Building Analytics Success Story
University of Iowa

In 2017, the University of Iowa (UI) implemented fault detection and diagnostics (FDD) software at 20 buildings to help them move from reactive to planned and predictive facility operations. UI's efforts have shown impressive results this past year, with 9% average energy savings since the installation of the FDD tool mid-year. Additionally, the four buildings with the most focused efforts achieved 13%-24% savings since implementing the FDD response process.

What is FDD?

Fault Detection and Diagnostic (FDD) software identifies buildings with suboptimal performance by analyzing building automation system (BAS) data. FDD is one type of energy management and information system (EMIS).

University of Iowa's facilities team has complex and unique building systems across campus, so they wanted a flexible FDD solution that would allow for customization. They also wanted to focus their in-house resources on what they do best: maintenance, engineering, and troubleshooting of their mechanical systems. UI leveraged a service provider to set up the FDD software analytics and map data point connections within their building automation systems (BAS). The FDD installation went smoothly, taking 3 months to get analytics running with relatively little involvement from campus staff.

UI's Analytic Response Group meets each morning to prioritize, plan, and coordinate the response to the FDD software's recommendations. Their efforts have focused on making good maintenance decisions based on data rather than institutional knowledge and responding to emergencies.

We saved $780,000 in energy cost in the first year and had 24% of work orders generated by FDD— helping us transition the organization from reactive to proactive mode.

 - Katie Rossmann
   Manager, Data Analytics and Commissioning

Quick Facts

Location: Iowa City, Iowa

Building type: University Campus

Floor area with EMIS: 2,700,000 sq ft

Total buildings with EMIS: 20

Energy savings: 9% annual savings at 14 buildings that had FDD installed for 7 months

Service provider: KGS Clockworks

EMIS Tools: KGS Clockworks Building Analytics (and OSISoft Pi for EIS)

Smart Energy Analytics Campaign: Recognition for Best Practices in the Use of FDD

The University of Iowa was recognized by Lawrence Berkeley National Laboratory and the U.S. Dept. of Energy in May 2018 for their exemplary work to save energy through the use of FDD.
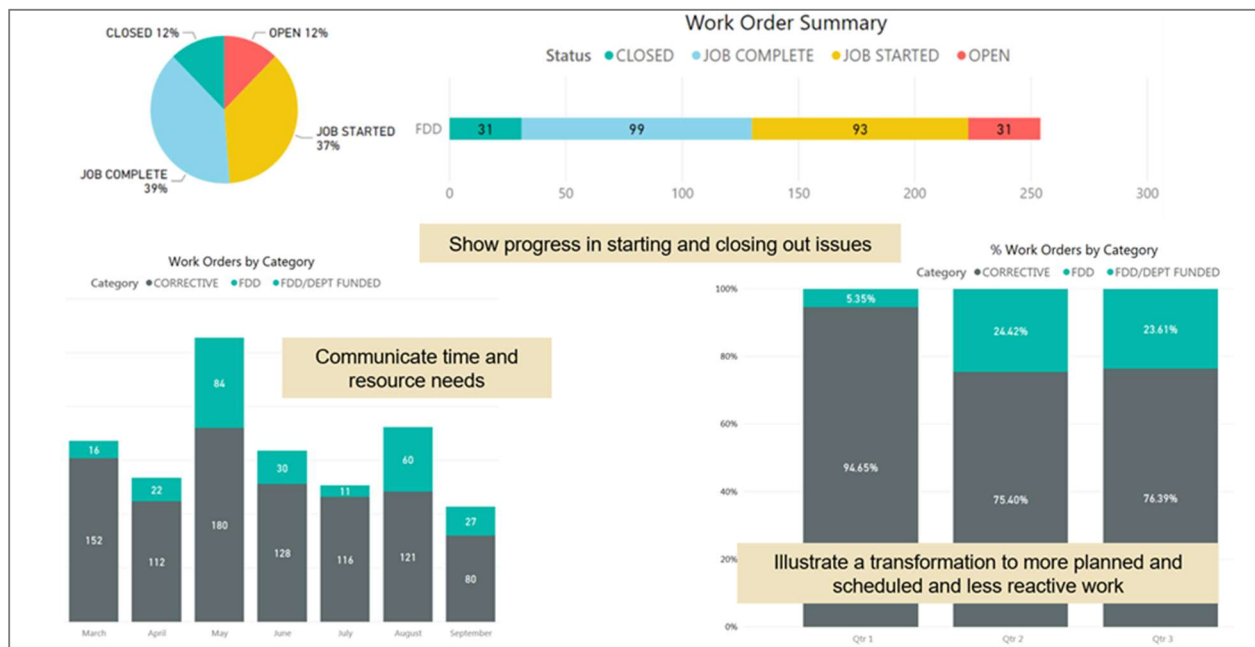
University of Iowa's integration of FDD with their work order software has been crucial to success

Faults Leads to Insights

UI's FDD software analyzes 49,000 points at 5-minute intervals, pulling data from four different BAS. With support from vendors, UI has also done an exemplary job integrating their FDD system outputs with their computerized maintenance management system (CMMS). Through this process, they track work orders generated by the FDD and monitor fault resolution.

The Analytic Response Group meets daily to review FDD results and troubleshoot issues together – this has been key to our success
  - Tom Moore, Senior Manager, Building Operations & Maintenance

Rather than view faults as a failure of their maintenance process, UI has the mindset that faults will always arise, and they plan to catch them with aid of their FDD tool. Faults detected through FDD are generally not the type needing immediate attention, but rather, issues that allow for planned and scheduled maintenance.

Pilot Helps to Hone Strategy

Prior to implementing FDD at 20 buildings, UI tested their approach through a one-building pilot. This approach created a specialized learning environment that helped the team avoid potential pitfalls in a broader roll out. UI was able to leverage these lessons learned to generate an RFP and select an FDD partner who could help them accomplish their newly refined goals.

The University of Iowa incorporated lessons learned from their pilot into their larger FDD implementation:

■ BAS point tagging and FDD rules development was time consuming during the pilot, so UI added these activities to the vendor scope of work

■ Prioritization based on cost, comfort and maintenance impact is critical to avoid information overload

■ Work order system integration was key to embedding FDD into UI's organizational process

University of Iowa's planning and patience is now reaping significant rewards - and growing as they onboard 29 more buildings with FDD in 2018.

The Smart Energy Analytics Campaign is a public-private sector partnership program focused on commercially available Energy Management and Information Systems (EMIS) and monitoring-based commissioning practices. The campaign couples technical assistance with qualitative and quantitative data collection to inform research, development, and field study priorities. Partnering participants are encouraged to share their progress and may receive national recognition for implementations that demonstrate exemplary practices.