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## **Wed-Mo-Or3-01: Manufacturing and development of high performance REBCO wires at SuperPower for various magnet applications**

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The increasing demand for REBCO wires from various magnet applications such as that for the HTS-based compact fusion, accelerators, transportation, medical and analytical systems is driving the increase in our production capacity and the further improvements in wire performance and qualities. In the last several years, SuperPower was focusing on advancing the wire manufacturing technologies. Great efforts have been made in upgrading the production systems and optimizing the processing techniques. These efforts were made aiming at the development of the next generation manufacturing technologies that are needed to make a transition from small-scale production to large-scale production. Highly stabilized processes with high throughput and high yield in all the processing steps, particularly in REBCO deposition, are the key to realize such transition. For this purpose, the critical components in the manufacturing systems are being redesigned or modified and new components are being added.

Continuous efforts are also being made at SuperPower in the further development of REBCO wires, aiming at achieving improved performance and required additional functionalities. Following the widely adopted HM tapes, which have an average  $I_c$  of 450 A/4mm at 4.2K-17T//c and an average  $I_c$  of 160 A/4mm at 20K-20T//c, we are working on the development of a new REBCO formula that will have a further increase in the in-field performance, especially at high fields around 20K. Seeing an increasing demand, we are establishing the manufacturing capability in-house for manufacturing filamentized tapes, which is based on laser striation. We have built a system in-house for making insulated tapes with polyimide coating. We are developing an advanced slitting technique for the improvement of the slit edge quality. In this talk, we will present an overview on these development work and the progresses in wire manufacturing.

**Authors:** Dr ZHANG, Yifei (SuperPower Inc.); Mr CAROTA, Gene (SuperPower Inc.); Mr SAKAMOTO, Hisaki (SuperPower Inc.); Mr HIRAI, Takao (SuperPower Inc.); Mr NAGATA, Harry (SuperPower Inc.)

**Presenter:** Dr ZHANG, Yifei (SuperPower Inc.)

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