

Progress in Arc Safety System Based on Harmonics Detection for ICRH Antennae

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The arc detection systems based on harmonics detection have been tested in USA (TFTR, DIII, Alcator C-mod) and Germany (Asdex). These systems have some advantages in comparison with traditional securities which use a threshold on the V_r/V_f (Reflected to Forward voltage ratio) calculation and are ITER relevant.

On Tore Supra (TS) 3 systems have been built using this principle with some improvements and new features to increase the protection of the 3 ICRH generators and antennae. On JET 2 arc safety systems based on the TS principle will also be used to improve the JET ITER-like antenna safety. In order to have the maximum security level on the TS ICRH system, the 3 antennae are used with these systems during all plasma shots in redundancy with the other systems.

This TS RF principle and its electronic interactions with the VME control of the generator are described. The results on the TS ICRH transmitter feeding the 3 antennae are summarized and some typical signals are given.