2G HTS tape reliable protection in 250 A current leads

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The heavy ion synchrotron SIS100 at the FAIR complex requires reliable and economical cryogenic current leads, operating at 1-3 Hz cycling current over 20-30 years of the accelerator life. More than 500 HTS local current leads will supply DC power for 140 corrector magnets. A novel design of these local current leads enables an operation at 0-250 A DC and a cycling current with ramp rates up to 750 A/sec and pulse current up to 300 A. The HTS part of current lead is made of 2G SuperOX tape and it is protected during quenches by use of an optimized brass strip stabilizer with gold plated Cu contacts. The cryo-stability of this protection concept was studied at GSI and the experimental data are presented in this paper.