SuperPower® 2G HTS Wire was used by Sumitomo Electric Industries to fabricate the world's first Power Cable utilizing 4 mm wide 2G HTS wire

Power Cable Application

SuperPower® 2G HTS Wire ~ Spec Sheet

In December 2006 SuperPower completed the world's first significant 2G HTS wire delivery with the shipment to Sumitomo Electric Industries of 9.7 km of wire for use in fabrication of a 30 m 2G HTS cable segment for the Albany Cable Project.

SuperPower is producing long lengths of high performance 2G HTS wire specifically designed for Power Cable applications.

- Long, single piece lengths of robust and high performing 2G HTS wire are available
- I_c uniformity in long lengths: STDEV less than 10%
- Surround copper stabilizer (SCS)
  - rounded edges beneficial for high-voltage applications
  - reduced probability of failure due to voltage breakdown
  - successfully implemented and tested on continuous lengths of hundreds of meters of wire
  - overcurrent capability tailored to cable application
- Mechanical robustness: better stress-strain characteristics than any other HTS wire
- Flexibility: able to wind on small diameters

Specifications	SCS4050 (4 mm wide)	Comments
Total thickness	0.095 mm	
Copper stabilizer thickness (total)	0.04 mm	Surround stabilizer with rounded corners
Substrate thickness	0.05 mm	Hastelloy® C-276
Critical tensile stress	> 550 MPa	At 77K
Critical bend diameter in tension	11 mm	At room temperature
Critical bend diameter in compression	11 mm	At room temperature
Critical axial tensile strain	0.45%	At 77K
Substrate resistance	125 Micro-ohm cm	Higher resistance leads to lower eddy current ac loss
Substrate magnetic properties	Non-magnetic	Leads to lower ferro-magnetic ac loss
Joint resistivity	40-50 $n\Omega cm^2$	
Critical bend diameter of joint	25 mm	
Critcal current	80A and higher	At 77K, self field
Hermeticity	24 hrs, 10 atm, LN_2	No degradation of I_c, dimensionally stable
Measured ac losses	0.36 W/m	Over entire cable, at 1000 kA_{rms} ($I_{op/peak}/I_c$ ~ 65%, 60 Hz)

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