MgB_2 cables: design, manufacturing and assessment

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Outline

- Introduction
- Design parameters
- Experimental R&D assessment
  - Cabling
  - Tests and results
- Industrial cabling process
- Conclusions

Conclusions

- A thorough electro-mechanical characterization of 1 mm MgB_2 wire has been carried out at CERN for the determination of the adequate cabling parameters.
- The minimum R_b, minimum T_p and maximum tensile load of the MgB_2 wire and cables have been proposed considering the geometry of each sub-cable and the mechanical performance of the MgB_2 wire at RT.
- Short length samples of 3 kA cables, 18 kA cables and 2 x 3 kA cables have been prepared and experimentally validated at CERN. I_C measurements of cables and extracted strands.
- Twelve samples (straight and bent) of 3 kA MgB_2 cables have been manufactured by TRATOS Cavi SpA. and measured at CERN for the assessment of the cabling parameters and the industrial cabling process.
- A 25 m long 3 kA MgB_2 cable has been manufactured by TRATOS Cavi SpA with the proposed cabling parameters.

Open points

- Activities are advancing according to the plan.
- When the 3 kA MgB_2 cable will be completed, we will move to the next step.