

All Experimenters' Meeting

Joint ANL/FNAL Superconducting
Surface Processing Facility

Overview & Status

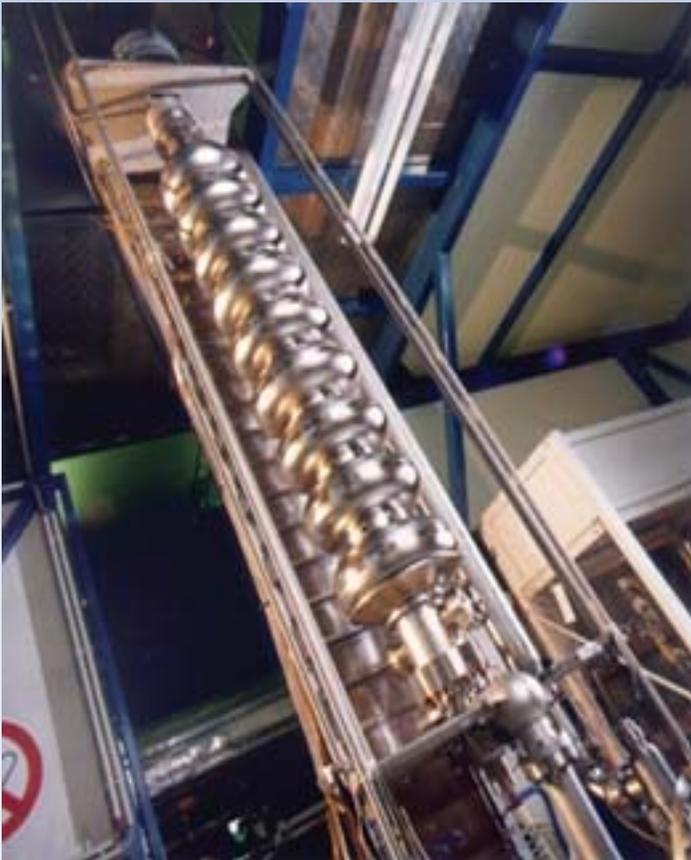
Allan Rowe
Fermilab
AD/MSD

December 5, 2005

Background Information

What are we processing?

ILC 1.3 GHz Multi-cell



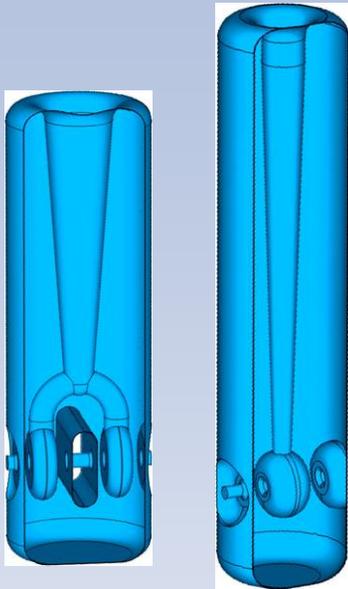
3rd Harmonic 3.9 GHz Multi-cell



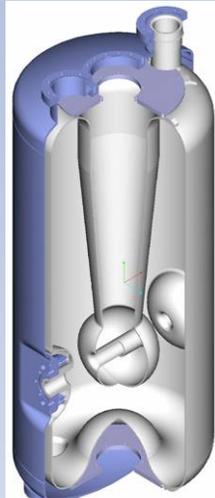
CKM & Other



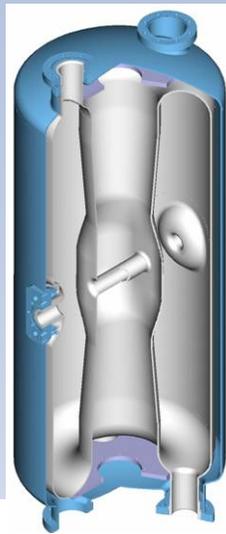
International Linear Collider at Fermilab



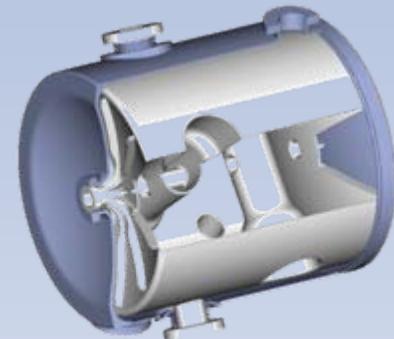
57.5 MHz QWR-based structures
 $0.03 < \beta < 0.14$



