Contribution ID: **251** Type: **Oral presentation (remote)**

Strategy for cavity R&D towards an upgrade of the European XFEL - current performance and the need for a new specification

Wednesday, 10 July 2024 17:00 (20 minutes)

Based on the success of the European XFEL srf cavity production, several projects worldwide (LCLS-2, SHINE, etc.) applied and further developed the underlying technology, specifically for cw application with higher Q-value and moderate operation gradients up to 21 MV/m. For a high-duty cycle (hcd) / cw upgrade of the European XFEL, it is required to preserve the high gradient operation in the original pulsed mode aiming for gradients > 25 MV/m in addition to the need for high Q-values (~3e10) at moderate gradients in hdc mode.
In the last years the focus at DESY to achieve this requirements is on the "Mid-T treatment" significantly simplifying the surface preparation process. A summary of results on single-cell cavities will be presented.
In parallel, 15 years after the European XFEL specification for the cavity series production, DESY identified its demand to adapt the specification to the actual state-of-the-art in srf technology, but to keep the mandatory fundamentals including a consolidated contractor supervision. The order of 10 new XFEL-type nine-cell cavities will allow to handover the know-how and a gain of experience to a (partially) new generation of experts.
In an extensive test phase the results of the Mid-T treatment R&D will be transferred to the cavities before they will be used to refurbish the low-performing XFEL accelerator module XM99.

Apply for poster award

Primary authors: RESCHKE, Detlef (DESY); STEDER, Lea (DESY)

Presenter: RESCHKE, Detlef (DESY)

Session Classification: Superconducting RF

Track Classification: Accelerator: Superconducting RF