

Notes From Discussion of Vessel Material Purchase Meeting

Meeting on: 1/5/2024

Written: 2/5/2024

Attendees: Alex Eslinger(JLab), Dan Cacace (BNL), Bill Wenliang (SBU), and Tom
Hemmick (SBU)

Written/Recorded by: Alex Eslinger

Carbon Fiber (CF) Quote

- Background: The primary purpose of the meeting was to verify dimensions across the different materials. The first quote we discussed was the CF quote.
 - We noticed that the original quote needed a tolerance correction. The vendor quoted us 1/8" overall tolerance, which is quite poor and insufficient for what we needed it for.
 - The finish was noted as incorrect in the original quote
 - There was a conversation about the adhesive backing they use on the carbon fiber (planned to be used for the interface between the Tedlar and the inner carbon fiber layer). It has little mechanical strength and you have to make sure you tell them to apply it for you or they'll allow you to DIY it.
 - There was no lead time on the quote shown at this meeting
- All of these discrepancies were intended to be discussed with the manufacturer

Tolerance Between End Ring and Carbon Fiber

- Background: The TPC used an Aluminum material in its design/construction. When it was assembled, it was slightly heated to fit to the (CF)/mandrel to ensure a tight fit during the glue-up. Since the pfRICH is using CF as the ring material with a [presumably] much lower CTE, how do we account for the clearance needed to install the ring during the vessel construction?
 - Tom Hemmick mentioned that 10mil would be the maximum 'gap' (tolerance) that the end ring should be sized in order to account for the glue in the glue-up process. The appropriate gap should be 7mil.
 - There was a discussion about the methodology and where this number came from. Primarily, SBU has developed a method of using syringes/controlled volumes along with a band on the cylinder to calculate the thickness
 - Tom assured us that the adhesive is spread is pretty consistently across the surface using this process.

Honeycomb Quote

- Background: The honeycomb quote was looked at and discussed.
 - The tolerance for the honeycomb in the Z-Direction (along the centerline of the vessel cylinder) is very flexible. You can “squish” or “pull” the material in most directions, but the thickness of the honeycomb is well controlled (on the order of 6 thousandths).
 - The direction of the ovals in the honeycomb pattern is important and was noted that the manufacturer needs to ensure they are properly oriented so that the material can be formed cylindrically.

Foam Boards

- Background: The foam boards were discussed and the thickness of the boards/minimum order quantity was the focus of most of the discussion.
 - Bill and Tom came to the conclusion that 3" boards make the most sense as long as every piece of the foam board is cut at least ~0.5" and there remains at least ~0.5" on the mandrel.
 - There was a brief discussion about material handling and it was decided to order the larger sheets and cut them down when they are received. Then the machine shop can cut them to final dimension. This ensures no extra lead time for the foam board orders.

Tedlar/Shaft

- Bill noted that the Tedlar was at JLab and the part number was TCC15BL3
- Bill and Tom discussed the shaft length and manufacture from the TPC.
 - Technico Linear Shafting