

# Startup of coated conductor pilot production at THEVA

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We have set up and commissioned a pilot production line for coated conductors with an annual capacity of 300 km (4 mm equivalent). The principal focus in building this pilot line was an economic and easily scalable production scenario. This has been addressed by using the simplest possible coated conductor architecture, consistent e-beam evaporation in all deposition steps, and in-house designed and assembled PVD equipment based on standardized, fully automated modules. Starting from electro-polished, non-magnetic Hastelloy C-276 substrate tape, an MgO double layer deposited by inclined substrate deposition (ISD) provides bi-axial orientation for the subsequent GdBaCuO layer and a thin silver contact layer. Although all depositions are performed in high vacuum (PVD), tapes up to 1000 m are continuously transferred from reel-to-reel and from atm-to-atm using our proprietary and unique TapeGate™ locking mechanism. This allows easy access and in-line quality control before collecting tape on the pick-up side.

Coated conductor tape with critical currents  $I_c(77K, sf)$  in excess of 300 A/cm has been demonstrated. However, our mid-term focus is not ultimate performance, but rather a robust and reliable product with reasonable cost perspective. Hence, apart from technical aspects our main efforts are currently directed towards optimized workflow organization, stringent control and documentation of all handling steps, and supply chain management to secure safe supply and constant product quality. Continuous improvement process (CIP) management shall lead to gradual cost reduction along the manufacturing process, before production will be scaled to full industrial size.