

Some Technology Issues for the General Assembly of EAST Superconducting Tokamak

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The construction of EAST (Experimental Advanced Superconducting Tokamak) was completed at the Institute of Plasma Physics of Chinese Academy of Sciences (CASIPP) in January of 2006 after challenging techniques over the period of 6 years. The followed cool-down test was also successfully performed and all superconducting magnets entered the cryogenic superconducting state smoothly. The reliabilities for technology R&D and assembly were well demonstrated as a result of the experiment. EAST device, a fully superconducting Tokamak consists of more 20,000 parts and possesses the configuration of 7,700mm in diameter, 7,500mm in height and the weight of 400 tons. The complicated general assembly of EAST began in July of 2003 and nearly took two and half years. Considering the technique ventures and the reassembly possibilities in some difficult cases the EAST general assembly was divided into two phases. In the first phase, which has been finished by this time the assemblies for all components should be performed except for the neck tubes, inner plasma faced components (PFCs) and a 1/16 inserting section of the vacuum vessel. In the second phase the remainder assembly must be done after passing the cool-down test for EAST integrated device including its bus-line and current leads.

During the general assembly not only some common difficulties for a large Tokamak need to be overcome, but also a series of technique problems for the superconducting Tokamak itself need to be solved properly. This paper emphasizes on some key technology issues that were faced and solved in EAST assembly process including optimization for assembly procedure, alignment of components, ensuring to heat insulation gaps, installation of unique parts, treatment of electro insulation, improvement on heat transferring, control on deformation of vacuum vessel etc.. Besides, the quality control (QC) methods which made important contributions to the general assembly are also described.