

BASIC STUDIES FOR PROCESS PARAMETER DEVELOPMENT FOR EP/HPR/SNOW CLEANING

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Abstract

Surface removal by electropolishing (EP) and final cleaning by High Pressure Ultra Pure water rinsing (HPR) are baseline technologies in order to achieve reproducible high surface field in superconducting niobium cavities. In the last years the standard horizontal EP process applying hydrofluoric (HF) and sulfuric acid (H₂SO₄) has been transferred to industry at KEK and DESY successfully. Alternative approaches based on the HF/H₂SO₄ mixture are vertical EP (Cornell University, CEA Saclay) as well as low voltage EP (CEA Saclay). As an alternative approach electrolytes free of HF are under investigation (INFN Legnaro, Accel Co/DESY and others). HPR has been established with various mechanical set-ups, water pressures, nozzle configurations and nozzle designs worldwide. Carbon dioxide (CO₂) snow is an additional cleaning approach developed at DESY. In contradiction to HPR it is a dry cleaning process, which allows the cleaning of water sensitive components as well as horizontal cleaning of niobium accelerator cavities. The recent developments of these processes will be discussed.

**CONTRIBUTION NOT
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