Project Data Sheet

HEALTHCARE

Environmental | ESD | Air | Power | Noise | Structure

Project: UNSW Electron Microscope Cooling System

Project Description

The UNSW electron microscopes represent a massive investment in capital and vital research for the whole country. These microscopes provide a vital tool in many research projects undertaken at this campus.

For accurate operation it is critical that the microscopes are cooled to the manufacturer's exact and stringent requirements.

Scope of Services

KAE was selected as the consultant to deliver the UNSW's microscope cooling system.

Design for the project involved provided close control of cooling water flow, temperature and pressure to sensitive electron microscopes (EM's) and was delivered with a great level of attention to the details of operational requirements and characteristics of system response.

Key considerations in the design are as follows:

- Precise flow of cooling water
- Close tolerance in supply water pressure
- Control of rate of water temperature changes
- Material and engineering devices selection
- Electromagnetic field, noise and vibration isolation
- Operational security of cooling source (building chilled water and dedicated chillers)
- Buffer capacity of chilled and cooling water
- Interfacing with UNSW alarm and monitoring system
- Emergency and back up plans

The outcome of the design provided a simple, reliable and robust cooling water system that can handle current and future demands.

Highlights & Deliverables

The project delivered:

- Highly stable cooling water flows to each microscope
- N + 1 systems
- Ability to isolate any electronic microscope without exceeding close controlled operating parameters of other microscopes.