

7. HIGH POWER RF LABORATORY

Name of the infrastructure	High Power RF Laboratory
Location of infrastructure (town, country)	Leganés, Spain
Web site address	http://www.ciemat.es
Legal name of organization operating the infrastructure	CIEMAT, Centro de Investigaciones Energéticas Mediambientales y Tecnológicas
Location of organization (town, country)	Madrid, Spain
Key Accelerator Research Area(s)	RF power systems for accelerators, high power RF conditioning and testing of RF components for accelerators
General description of the infrastructure	<p>The CIEMAT High Power Radiofrequency Laboratory (HPRF Lab) is used for the characterization, measurement, and high-power validation tests of different prototypes and RF components. Apart from basic RF and microwave laboratory test instrumentation and measurement equipment, a high-power RF source is available, which is composed of the following parts:</p> <ul style="list-style-type: none"> - RF module: 200 kW CW @175 MHz RF tetrode-based amplifier + fully digital LLRF - High Voltage Power Supply. - Test bench for RF couplers conditioning. - Auxiliary RF components. - Water cooling system. - Air cooling system. - Electrical Supply System.
Already existing or planned	Already existing
Unique features	Unique 200 kW CW @175 MHz RF source in Spain, possibly Europe
Present situation/future changes/expected lifetime	Operative at least until 2025
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	No
Main user community	70% in home users; 30% external users (industry collaborators)
Number of users	CIEMAT for EUROfusion activities and several industrial partners for technology R&D
Open for external users	Yes
If open to external users: Modality of access to the infrastructure (access unit)	There are different modalities to access the facility like a "Service Contract" or a "Collaboration Agreement" among others
Number of access units available for external users	Depending on the availability of the part of the installation needed
If open to external users: Support offered by the organization operating the infrastructure	The equipment is under the responsibility of the CIEMAT, which are in charge of the operation, maintenance and safety issues. CIEMAT agrees to provide the personnel to ensure these functions.
Review procedure for requested access	Either after discussion with CIEMAT, or in the frame of an international contract, European or else
How to apply	By contacting the responsible
Can the infrastructure be made available?	Yes
If YES, fraction of time that could be made available (%)	Negotiable
Contact details (name, Institute, email,)	<p>Cristina de la Morena / David Regidor Fusion Technology Division Avenida Complutense, 40 28040, Madrid cristina.delamoren@ciemat.es / david.regidor@ciemat.es Tel.: +34 91 496 2600/ +34 91 346 6434</p>
Annual operating costs (excl. Investment costs) of the infrastructure	50 k€
if available: costing model (how is the annual operating cost calculated)	If service is delivered to internal CIEMAT clients, costs are calculated on a basis of an all-in fee package. Special conditions may be applicable for tests performed in the frame of approved official cooperation agreements.
Estimated investment cost (replacement value)	3 M€

Pictures

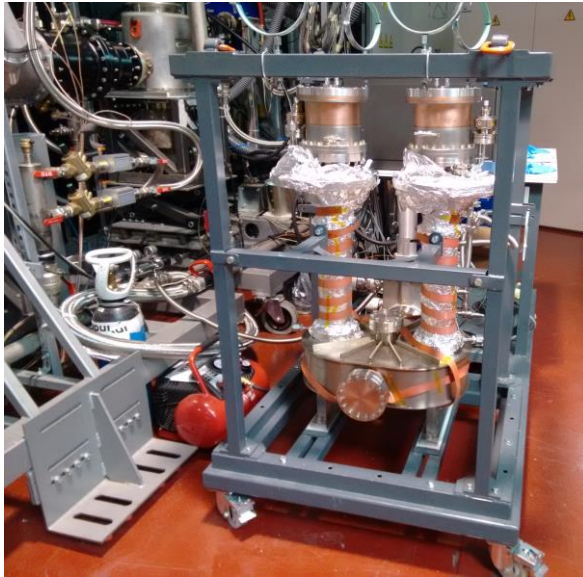


Fig. 10. RF couplers vacuum baking

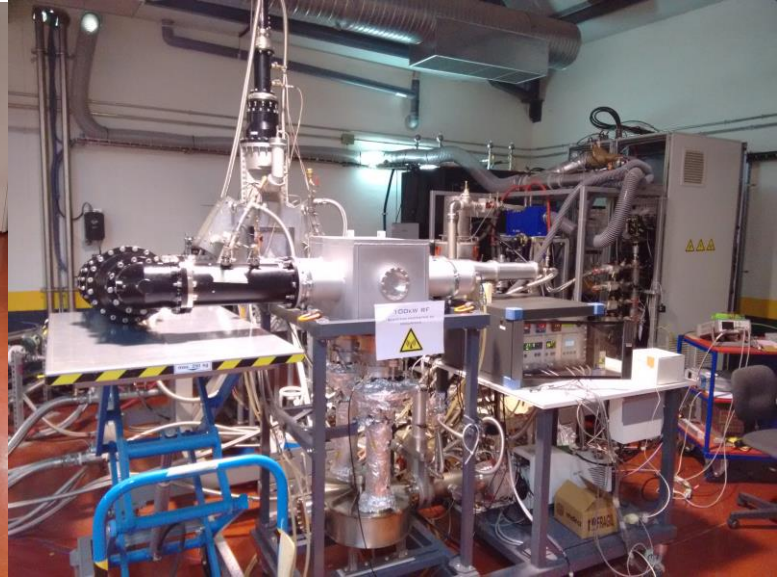


Fig. 11. Test bench for RF couplers conditioning



Fig. 12. High power RF source of the CIEMAT High Power RF Laboratory