TECHNOLOGY BOLSTERS COMMISSIONING OF AIRFLOW AND OTHER COMFORT SYSTEMS

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Technologies are both available and advancing to make terminals, towers and other airport facilities even smarter. Such upgrades are extending beyond the building automation system (BAS) to further improve the control of airflow and temperatures.

Technology is enabling airports to improve functionality, client comfort and financial performance. The benefits are arriving even as leaders deal with the delicate balance all airports face: providing an inviting and secure environment for passengers while minimizing costs of utilities and operations and maintenance (O&M).

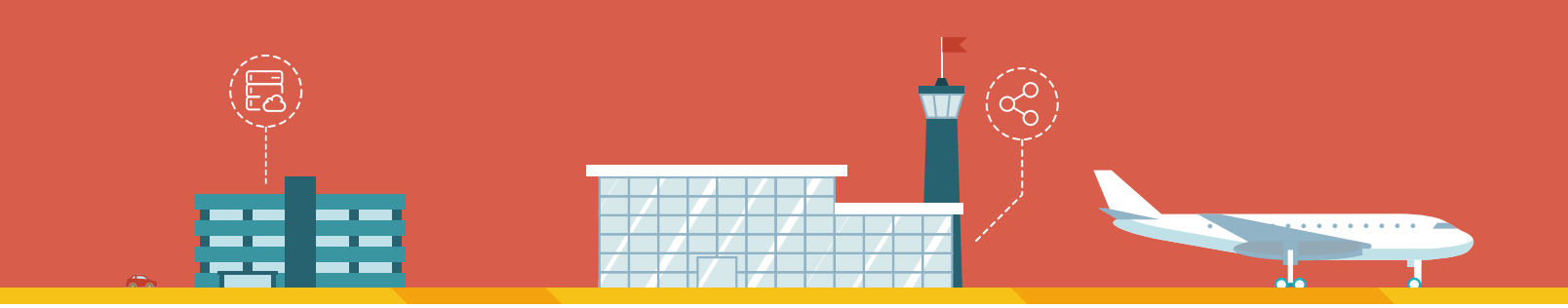
For the past 30 years, airport leaders have turned to engineering firms and equipment vendors to generate enough savings through retrocommissioning, or RCx, to finance necessary efficiency improvements. And it has worked: Airports have reduced energy consumption by 15 percent to 20 percent, and O&M costs have declined as crews have been dedicated to actually correcting problems rather than having to also diagnose them before making repairs (and then having to document all the work afterward).

RCx is a great start, but more can be achieved with a smart building approach using building data analytics. It is no longer good enough to rely only on industry migration of improvements in energy consuming equipment efficiencies. Today's challenge is to use the information and data available from the BAS and integrated enterprise systems to proactively and dynamically drive energy consumption toward the technical potential. Monitoring-based commissioning (MBCx or MCx) provides the tools and processes to capture energy savings that are typically unrealized after energy audit and retrofits are installed. It takes advantage of data that is often already available, but unutilized, to optimize operation of facilities and prioritize repair needs, saving anywhere from 5 percent to 25 percent. Note that it is a continuous approach, not a periodic activity scheduled on a facility manager's calendar.

Use of fault detection and diagnostic software, or FDD, also is key. FDD compares data — typically obtained from the facility's building automation system — to pre-entered and/or customized algorithms to determine whether current operations are deficient in any way. FDD goes a step further by providing feedback to facility operators regarding the nature of the identified issue, including its duration, energy impact and recommendations for remedy or repair. Integration of FDD software with enterprise-level software packages also can be used to automatically generate work orders, estimate repair and replacement costs, prioritize cost-benefit ratios and provide information in dashboards for operators and public relations.

Most software solution packages for FDD technologies are BAS vendor- and product-agnostic. It is common to use a software solution provider and a separate integration firm to manage large-scale data integration and security requirements of a program of this size. Most provide two approaches to installation: on-site and remotely hosted. Key differences involve where security protocols are installed, how they are maintained, and how they influence data acquisition and communication with integrated systems. Depending on the hardware used by the BAS and other enterprise systems, some additional field panels and/or middleware may be required. Among systems that can be integrated are BAS, enterprise asset management (EAM), operations and maintenance, utilities, budgeting, costs, flight data, and multilevel reporting.

It is important to begin the process with a clear understanding of a client's goals. A field evaluation of hardware, circuits, sensors and communication protocols can determine if the system is sufficiently ready for adaptation of FDD software. It also can



help determine what algorithms can be applied and, more importantly, what additional data points and hardware may be required to take advantage of more sophisticated analytical algorithms. An RCx effort can identify preliminary deficiencies in operations and recommend retrofits that can drive energy consumption down and eliminate the need for ongoing reinvestment in repeat services.

An airport can optimize HVAC zone temperature, airflow set points and lighting levels using planes' arrival and departure times from the airport's Flight Information Display System (FIDS). This method of integrating building controls into complementary systems — and monitoring the integration for performance — is often underutilized. Combining this strategy with innovative FDD technology allows airports to become smarter and more comfortable while saving significant amounts of energy above and beyond traditional methods.

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PROBLEM SOLVED. NOW, WOULD YOU PLEASE PASS THE BEANS?

As the airport's facility manager, it's already been a long day. Sitting in meetings and reviewing plans for a terminal addition will do that.

Now you're home, hungry for some dinner and conversation. The food's ready. Chairs are filling up.

Buzzzzzzzzzzzzzzz...

Your phone's screen lights up with a text from work: ***Zones overheating in international terminal. Faulty valve.***

You manage to crack a familiar smile, though, because you know you won't be climbing into your truck for a drive back to work. You won't be waiting until morning to be greeted by a terminal filled with unhappy people. And you won't be getting a bill for energy wasted unnecessarily overheating shops and gates and restaurants and everything else inside the massive building you're responsible for.

No, you'll simply put the phone down, place a napkin on your lap and get on with the business at hand: dinner.

That's because airport leaders have invested in a smart building program, one that has already identified the issue, recommended repairs and dispatched appropriate staffers — via a work order and diagnostics sent to a PC tablet — with the correct parts so that proper settings can be restored.

You're smiling because you know passengers will be comfortable, your staff is responsive, your costs are effectively managed and your bosses can continue enjoying an optimal level of energy savings.

All before the next flight arrives.

Now, would you pass the beans?