

Designing, Managing and Running a Multipurpose Advanced Materials Characterisation Facility

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As everyone in the EM community is well aware, modern electron microscopes (SEM, TEM and FIB systems) require stable environments in order to make them capable of extremely high resolution performance. Further to this, in many cases, there are a whole range of diverse instrumentation now also being housed with or near the EM microscopes. These multipurpose laboratories and facilities require specialised building design and many more construction considerations that must work seamlessly with other infrastructure. This is not always a simple process.

Recently Western Sydney University built a new \$30 million science building for Parramatta, significantly expanding the University's capacity. This building has become the new home for the Advanced Materials Characterisation Facility (AMCF) This facility underpins all research within the University from many discipline and specialises in assisting researchers, students and industry with any form of material analysis and characterisation. Consequently, the facility supports a wide range of researchers with a variety of needs.

The AMCF is housed in a purpose-built single-level building located in the front of the Science building. The Science building's environmental credentials are highly impressive. As a 6-Green Star Rating building, it incorporates some of the most cutting-edge building methodologies into its design and construction. The Science building features include a polypropylene formwork system under the ground floor slab that is made from recycled car batteries, and a concrete core tempering HVAC system, which features over 20km of hydronic pipework. This ensures that the building's own concrete mass can store heat and deliver efficient cooling. Some of the previous points, as you could imagine, can generate problems for sensitive instrumentation area such as the AMC Facility.

The very broad range of research projects that the AMC Facility supports requires careful facility management and development of best practice management, training and safety specific to the needs of the users.

Over the last couple years, many new procedures have been implemented into the AMC Facility. These include: general rules, policy and procedures, an on-line booking system with different levels of access, swipe card access, training courses and procedures, management and planning, as well as delivering and supporting research across a multitude of disciplines located around many campuses. The AMC Facility operates 24 hours per day for experienced users. This, therefore, requires careful planning and management to work effectively. This presentation will discuss some of the procedures that have been implemented to sustain effective operation at the AMC Facility and reflect in strong benefits for users and the staff. The presentation will display how careful design and innovative building aids in the management of the facility, lowers running costs, provides a more comfortable environment, creates a safer working environment, allows for changing research environments and also allows for future proofing the space for the next generation of instrumentation purchases.