

# **Expediting the transfer of 2G HTS tapes from production to applications: customised finish and integration into HTS device modules**

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*Super Ox*

To deposit a high quality HTS layer is unarguably the most important step in 2G HTS tape manufacturing. There are many further steps to take beyond the HTS growth, however, before these amazing materials find their use inside real superconducting devices. In this talk we will describe two directions in which we are moving in order to facilitate the way of 2G HTS tapes from production to applications: (1) customised finishing of tapes for specific applications and (2) integration of 2G tapes into basic modules of HTS devices.

Various applications of 2G HTS tapes in HTS devices dictate different key requirements to the properties of the tape material and its finish. While it is desirable for all applications that tape has a high and uniform critical current, for each application there is a specific profile of key tape properties that may be quite different for different applications. SuperOx, as a manufacturer of 2G HTS tapes, is active in developing and offering customised tape solutions to reflect different key property profiles sought by the developers of various HTS devices. At present, customisation options include on-demand thickness of silver and copper coatings, surround polyimide insulation, low resistance soldered joints, solder plating, and lamination.

We have developed in-house capabilities for making basic modules of more complex HTS devices such as pancake and racetrack coils for magnets and rotating machines, soldered stacks of tapes for high current cables, HTS current leads, and tapes with proprietary protection against overcurrent for fault current limiters. Another development are solid 2D blocks of any size and shape consisting of multiple layers of 2G HTS tapes that represent an advanced and easily engineerable alternative to bulk HTS materials for applications that require trapping of magnetic field.