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## Current Centre Line calculation method and results for ITER Poloidal Field Coils

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Two out of six Poloidal Field Coils (PFC) are already delivered to the ITER Organization. The PFC are built winding, impregnating and vertically stacking double pancakes (DPs) of NbTi Cable-in-Conduit conductors into a Winding Pack (WP). Later, the Winding Pack (WP) is impregnated for ground insulation and clamping devices are installed for structural support and interface with the rest of the ITER machine. Four of the five coils are manufactured at ITER site by European companies under Fusion For Energy (F4E) management, PF06 was manufactured in China, in a collaboration agreement between the Institute of Plasma Physics Chinese Academy of Sciences (ASIPP) and F4E.

One of the main parameters characterizing the PFCs is the Current Centre Line (CCL), defined as the barycentre of its WP conductors. Ideally, the CCL would be in the WP's symmetry plane but due to solutions in the construction design and manufacturing deviations, it may vary. Double Pancakes (DPs) may be wound with different dimensions, or a deviation during their stacking would cause a misalignment of all the conductors contained in that ill-positioned DP, affecting the CCL. Based on the method developed for the Toroidal Field Coils but considering their specific architecture and particularities, F4E calculated the PF CCL for the two first coils in a joint CAD, metrology and manufacturing engineering effort. Data used are geometric measurements taken during the Double Pancakes (DP) and WP manufacturing, and the process is divided in three main phases: DP modelling, Virtual Stacking and WP global alignment.

This paper explains the process to calculate the Current Centre Line (CCL) of the two first PF Coils using manufacturing data, defining the uncertainty associated to the calculation and comparing against the target tolerances defined for the proper ITER machine operation.

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