

Study on the Unidirectional Compaction of Terminal Cables in the CICC Joint

H. I. Nam*, H. J. Lee⁺, J. H. Park*, G. W. Hong⁺

**Chungbuk National University, Cheongju, Korea*

⁺Korea Atomic Energy Research Institute, Taejeon, Korea

The void volume fraction of cables is one of the effective parameters to characterize the joints of superconducting magnet. Because electrical resistance and cooling stability in the CICC (Cable in Conduit Conductors) joint are governed by the void volume fraction, it should be controlled constantly in the termination of cable. The change of cross-section shape in the cable was found during the unidirectional compaction of terminal sleeve. The non-uniform thickness of the sleeve after compaction is expected because the loading is not axi-symmetric, and the plastic flow is also not axi-symmetric. The CICC was compacted from 45% void volume fraction to 15% by using two piece compaction jig, which could be pressed uni-directionally. Commercial code, ABAQUS, was used to analyze the plastic flow in the sleeve during the unidirectional compaction. The increment of radius of jig edge could minimize the change of the shape of cable. The calculated results were agreed with the experimental observations.

keywords : CICC joint, sleeve-compaction, void volume fraction, plastic flow