



MT 26
International Conference
on Magnet Technology
Vancouver, Canada | 2019

Contribution ID: 893

Type: **Contributed Oral Presentation**

Thu-Af-Or19-03: Development of ReBCO coated conductors with improved properties for magnet applications by THEVA

Thursday, 26 September 2019 14:30 (15 minutes)

Magnet applications require coated conductors with high in-field performance, well-defined geometry, high mechanical stability, as well as adequate stabilization. At THEVA coated conductors are produced using an all PVD approach. The high performance of the tape is enabled by ISD-MgO buffer layers and several micrometer thick GdBCO HTS layers.

High performance at fields up to 31 T was recently reported with our standard coated conductors. To improve the wire for magnet applications THEVA is now testing the applicability of artificial pinning to our technology. First results already show significant improvements below 30 K and above 5 T. Furthermore, a PVD approach for the Ag and Cu stabilization is now in production which gives a high uniformity due to the inherent features of PVD processes. This will allow a very dense packaging of the wire in magnet coils. Together with the newly developed 50 μm thick substrate wires a very significant improvement in terms of current density can be realized.

We will show a summary of the recently achieved properties and give an outlook on the next development steps on our roadmap.

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Session Classification: Thu-Af-Or19 - High Tc Wires and Cables II