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# Qualification of ITER PF6 Helium Inlet

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The Poloidal Field (PF) coils are one of the main sub-systems of the ITER magnets. The PF6 coil is being manufactured by the Institute of Plasma Physics, Chinese Academy of Sciences (ASIPP) as per the Poloidal Field coils cooperation agreement signed between ASIPP and Fusion for Energy (F4E).
The ITER PF6 winding pack is composed by stacking of 9 double pancakes. Each double pancake is supplied with supercritical helium with 2 inlets located on the innermost turn, in the middle of the layer joggles where the conductor goes from a pancake to the other. The helium inlet will undergo huge cyclic electromagnet loads during Tokamak operation, thus needs to be qualified with rigorous procedures.
This paper describes PF6 helium inlet qualification. In the qualification process, helium inlet hole drilling and stainless steel wrapping removal were carried out. Helium inlet welding with full penetration by automatic welding machine was performed, temperature measurement during welding was implemented and was under 250 ℃. Leak test and X-ray test were applied to ensure no defect was exist. The qualification samples passed the 600,000 cycles fatigue test and laminography test. Micro and macro inspections were been done to finally check the welding quality. PF6 helium inlet qualification was approved by ITER IO before Dummy double pancake manufacturing.

## Eligible for student paper award?

Yes

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