

EP of SC cavities at ANL in support of ILC

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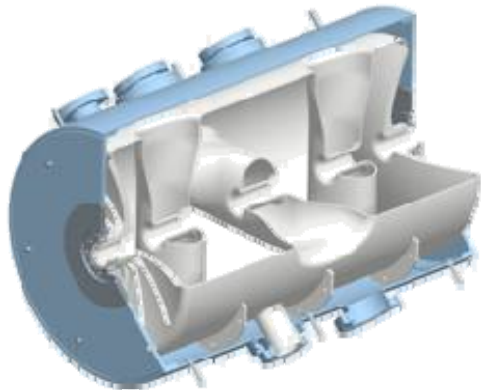


Cavity Processing:

ANL $\beta=0.63$ Triple-Spoke Cavity, Area $\sim 1.5 \text{ m}^2$

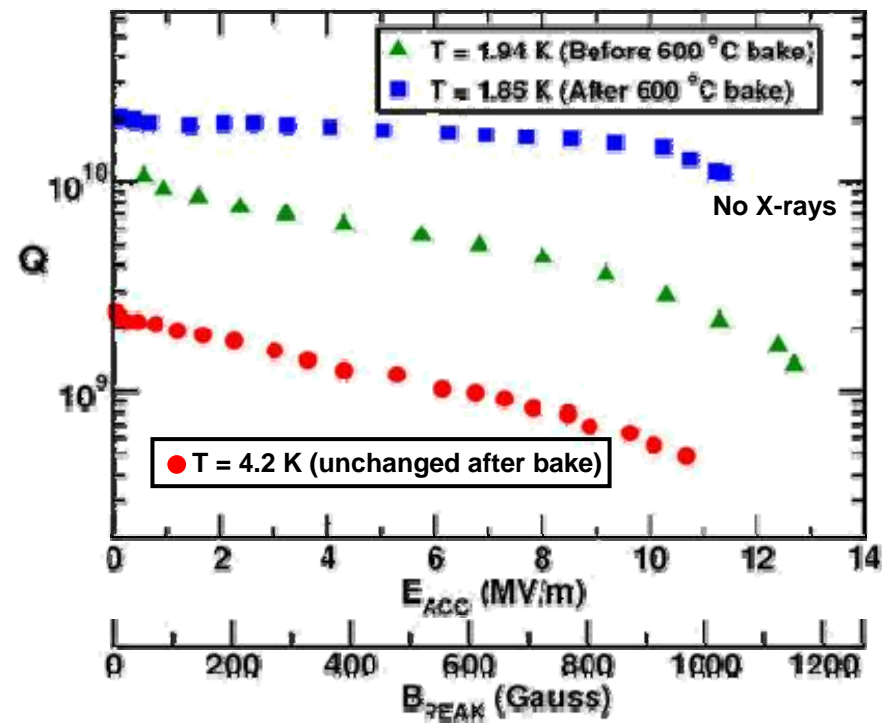
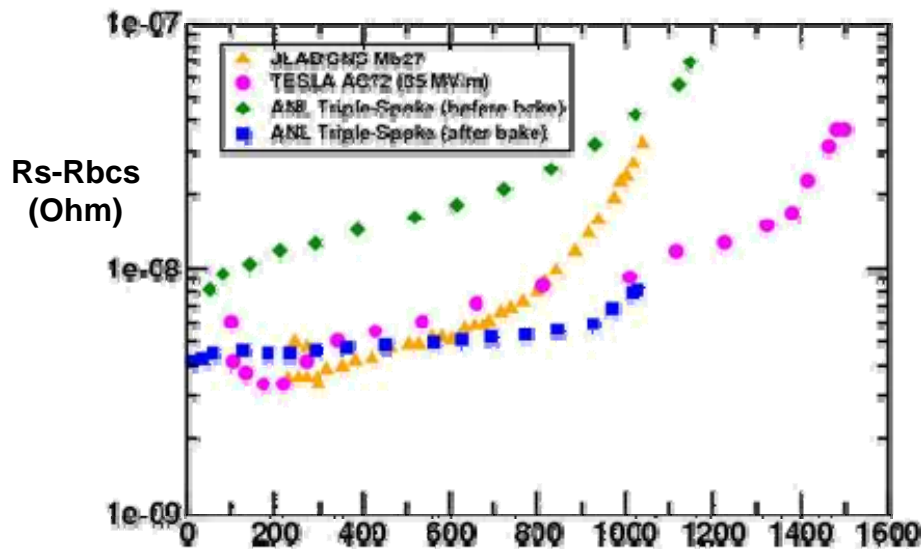


