

## Coated Conductor R&D at Shanghai Superconductor Technology and Discussion for Fusion Application

Yukata Yamada<sup>1,2</sup>, J-M Zhu<sup>1</sup> and B. Song<sup>1</sup>

<sup>1</sup>Shanghai Superconductor Technology Co., Ltd., Shanghai, China

<sup>2</sup>Chubu University, Thin Film R&D Center, Kasugai City, Japan

E-mail: [yutakayamada@isc.chubu.ac.jp](mailto:yutakayamada@isc.chubu.ac.jp)

**Abstract**—Recent progress of HTS magnets for compact fusion and the mass production of HTS-CC (Coated Conductor) attracted much interest in HTS industry as well as in the energy business community. Here in this presentation, I first summarize the recent effort at Shanghai Superconductor Technology for the low-cost and mass production especially for fusion application as well as  $I_c$  and  $J_c$  properties.

Recently we have organized “HTS conductor R&D committee for fusion application” in Japan to discuss what we need in CC R&D for this application. At the end of 2022 we visited JT60SA in QST (National Institutes for Quantum Science and Technology) and discuss HTS system possibility with QST members. JT60SA is a most advanced Tokamak type system made of NbTi and Nb3Sn conductors for TF and CS coils and much more compact than large ITER. This system completed in 2020, and now ready for operation. They have solved many problems in the conductor or magnets such as strength, size accuracy, AC loss and so on which was critical to the realization of the whole system.

In the latter half of this talk, on behalf of the above committee, I will especially introduce some discussion about the important R&D issues for fusion application. Also, expected price of REBCO conductor will be discussed using low temperature fusion systems of JT60SA or ITER.

**Keywords (Index Terms)**—Coated Conductor, Fusion Application, Critical Current, Strength