

Status of CW cryomodule testing at Cryo Module Test Bench.

Thursday 17 October 2019 16:14 (2 minutes)

Cryo Module Test Bench (CMTB) is a facility at DESY to perform Continuous Wave (CW) and pulsed tests on European XFEL cryomodules. The facility is equipped with a 120 kW Inductive Output Tube (IOT), and more than 180 W of cryogenic power at 2 K can be used for the tests. Since last Summer, a new accelerating module, namely XM50.1, is installed at CMTB. Such a device is the first production European XFEL module to be tested in CW. Such a module is equipped with eight superconducting TESLA cavities that are driven with a vector sum scheme. These tests are essential to define the operational constraints and validate technologies for the proposed European XFEL CW upgrade. Of particular importance is the mitigation of microphonic related effects to lower the RF power requirements. Such a task is achieved using an Active Noise Controller (ANC) that uses piezo actuators to reduce the mean square detuning of each cavity. Another effect of interest is the RF-induced heating of the cavity couplers that make the Q_{ext} drift over time. Then a proper characterization of this effect is useful to optimize the RF power consumption of the accelerating system. Other important tests that are ongoing or foreseen at CMTB include the online detection and measurement of quenches and detuning, the characterization of Q_0 at different cryogenic temperatures, and the achievable field regulation using RF feedback.

Primary author: Mr BELLANDI, Andrea (DESY)

Co-authors: Mr GUERMES, Cagil (DESY); Dr KOSTIN, Denis (DESY); Dr RESCHKE, Detlef (DESY); VOGEL, Elmar (DESY); MITTAG, Frank (DESY); Dr SCHLARB, Holger (DESY); SANDVOSS, Ingo (DESY); Dr SEKUTOWICZ, Jacek (DESY); BRANLARD, Julien (DESY); Dr ESCHKE, Jürgen (FAIR GmbH); Mr JENSCH, Kay (DESY); ONKEN, Ruediger (DESY); Mrs BARBANOTTI, Serena (DESY); PFEIFFER, Sven (DESY); Dr AYVAZIAN, Valeri (DESY)

Presenter: PFEIFFER, Sven (DESY)

Session Classification: Poster Session

Track Classification: Poster: Controls/Seeding/DAQ