ANL EP: Beta=0.63 Multi-Spoke Cavity

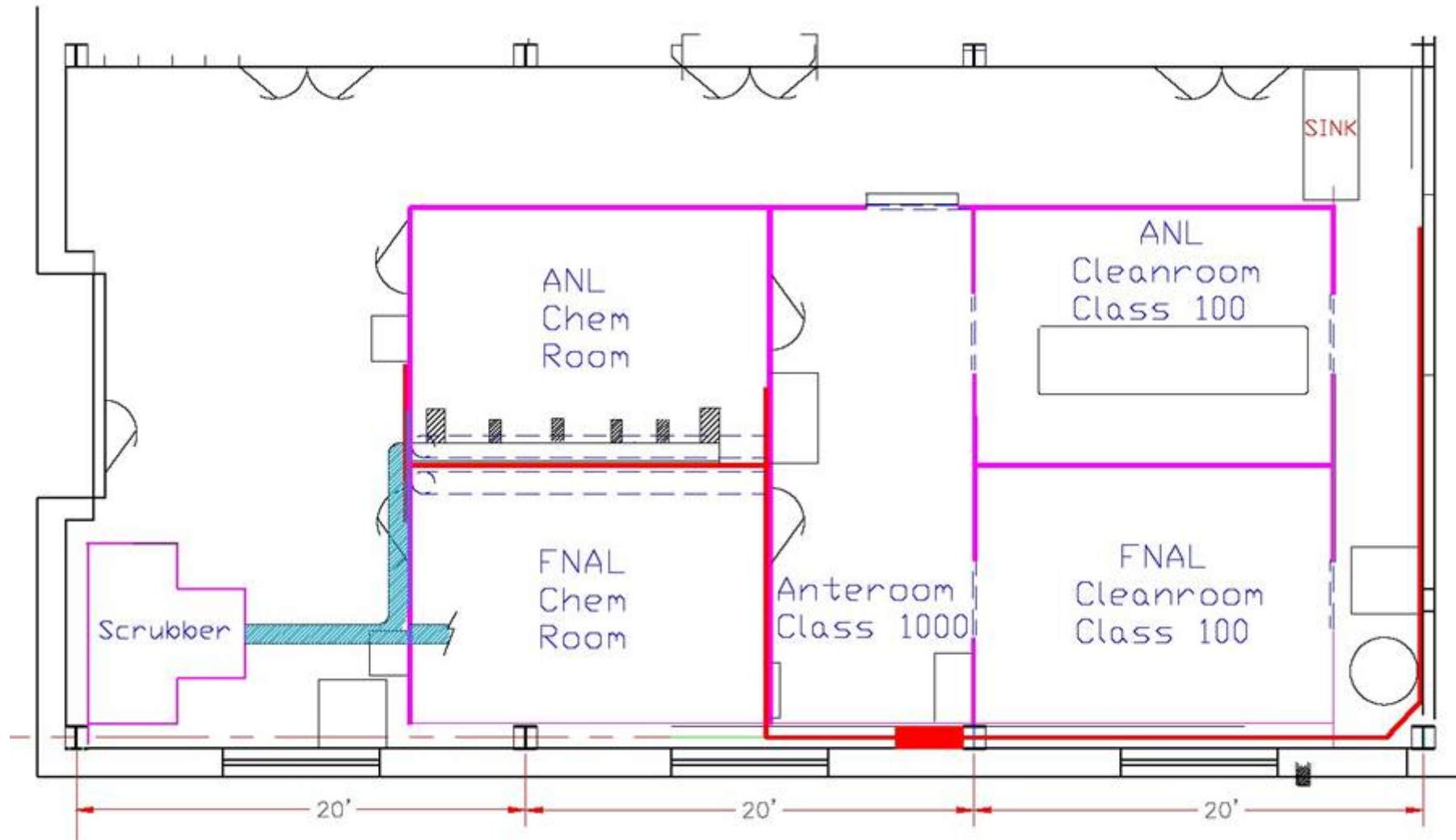


➤ Q-disease was observed; hydrogen degassing at 600 °C was performed at ANL

➤ 2 K surface resistance decreased substantially after 600 °C bake.



Floor plan of the Superconducting Surface Processing Facility (SCSPF) a joint project for ANL & FNAL



