

GUIDED CAVITY REPAIR WITH LASER, E - BEAM AND GRINDING

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Abstract

Recent cavity processing statistics indicate that the development of RF superconductivity has reached a stage where more and more cavities were limited by quench and not by field emissions. The combination of high resolution optical inspection, cavity quench detection and surface replica revealed more than half of the cavity quenches were limited by identifiable surface features, namely pits or bumps. The quench field ranged from 12.7 MV/m up to 42 MV/m. Several methods have been explored in various laboratories to remove the surface features. Those included the laser re-melting, Electron beam re-melting and local mechanical grinding. This paper reports the latest development of those guided repair technologies and their benefits to improve cavity performances.

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