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P2.079 Design and experimental study on high current dc disconnector contact

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The high current dc disconnector is the significant switch in ITER poloidal field converter power supply system. The high temperature rise in the contact area of disconnector is the key factor which limit the capacity of current carrying. In order to reduce the contact resistance and improve the capacity of current sharing and carrying, two new contact structures of circular contact and ring contact with spring to realize self-adaption are presented in this paper. Based on the built contact resistance test platform, the relationships between contact resistance and applied contact force, roughness of contact surface, and the shape parameters of contact, like curvature radius of circular contact, inner diameter and raised radius of ring contact, are introduced in detail. In addition, based on the ring contact structure, a nine-contact connected in parallel is set up to test the capacity of current sharing, and the results show that the non-uniform sharing coefficient is only 1.23, which demonstrates the good performance of the proposed structure.

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