

Iowa Advanced Technology Laboratories

Construct Laboratory in E121, University of Iowa

(New Semiconductor Research Laboratory)

Client:

Board of Regents
University of Iowa
Iowa City, Iowa

Cost:

Construction: \$1,100,000.
MEP Construction: \$745,000.

Client Contact:

Steven Schlote
FM-Planning, Design and
Construction
230 University Services Building
University of Iowa
Iowa City, Iowa 52242
Phone: (319) 335-8100
E-Mail: steven-schlote
@uiowa.edu

Team:

Pr-in-Chg: Amy M. Infelt, P.E.
PMgr: Amy M. Infelt, P.E.
Mech: Dwight C. Schumm, P.E.
Elect: David Shelley.

Architect:

Robert Carlson, AIA
Rohrbach Carlson, PC
325 E Washington St, Suite 400
Iowa City, IA 52240
Phone: (319) 338-9311

Lab Consultant:

Richard M. Heinz, AIA
Research Facilities Design
3965 5th Ave, Suite 300
San Diego, CA 92103
Phone: (619) 297-0159

This project involved the installation of a Class 10,000 self contained clean room with a Class 1000 production area and Class 100 laminar flow hoods, all in an existing shell space, in support of a Molecular Beam Epitaxy Research Laboratory. In general, new HVAC, plumbing and electrical distribution systems were installed in support of the renovated shell space and connected to the existing central building systems. Specifically, a new air handling unit system, including a desiccant dehumidification system and laminar flow HEPA filter modules on the supply air, was installed to serve the new clean room area. Although the clean room itself was provided as a complete turn key operation, the temperature controls associated with the control of the clean room mechanical equipment were specified to be provided by the same building control contractor already present within IATL to simplify the operation and maintenance of the system in the long term.

Specific systems installed included new distribution and exhaust ductwork, laminar flow HEPA filter modules, laminar flow hoods, plumbing piping, including acid resistant waste and vent, deionized water, process cooling water, natural gas, and domestic water piping, fire protection piping, an uninterruptible power supply, normal and emergency power, lighting, fire alarm and telecommunications. Since the purity levels of the deionized water required for this laboratory



exceeded the capabilities of the building system, a mixed bed deionizer, including 0.05 micron filters, UV lights and recirculation pump, was also specified to provide the deionized water at the levels as required.

A new liquid nitrogen system was also installed to provide the cooling medium required for the research laboratory, including a system of vacuum jacketed piping routed from the remote mounted nitrogen tank to a phase separator within the building. The aesthetics involved in integrating the new liquid nitrogen tank were coordinated with the original building designer to ensure compatibility with the original building design. Gas vaporizers at the liquid nitrogen tank supplied a nitrogen purifier for the high purity gas nitrogen system that was also required. This high purity gas nitrogen was distributed via a system of 316L stainless steel tubing.

Both the unique systems required by the usage of this space and the highly visible nature of this project made it one of the more enjoyable and challenging projects completed by Design Engineers on the University of Iowa Campus.



DESIGN ENGINEERS, P.C.

MECHANICAL/ELECTRICAL CONSULTANTS