

High pressure rinsing at CERN

Initial tests with a Haskel pressure amplifier

- pressure: up to 600 bar
- nozzle: very high pressure nozzle (60000bar) from Flow Systems. Other nozzles had much poorer performance
- samples: BCP treated contaminated with grease, paint, and molycote
- examination: scanning electron microscope (SEM)

results from samples

- very good cleaning for pressures between 100 and 200 bar and at distances up to 10 cm
- best angle of incidence: perpendicular
- at 400 bar the water jet left a black trace on the niobium surface (oxidation) but no damage was seen under SEM
- leaving the water jet on a spot for minutes erosion started
- at 600 bar the erosion was strong

cavity rinsing

- rinsing in a closed system under filtered nitrogen
- monitored: suspended particles, TOC, and resistivity
- HP-water jet: 100 bar 30 l/min $R > 16$ Mohm.cm
- low pressure jet: 5 bar 30 l/min $R > 16$ Mohm.cm
- rinsing continued until resistivity $R > 15$ Mohm.cm
- drying by vacuum pump

results from cavity rinsing

- one Nlb-cavity was recuperated after 5 rinses for about two hours with 3 cold measurements in between. The particle count diminished by 80% but stayed nevertheless on a high level (air bubbles?). The cavity reached 9 MV/m afterwards
- low resistivity (<12 Mohm.cm) in the water outlet is correlated with high electron activity
- TOC proved to be a good early monitor of problems with our water treatment plant