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The result of ITER TF coil double-pancake heat treatment in Japan

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9 ITER TF coils are being manufactured in Japan for ITER project. Each TF coil consists of 7 Nb₃Sn conductor double-pancakes (DP). In heat treatment of DP, strand witness samples are heat-treated with DP simultaneously and then their critical current (I_c) is measured to confirm soundness of the heat treatment. Recently, heat treatment of all of 63 DPs has been successfully completed under proper process control. The result are reported in the paper. On the other hand, there was a risk of disturbance, which is unpredictable such as sudden temperature deviation and interruption, due to unavoidable trouble (blackout etc.) during heat treatment. In such a case, the strand performance may be degraded, especially in internal-tin Nb₃Sn strand. Therefore, to clarify an influence of the heat treatment disturbance on strand performance, authors prepared witness samples heat-treated with artificial disturbance and the I_c were measured. As a result, it was revealed that influence of temperature deviation appeared on strand performance while influence of temperature interruption was sufficiently small. The details is also described in the paper.

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