**SCSPF – Argonne Chem-room
will begin operating in ~ 6 weeks**



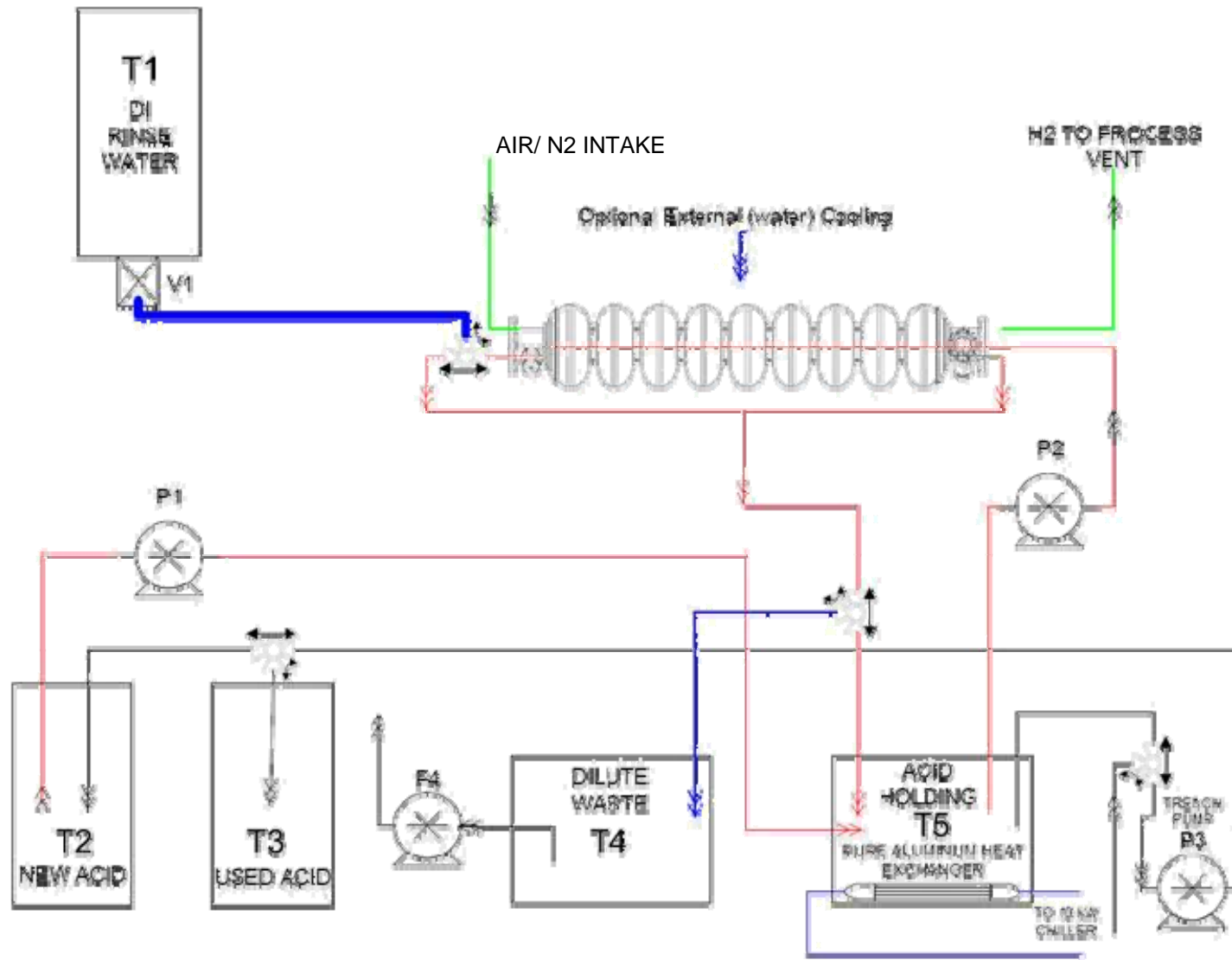
SCSPF Clean room - class 1000 antechamber



