

## **Advances in HTS materials**

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HTS materials offer great opportunities to reach higher magnetic flux densities when compared with conventional superconductors. The upper generally accepted limit of 23 T using Nb<sub>3</sub>Sn can be overstep with HTS.

HTS Bi-2212 round wires have shown critical current densities as higher than 1000 MA/m<sup>2</sup> under 45 T at 4.2 K. The road for very high fields is open. The round shape suits rather well for magnets, especially with high current specifications since the “classical” high current cables (Rutherford, CIC) require elementary round conductor. The absence of current anisotropy in round conductor is another advantage.

The YBaCuO coated conductors which form the second generation of HTS conductors show large opportunities for high fields. Their higher mechanical performances (IBAD process) compared to Bi conductor bring advantages for high field magnets.

The protection of HTS magnet is an identified issue since degradations have been observed in several magnets after a quench.

A state of the art of HTS materials, especially in Europe, will be presented.