

## Experience, Status and Prospects of HTS Rotating Machines with 1G and 2G HTS at Siemens

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**Abstract** - Soon after the availability of long lengths of technical High Temperature Superconductors (HTS) we started a multi-phase development program to build several rotating machines based on HTS. These machines fulfilled the goals of technology demonstration, and demonstration of application potential for use in motors and generators. We will report about special features and requirements concerning rotating machines based on 1G-HTS as well as on recent results concerning long term experience gained with a HTS-generator in a plant in Nuremberg (partly funded by German BMWi). The latter machine was disassembled, analyzed and assembled again according to the test schedule. This project has increased the level of confidence in HTS technology considerably and led to an even simpler mode of operation of the machine and a reduction of complexity. The increased performance of 2GHTS is a motivation to start new development efforts to benefit of this in rotating machines. Properties of the technical wires have to be studied, concepts and processes have to be adopted to harvest the new features of rotating machines based on 2G-HTS. Part of this adoption is the construction of a rotating test rig in partnership with the KIT (partly funded by BMWi) to study the enabling technologies on the path to realization of 2G-HTS based large rotating machines/ generators.

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