High Voltage Solid State Gyrotron Body Power Supply

M Santinelli (ENEA), T Bonicelli (EFDA), R Claesen (ENEA), D Fasel (CRPP), P L Mondino (EFDA), M Pretelli (OCEM SpA), L Rinaldi (OCEM SpA), L Sita (OCEM SpA), G Taddia (OCEM SpA).

Abstract
This paper will describe the design and successful factory tests on dummy load, of the CPD Gyrotron Body Power Supply which is going to be installed at ENEA, Frascati. The actual achieved performance will be compared with the specification and the extensive modelling that was done during the design phase.

The design includes measure to enhance the reliability of the body power supply such as redundancy, plug-in modularity, component de-rating and component standardisation.

The topology of the body power supply has been conceived as a solid state topology based on the SWM (Stair-Way Modulation) technology, in which the 40kV output voltage is reached by adding 50 high voltage modules in series connection.
This is also the topology suggested for the 170 GHz, 2 MW, steady state gyrotron which is being developed in a collaboration between European research associations and industries, to be used on the Test Facility for Electron Cyclotron Resonance Heating (ECRH) gyrotron development for ITER.