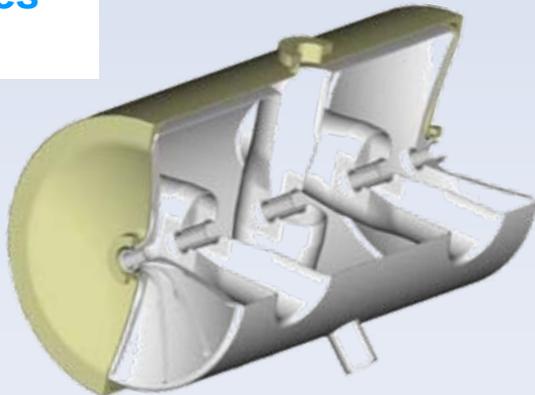
115 MHz $\beta=0.15$
 Steering-Corrected QWR



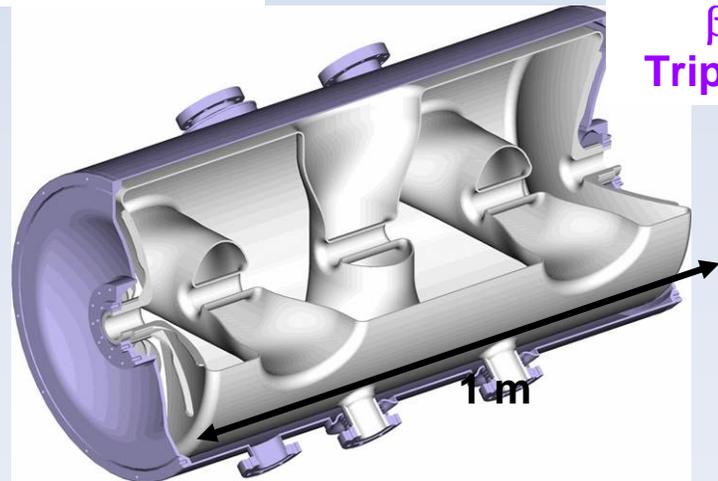
172.5 MHz
 $\beta=0.26$ HWR



345 MHz $\beta=0.40$
 Double-spoke



345 MHz
 $\beta=0.5$
 Triple-spoke



345 MHz
 $\beta=0.62$
 Triple-spoke

Background Information cont...

What is 'surface processing?'

A series of cleaning/purifying procedures that reduce contaminants on the superconducting surfaces to maximize surface gradient and minimize surface resistance.

After fabrication, all superconducting resonators must be 'processed' before they can be tested and qualified.

Background Information cont...

