

NX12 Model of the Hall A SoLID Magnet Voltage Tap Locations

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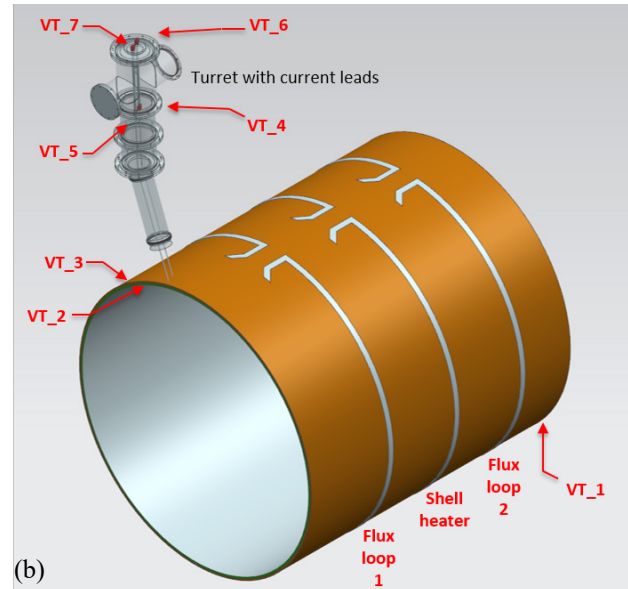
Using NX12 software, a model of the Hall A SoLID magnet was generated to indicate the locations of seven voltage taps.

The SoLID magnet control user screens and documentation have visual references to provide an understanding of the magnet's instrumentation locations. Using NX12 software, a model showing the voltage tap locations on the SoLID magnet was designed and can be imported onto HMI screens used to monitor the values of the voltage taps.

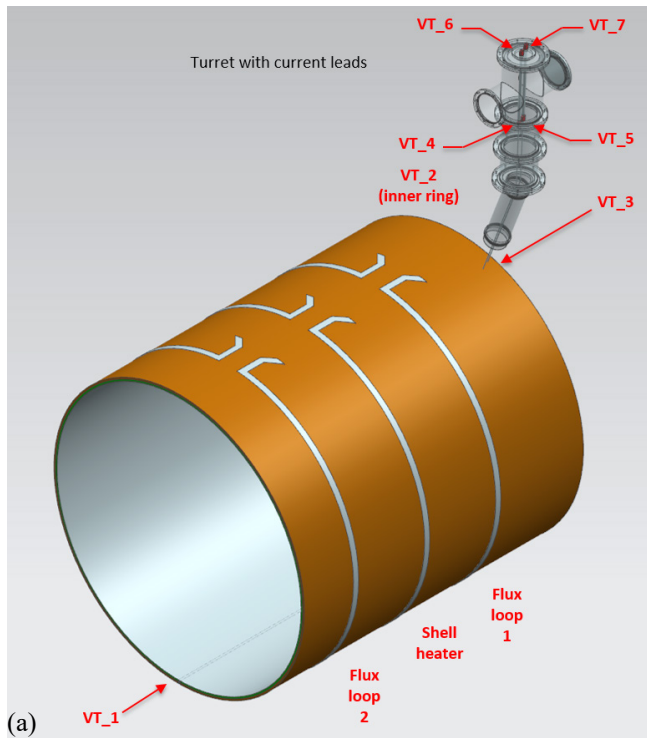
To determine the magnet's voltage tap locations, diagrams from the operating manual for the CLEO II magnet from Oxford Instruments were studied [1].

The SoLID magnet has seven voltage tap locations, VT_1 through VT_7, Fig. 1. VT_1 is the junction between the inner and outer coils, accessed at the lower rear of the magnet coil cylinder. VT_2 and VT_3 are located on the inner and outer coils. VT_2 is shown as the cylinder inside of the bronze cylinder, which is VT_3. A rectangular bar centered between them represents the VT_1 access point at the bottom rear of the magnet coils. VT_4 through VT_7 are in the turret, above and below each current lead stack.

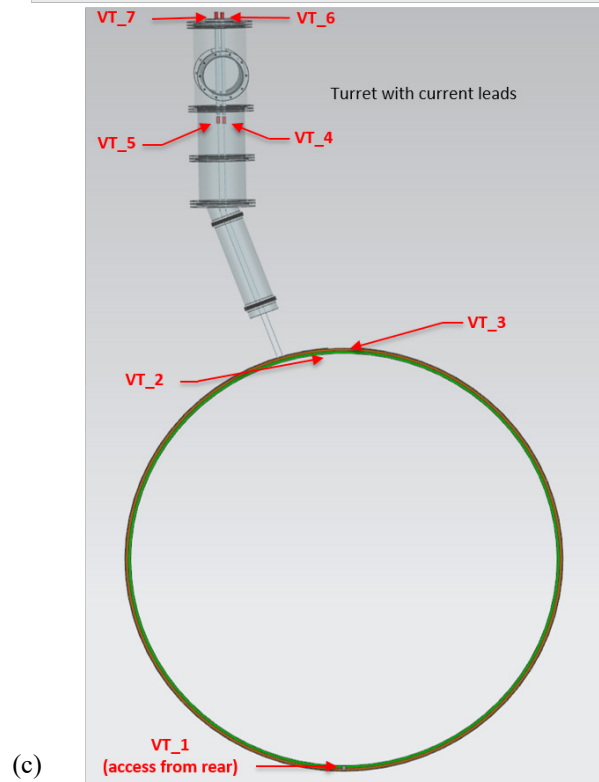
Some of the more difficult components to design were the flux loops and shell heater. After different attempts, a cylinder



(b)



(a)



(c)

FIG. 1. Model representation of the SoLID magnet showing voltage tap locations. (a) Isometric rear, (b) isometric front, (c) front.

was modified by designing “cutting tool” extrusions to subtract material from the original cylinder to make the final shape, Fig. 2.

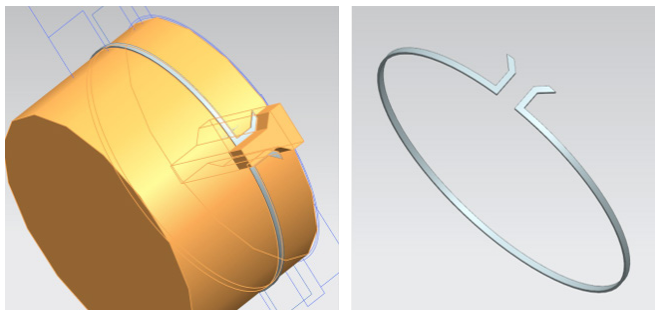


FIG. 2. Construction of the flux loops and shell heater using design cutting tools (left) and the finished product (right).

In conclusion, the generated model can be used as a reference for documentation or a graphic tool for software controls and monitoring.

[\[1\] Oxford Instruments LTD, *Oxford Operating Manual for CLEO II Superconducting Magnet.*](#)