
Contribution ID: **148** Type: **not specified**

# Design of High Current Busbar Contact Connection for ITER Poloidal Field Converter

*Monday, 17 September 2018 11:00 (2 hours)*

The DC equipment of ITER poloidal field converter will be interconnected by DC busbar with water cooled aluminum busbars with cross section 200×60 mm, whose segments will be connected by aluminum flexible links in order to compensate that of thermal expansion. Because the contact surface between DC busbar and flexible links are small and the high current up to 30 kA flowed through, the power dissipated in the contact surface are about 900W, if the contact resistance is assumed only to be 1 uΩ, it is necessary to decrease the contact resistance in order to reduce the temperature rise of contact joint. This paper presents the different design on high current bolted busbar connection to increase the contact area and reduce contact resistance. Firstly, several methods to be discussed to reduce contact resistance based on lots of references. Secondly, these methods are analyzed by using ANSYS software, the pressure and stress between the contact surface is provided, it is obvious that the contact resistance is smaller with the increase of pressure and stress between contact surface. According to comparison among the different design, the best one is decided to be applied, the contact resistance is less than 1 uΩ. Finally, the experiment data are present to prove the validity of the design, the average temperature rise of connect terminal is less than 20℃, it can meet the requirement of ITER operation.

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**Session Classification:** P1

**Track Classification:** Magnets and Power Supplies