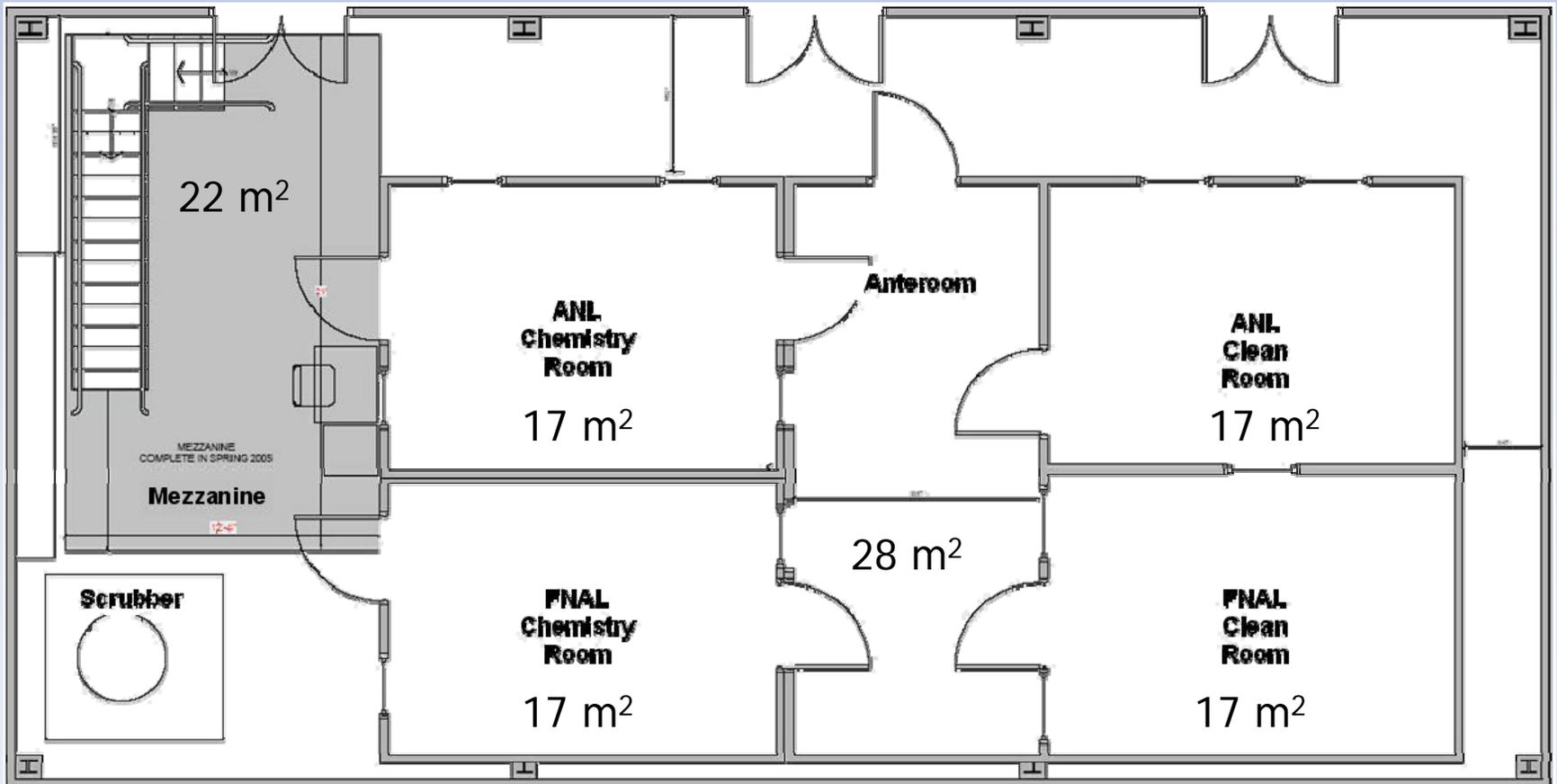
What are the cleaning/purifying processes?

1. Post-fabrication degreasing. (UHV surface cleaning)
2. External surface etching using BCP. (HF, H₃PO₄, HNO₃)
3. Internal surface etching/polishing using BCP/EP.
4. Post-etch surface cleaning and rinsing.
5. Hydrogen degasification bake.
6. Internal surface etching/polishing using BCP/EP.
7. High Pressure Rinse.
8. Ultra-clean particle-free drying.

Red=Will occur at ScSPF.

International Linear Collider at Fermilab

Joint ANL/FNAL Superconducting Surface Processing Facility



STATUS—In Photos

Anteroom





ANL Processing Room Setup for EP



FNAL Processing Room Setup for BCP



Scrubber
(3000 cfm)

