WAMSDO presentation

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"NbTi and Nb_3Sn PIT strands for accelerators"

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Abstract. NbTi conductors for accelerators are mainly keystone cables made of fine filament conductors with filament diameter of 6-7µm. For 3 octants of the inner dipoles of LHC - about 2000 cables of 460m each - EAS has produced more than 30000km of the inner dipole strands with 7µm filament diameter according to the double stack technique. For the MQM/MQY matching quadrupole cables EAS has manufactured 2 types of strand - in total more than 13000km - with 6µm filament diameter according to the single stack technique.
For fast pulsed magnet application conductors with filament diameters below 2.5µm in a CuMn are required. Several billets have been produced for HEB (SSC) in 1992. Because of the unsuited Nb barrier techniques at that time many wire breakages have occurred. In the meanwhile the barrier technology has been optimized and established to guarantee long lengths production.
For the FAIR project at GSI EAS has delivered 44km of strand Ø 0.5mm for SIS 100 and 19km of SnAg5 coated strand Ø 0.825mm for SIS 300. Both types of conductors have filament diameters of 4.3-4.5µm in a Cu matrix and a critical current density of 2700-2800 A/mm^2 at 5T - 4.2K.
For NED / CARE EAS has produced several billets of PIT Nb_3Sn conductors Ø 1.25mm with 288 filaments of < 50µm and j_c nonCu (12T - 4.2K) exceeding 2600A/mm^2.