Propose to use ANL resources for ILC EP

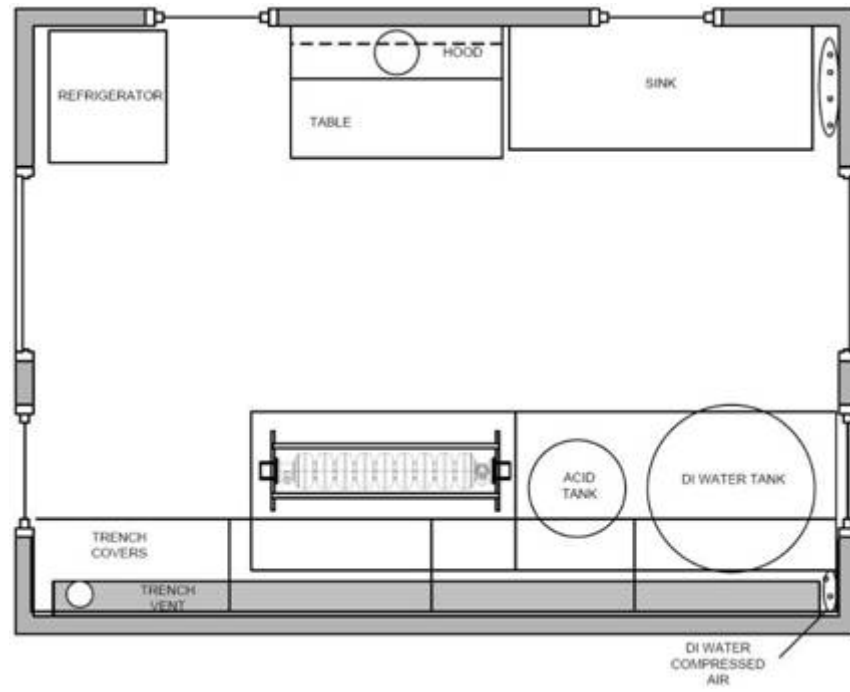


Conceptual design - EP Flow Diagram



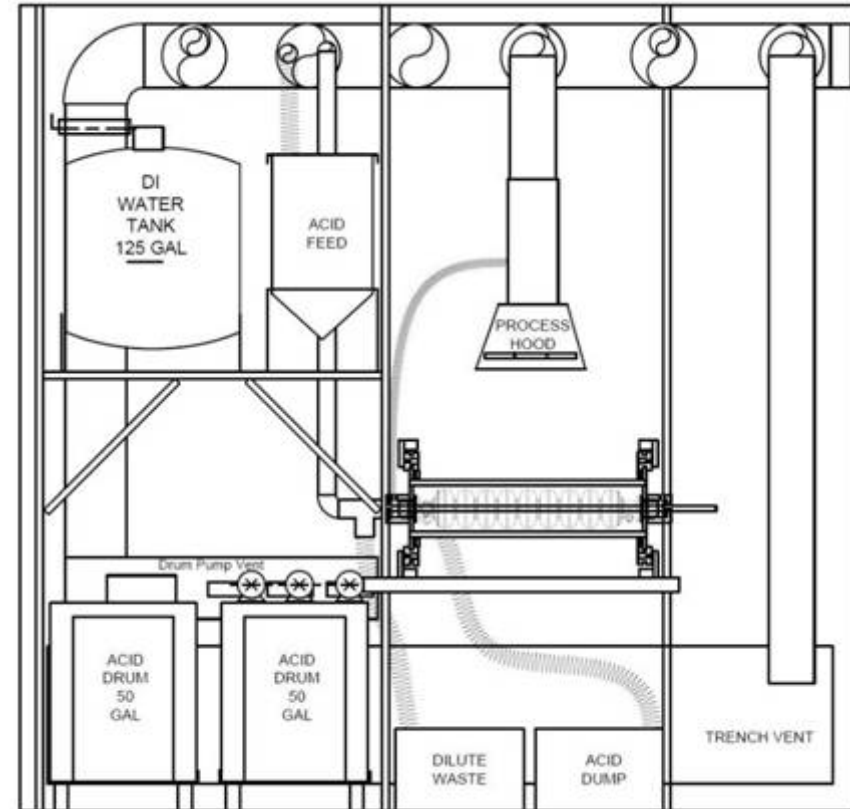
Conceptual design for EP of 9-cell Cavities in the ANL Chem Room

Floor Plan



16 feet

Side View



16 feet

FY06 Activities

- ANL-FNAL-GDE MOU, including EP specification
- Engineering design of the physical EP apparatus
- Review design and initiate procurement

Proposed FY07 activities:

- Assemble and commission an EP system by the middle of FY07 (0.75 FTE, \$65 K M&S)
- Electropolish ILC cavities in the second half of FY07 (0.75 FTE, \$110 K for **eighteen EP procedures**)
- Design and construction of an HPR system at the joint facility for rinsing after EP (1 FTE, \$200 K M&S)
- Interface with U.S. EP vendors/develop and optimize hardware suitable for large-scale EP (1 FTE)



Proposed FY08 activities:

- **Electropolish 12 ILC cavities** assuming 5 EP procedures/cavity (1.5 FTE, \$225 K M&S)
- Installation of a PLC-based control system for EP (1 FTE, \$75 K)
- Interface with U.S. EP vendors/develop and optimize hardware suitable for large-scale EP (1 FTE)

Proposed FY09 activities:

- **Electropolish 50 ILC cavities** with up to 5 procedures/cavity (4 FTE, \$750 K M&S)
- Operations of an HPR system at the joint facility for rinsing after EP (1 FTE, \$50 K M&S)
- Interface with U.S. EP vendors/develop and optimize hardware suitable for large-scale EP (1 FTE)



Summary

Projected throughput:

18 Procedures (3-4 cavities) in 2007

12 Cavities in 2008

50 Cavities in 2009

Projected costs (\$k):

FY	Labor	M&S	Indirect	Total
2007	808	390	380	1578
2008	796	488	399	1683
2009	1318	1040	718	3076

