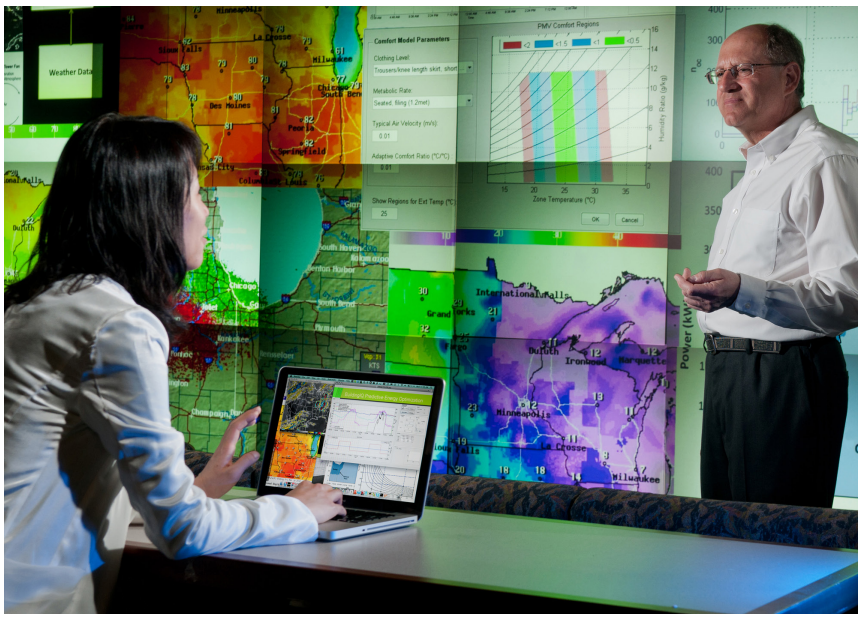
Proactive Energy Management for Next-Generation Building Systems

Argonne is engaged in work to develop sensors and controls to improve the energy efficiency of buildings. As part of this effort, the laboratory is collaborating with an industrial partner, BuildingIQ, to design and test next-generation energy management systems for buildings. These new systems make use of weather and occupancy information to optimize operating conditions, in real-time, to minimize energy usage and ensure thermal comfort. Leveraging Argonne's expertise in optimization modeling and algorithms, researchers are working to expand the system with additional capabilities including occupancy estimation, ventilation optimization and air-quality satisfaction.



The Advanced Photon Source's BuildingIQ system makes use of weather forecast information and building temperature predictions to optimize, in real-time, the air delivery conditions of the air-handling units.

Impact

Argonne has been testing some of these concepts in its Advanced Photon Source office building and the Theory and Computing Sciences building. Savings of up to 30 percent have been observed. The system is designed to plug into existing commercial building management systems and does not require expensive upgrades to use. The research team is already speaking to several commercial builders and contractors who are interested in applying the design to future building projects.

Partnerships

Argonne has partnered with energy management software company BuildingIQ for these pilot projects.

Funding

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More Info

http://www.anl.gov/articles/buildingiq-makes-argonne-smarter-about-energy-management

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