

Hybrid couplers on the JET ICRF system: commissioning and first results on ELMs

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* See appendix of M.L. Watkins *et al.*, *Fusion Energy 2006 (Proc. 21st Int. Conf. Chengdu) IAEA*.

During the 2004-2005 shutdown, hybrid 3dB couplers have been installed between the A2 ICRF antennas A and B. While the initial goal was to free one of the generators to power the oncoming ITER-like JET-EP antenna, it became clear that the coupler properties could be used to increase the ICRF power on ELMs as done on ASDEX-Upgrade [1]. In parallel to the coupler installation the data acquisition system was upgraded in order to obtain the forward and reflected voltage amplitudes with a time resolution up to 4 μ s. As expected, the first tests showed that the reflected powers during ELMs was successfully directed to the coupler dummy load instead of the generators and that a clear improvement in the averaged coupled power in the presence of the ELMs could be obtained. Nevertheless, it appeared that the existing levels of the voltage standing wave ratio (VSWR) protection against arcs were not satisfactory and had to be re-assessed. In particular, evidence of voltage-node arcing in the vacuum transmission lines was found, emphasising the importance of developing an appropriate arc detection systems.

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[1] F. Hofmeister *et al.*, Proceeding of 20th SOFT conf., Marseille, France, 1998, pp. 437–440.