

## New Aero-propulsion, Mechatronics and Energy (AME) Building at FSU



The new AME building becomes the latest addition to a world class group of facilities located in Innovation Park at FSU's Southwest Campus. The AME Building's neighbors include the Mag Lab, FAMU-FSU College of Engineering, recently completed Material Research Building, Center for Applied Superconductivity in the Shaw Building, as well as the Research Foundation Buildings A&B.

This 60,000 ft<sup>2</sup> state-of-the-art facility supports advanced research in aerospace and aviation, mechatronics (robotics) and sustainable energy engineering. The AME building houses laboratories, equipment, offices and other infrastructure necessary to carry out the university's research mission in several key areas that are crucial to the economic development of the state and nation. Some of the organizations housed in this \$23 million facility are the university's Center for Intelligent Systems, Control and Robotics (CISCOR) and Florida Center for Advanced Aero-Propulsion (FCAAP), which is a State University System Center of Excellence that is headquartered at FSU.

As its name indicates, the research that takes place within the Aero-Propulsion, Mechatronics and Energy Building focuses on three key areas:

- **Aero-propulsion:** The discipline of aero-propulsion deals with transportation systems and other objects that move through air, influencing the design and fabrication of aircraft, spacecraft, automotive transport, and all manner of vehicles in motion. The relevant research areas cover fundamental science topics such as aerodynamics, fluid mechanics, acoustics, thermal physics and turbulence, as well as practical applications such as combustion improvement, active

control of flow separation, supersonic jet noise suppression, lift/thrust enhancement and drag reduction.

- **Mechatronics:** The term mechatronics, a combination of mechanics and electronics, was first used in Japan in the 1960s. From a technical perspective, it is the synergistic integration of mechanical, electrical, control and computer systems to create functional products. Mechatronics has become the enabling technology responsible for industrial innovations in numerous economic sectors, including automobiles, alternative energy, aerospace, electronics and defense. The field of mechatronics generally covers topics such as robotics, micro-electro-mechanical-systems (MEMS), intelligent systems, automated guided vehicles and smart materials.
- **Energy:** Seeking new energy resource that are more efficient and cost-effective and that minimize effects on the environment is among the most critical issues that the world will have to grapple with in the 21st century. The Aero-Propulsion, Mechatronics and Energy Building houses research labs for organizations that are focused on exploring reliable, affordable, safe and clean energy technologies, including projects such as fuel-cell, advanced battery technologies, smart grid, thermal and power management for distributed energy systems.

The AME Building has been designed and constructed with attention paid to fostering collaborative research between the building's occupants and other nearby researchers. Therefore, it is no accident that the design utilizes similar materials and techniques as its close neighbors. Metal panel skin, brick colors, window treatment, and site planning were carefully coordinated by the architect to reinforce the building's image as a unique center for the study of aerospace engineering components, energy management engineering, and robotic devices. Interior spaces were clustered in a way to support extended building hours and bring the occupants together spontaneously to support multi-disciplinary collaboration.

Also the AME Building incorporates design and construction that adheres to sustainable practices. Special care was paid to the building's energy consumption and to the indoor environment. Day lighting was used to reduce the need for artificial lighting. Materials were chosen for their ability to support recycling.

Ref: [http://www.facilities.fsu.edu/share/Human\\_Resources/Current\\_Newsletter.pdf](http://www.facilities.fsu.edu/share/Human_Resources/Current_Newsletter.pdf) and

<http://www.eng.fsu.edu/me/research/ame.html>