ This inner diameter (126.078 cm) takes into account the adhesive layer thickness offset needed for bonding the end ring to the facesheet – **True / False ?**

⬡ Can Charles + Bill + Alex all sign off on this dimension check before machining ?

⬡ I will start machining CAM design next week

- ⬠ Alex, Charles, Sushrut, Dan and Beni – met after the engineering meeting and the final agreed upon dimensions are as follows :

- ⬠ End Ring Outer Radius – R649.322mm
- ⬠ End Ring Inner Radius – R630.51mm

- ⬠ Thickness (along z) – 25.4 mm



Temp °C	Ramp Rate °C/min	Notes
20	-	Initial
70	3	
70	Hold	30 min
20	3	Cool down

Did 4 thermal cycles for the part
Distortion visible after the first cycle itself

Image gets distorted after thermal cycling –
had a clean image before cycling

Lexan 30-micron sheet

Need more samples for Lexan for further tests –
Bill will send more once he gets his order at
SBU ~ 1 month (?)

◇ CTE mis match

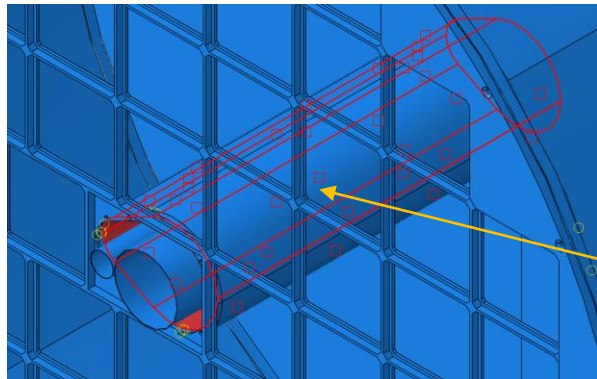
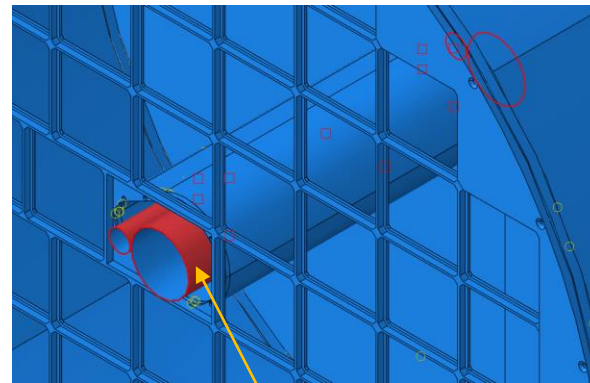
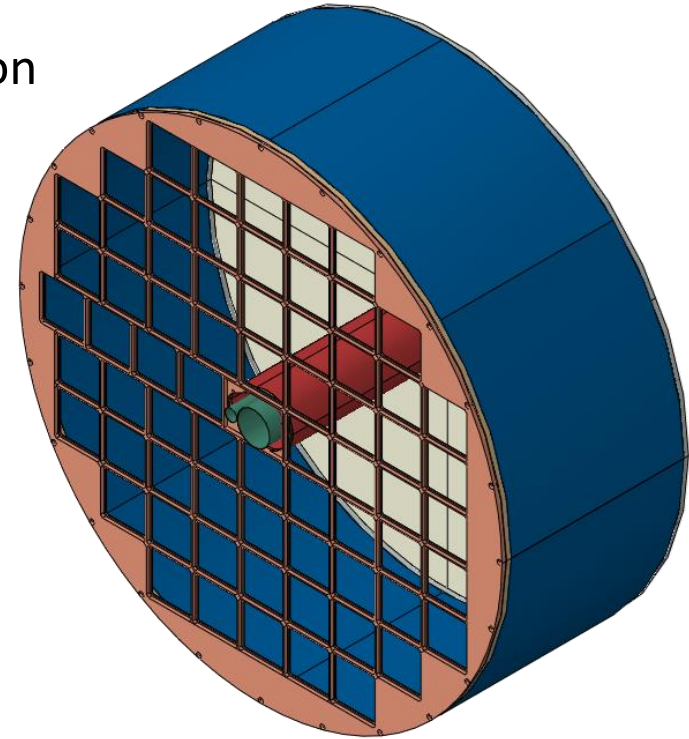
◇ **Beam pipe bake out temperature** affecting the inner mirror and inner most sealing of the sensor layer

Lexan CTE $\rightarrow \alpha_{Lexan} = 70 \frac{\mu\epsilon}{^\circ C}$

CFRP substrate $\rightarrow \alpha_{xx} = \alpha_{yy} \cong 5 \frac{\mu\epsilon}{^\circ C}$
 $\alpha_{zz} \cong 60 \frac{\mu\epsilon}{^\circ C}$

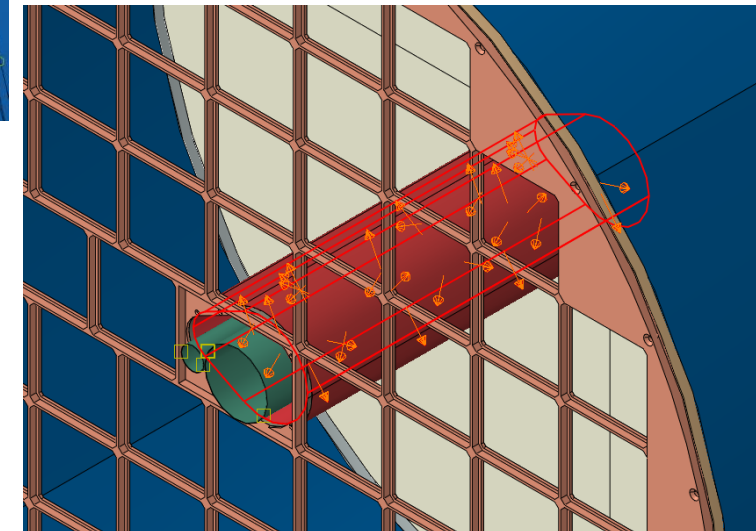
West System 105 Epoxy $\rightarrow \alpha_{epoxy} \cong 60 \frac{\mu\epsilon}{^\circ C}$

◇ ... On-going simulation



Beam Pipe constant temp at 120°C

Convection, Radiation coupling



◊ One sample shipped to Bill/SBU

FedEx Tracking Number: 272790012749

Estimated delivery – Tuesday 2 April 2024