Facade Integrated Technologies (FIT) Testing Facility

A Signature Research Facility of the
HIGH PERFORMANCE ENVIRONMENT LAB (HiPE) at the University of Oregon (Oregon Best)

THE ONLY FACILITY OF ITS KIND IN THE U.S., THE FAÇADE INTEGRATED TECHNOLOGIES (FIT) TESTING FACILITY, part of the high performance environments (HiPE) laboratory, occupies a three-storey building on the University of Oregon Campus. Eighteen modules on the north and south façades tests a wide range of façade technologies and tracks how building occupants interact with them.

Research Focus & Expertise

Located on the UO campus, the Façade Integrated Technologies (FIT) facility is an Oregon BEST signature shared-user facility, operating on a simple fee-for-service model.

The full scale testing facility houses a comprehensive set of tools for characterization and measurement of façade and building envelope components and materials.

Clients of the FIT lab also have access to expertise and advanced facilities for, *lighting*, *daylighting*, *ventilation*, *acoustics*, *solar*, and *energy modeling* and analysis- all available in the same building at the High Performance Environments Lab (HiPE).

The simple fee-for-service operating model of both FIT and HiPE allows collaborators to fully utilize the facility without concerns about intellectual property.

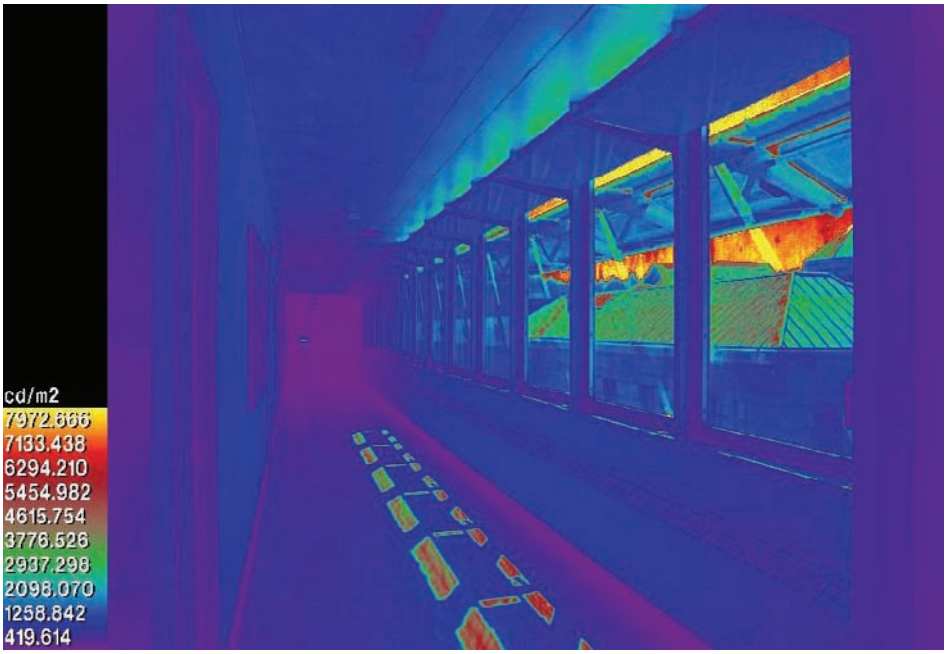
The FIT facility provides experimental full-scale testing for envelope components by measuring their energy performance, synergy with other systems, occupant impact, and occupant acceptance of façade and envelope technologies. The FIT lab is full-service, open to use and collaboration across the Oregon University Systems' researchers and labs, as well as with industries, manufacturing companies, and start-ups. The lab is currently engaged in R&D efforts of envelope components that will transform the process of building design for all design and construction professionals. It also attracts future research and collaboration potential between various academic institutions, disciplines, and industry-funded research for actual verification and testing of building facades products.

HiPE
High Performance Environments Lab

Facility & Equipment

The Fit lab has the capabilities to test various products covering most areas of high-performance façades that includes, but not limited to:

- *Solar Control and Daylighting*: Light-Guiding Glazing, Holographic Optical Eletments, Laser-Cut Panels, Aerogel Diffuse Glazing, and Optoelectronic Glazing;
- *Natural Ventilation:* Breathable Walls, Active Insulation, Automated and Manually Operable Double Envelope Vents
- *Energy Micro generation:* Façade-Integrated Photovoltaics, Solar Capillary Tubes, Vacuum Pipes, Photovoltaic Shades, and Solar Awnings.



Donors, Partners, and Collaborators.

Façade technologies tested in the FIT lab come from a variety of sources:

- Innovative Products generated from OR BEST researchers and university lab partners.
- Existing cutting-edge products that face market barriers or have limited market penetration yet high energy generation/savings potential, such as electrochromic windows or holographic glazing.
- Innovative products generated from Industry professionals such as Architectural/Engineering Firms, and Building Developers
- Innovative Products generated from other researchers and national labs
- Industry/Start-ups third-party and verification for façade and building envelope products

The facility acts as a catalyst to generate new and innovative products that strengthens Oregon's Green Building industries by working in collaboration with world leaders and Oregon based façade manufacturers and consultants. At the same time, the facility is used to attract the brightest personnel and students, to educate the future generation of green building researchers and technicians

The Oregon BEST FIT Facility/ Laboratory works in close collaboration with:

Portland State UNIVERSITY

PSU Green Buildings Research Lab

UNIVERSITY OF OREGON

Solar Radiation Monitoring Laboratory

SuNRISE

Combining efforts to create complimentary basic and applied research facilities to keep Oregon in the leadership of solar energy and green buildings (SuNRISE = Support Network for Research and Innovation in Solar Energy). The SuNRISE indoor PV laboratory is being developed to test new and innovative ideas in a controlled laboratory environment on small scale samples, while the FIT lab is moving towards a full scale prototype testing facility in a Living/Learning Building Lab (LLBL). Combined, these labs create the rare opportunity to test and characterize advanced high performance facade systems from initial experimental development to market application and verification.

best
Oregon Built Environment & Sustainable Technologies Center

An initial investment of $273,000 and fundraising support came from Oregon BEST, an organization that connects Oregon's businesses with a shared network of university laboratories to transform green building and renewable energy research into products, services, and jobs that power the state's green economy. Additional financial support came from Oregon University System, office of capital projects, and the University of Oregon.

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UNIVERSITY OF OREGON

HiPE High Performance Environments Lab