

The cable for the Panda Solenoid

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Reasons for a change

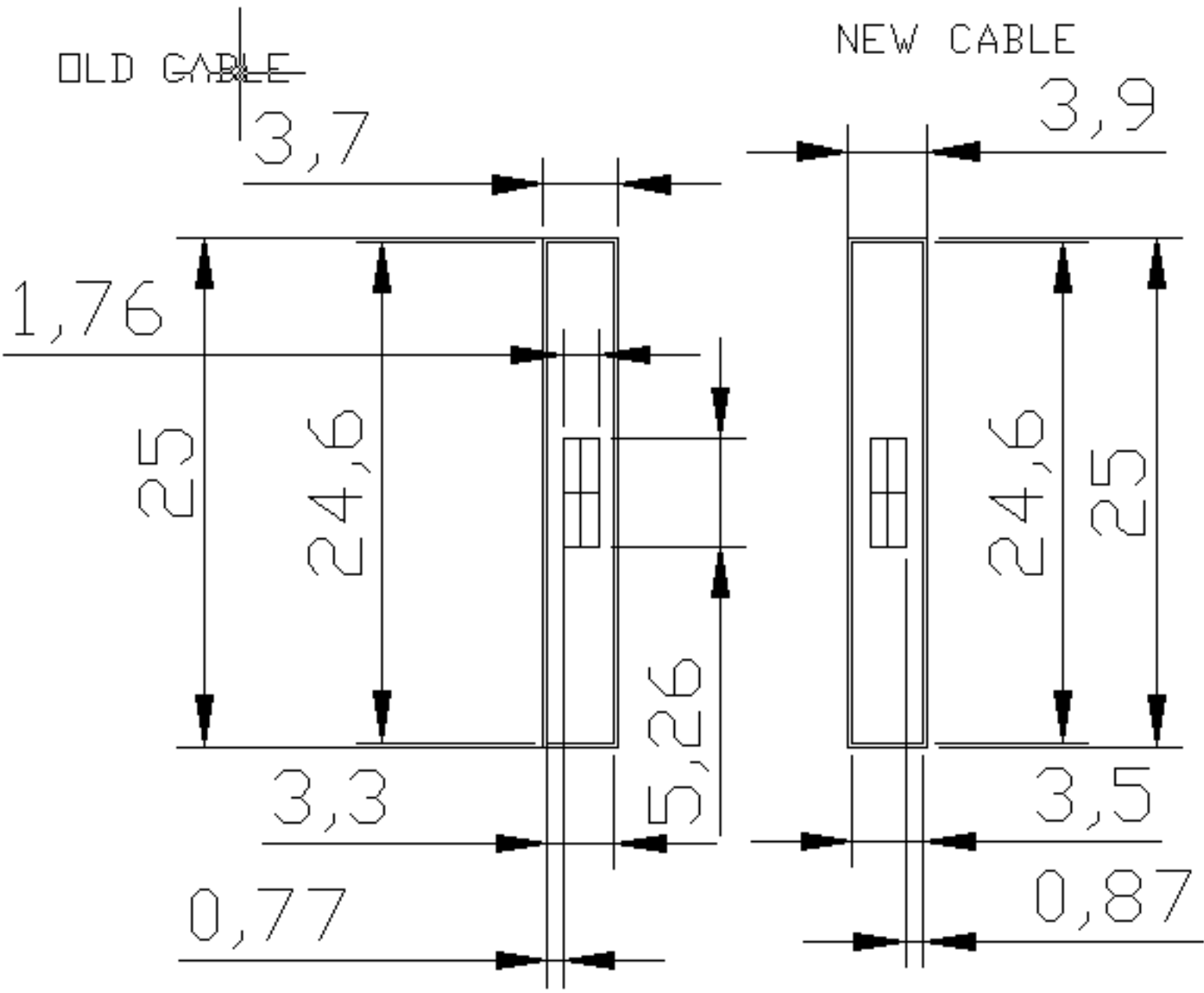
- To avoid Unwanted Risks in the cable production (S/C insert alignment and Strand dimension)
- To avoid unwanted risks in the Coil Winding Process (elastic instabilities in the cable during the winding)
- To keep the operating current in the reasonable limit of 5000 A.

ASG suggestion

- **A Cable aspect ratio <7 is preferred for a winding radius of ~ 1000 mm (based on the Finuda, Babar and ZEUS experience)**
- This is the reason for decreasing the **end coil** to **central coil** current ratio to 1.4 : 1.
- **Andrea Bersani will present the updated design.**

OLD CABLE

NEW CABLE



The Genoa Proposal

- Indirectly Cooled Aluminium stabilized cable.
- Epoxy vacuum impregnated glass insulation.
- Two current densities to meet the specification for the field quality in the tracker.
- 5000 A Operating Current

S/C cable parameters

- Operation at half the critical current at the operating temperature of 4.5 K and the maximum field on the winding (~ 3 T)
- This gives a 1.8K temperature margin for the current sharing temperature.
- And an enthalpy margin of $\sim .5$ Joules/metre of winding.

Cable

- Rutheford type cable 90% compacted
- 4mm^2 NbTi, 1:1.09 Cu
- Total cross section of the superconducting cable 8.36mm
- Assuming 12 strands 0.95mm dia
- The cable dimension is $\sim 1.76 \times 5.28\text{mm}^2$