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## Status of mu2e Transport Solenoid cold mass

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The Fermilab Mu2e experiment is currently being built at Fermilab to search for evidence of charged lepton flavor violation through the direct conversion of muons into electrons. The experiment comprises three large superconducting solenoids; the transport solenoid consists of 52 superconducting coils arranged in an s-shaped pattern in order to guide muons from the source to the stopping target. The Transport Solenoid system is made of two independently powered and independently cryostated magnets, referred to as Transport Solenoid Upstream (TSU) and Downstream (TSD). Each TS superconducting coil is wound using NbTi superconducting cables stabilized with pure Aluminum. The impregnated coils are machined and subsequently assembled into Aluminum housing shells via a shrink fit process to form a total of 27 modules, which are then bolted together and electrically and cryogenically connected. Each shell is machined from a large forged billet to the precision needed to achieve the proper coil-shell interference as well as to preserve the spatial orientation of the 52 coils needed to satisfy the magnetic field requirements set by the mu2e experiment. The manufacturing of the Transport Solenoid cold mass is now concluded. This work summarizes the main aspects of the TS cold mass design, describes the manufacturing and assembly processes and discusses lesson learned from the fabrication.

**Primary author:** LOMBARDO, Vito (Fermi National Accelerator Laboratory)

**Co-authors:** AMBROSIO, Giorgio (Fermilab); BADGLEY, Karie (Fermilab); BRANDT, Jeffrey (Fermilab); EVB-OTA, Daniel (Fermilab); HOCKER, Andy; LAMM, Michael (Fermi National Accelerator Laboratory (FNAL)); SCHLABACH, Philip (Fermilab); BERSANI, Andrea; FABBRICATORE, Pasquale (INFN e Universita Genova (IT))

**Presenter:** LOMBARDO, Vito (Fermi National Accelerator Laboratory)

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