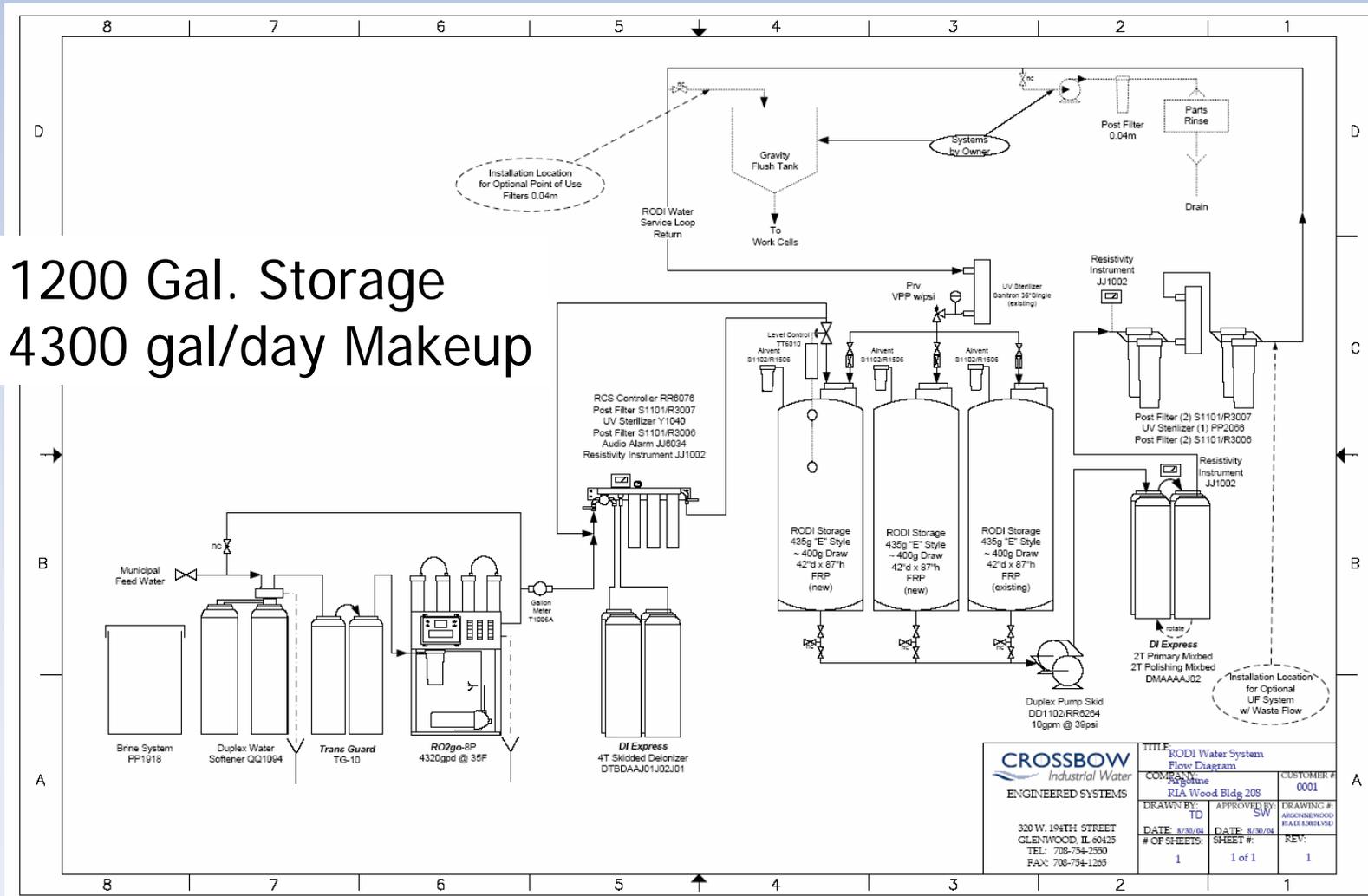


FNAL Control Station

International Linear Collider at Fermilab

Ultra Pure Water System

1200 Gal. Storage
4300 gal/day Makeup



CROSSBOW Industrial Water ENGINEERED SYSTEMS 330 W. 104TH STREET GLENWOOD, IL 60425 TEL: 708-734-2330 FAX: 708-734-1265		TITLE RODI Water System Flow Diagram COMPANY Fermilab PROJECT RIA Wood Bldg 208 DRAWN BY: TD DATE: 8/26/04 # OF SHEETS: 1		CUSTOMER # 0001 DRAWING #: ALEXANDER WOOD HALL/ENR/04 APPROVED BY: SW DATE: 8/30/04 SHEET #: 1 REV: 1	
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Remaining Work

ANL

- Facility safety review (December 2005)
- Install EP setup for RIA type cavities
- Install HPR system

FNAL

- Finish control system programming (December 2005)
- BCP system safety reviews (January 2006)
- Install cleanroom equipment
- Receive first 3.9 GHz 3rd Harmonic cavities (Winter 2006)