Measured Air
PERFORMANCE

Life Science building uses innovative technology to drive significant energy saving in lab exhaust system and reduce carbon footprint.

A life science building in Boston with Gold status LEED certification was looking to aggressively drive energy savings. They installed SmartStack™ to monitor four large high plume lab exhaust fan sets. The resulting annual energy savings, confirmed by the local utility and the owner's commissioning firm (Cx firm), are just under 2,000,000 kWh,

LARGE UNTAPPED ENERGY SAVINGS POTENTIAL IN LABORATORY EXHAUST

Lab buildings use 8–10 times the energy of office buildings. Laboratory ventilation systems can use up to 40% of the lab building's total energy use. For decades, the energy saving efforts have been directed at reducing the supply air to the labs. However, the lab exhaust system has been ignored, until now.

The exhaust fans run 24 X 7 at extremely high exit velocities to provide dilution of any contaminants in the exhaust air, as well as to prevent re-entrainment of contaminants back into the supply air intakes. However, the lab exhaust air is clean typically 70%+ of the time. And the general lab exhaust can be clean up to 99% of the time. Lowering the exhaust fan exit velocities when the lab exhaust air is clean can deliver tremendous energy savings.

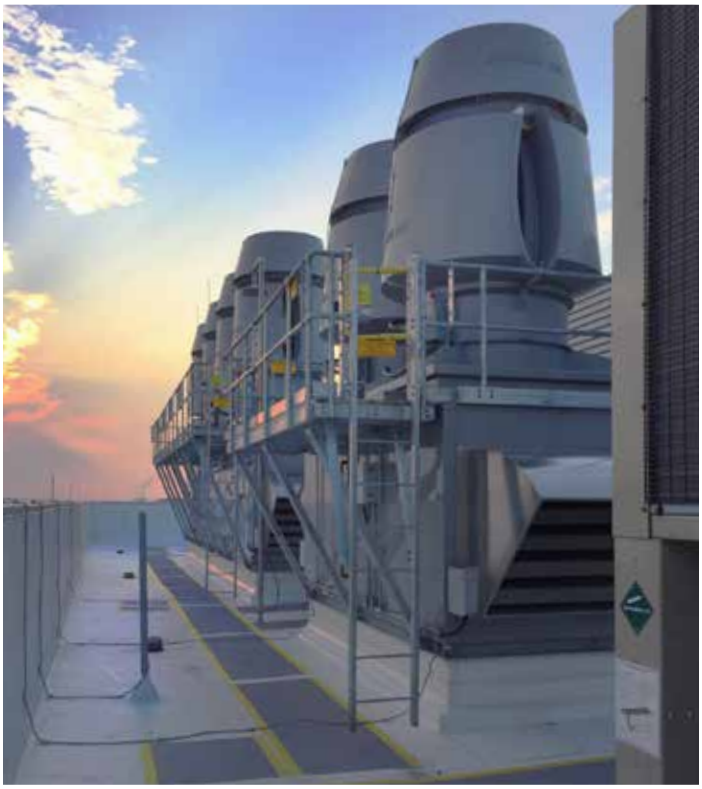
SmartStack™ is an active sensing, fail-safe system that monitors the cleanliness of lab exhaust air and indexes the according exhaust fans accordingly, capturing these energy savings.

The project included four SmartStack™ systems monitoring the exhaust air in each of the four risers that connect to the four fan sets. As the fans sets did not have variable frequency drives (VFD), these were purchased and installed, adding significant cost to the project.

THE PROJECTED SAVINGS WERE:

- **1,2000,000 kWh ANNUALLY**
- **$240,0000 SAVINGS ANNUALLY**

The four SmartStack™ systems and VFD's were installed, tested and commissioned. The projected savings were met and validated by the Cx firm and local utility. However, the Cx firm was able to further optimize the system (including additional fan turn down at night) and the final annual savings are:



- **1,800,000 kWh ANNUALLY**
- **$380,000 kWh ANNUALLY**
- **PROJECT ROI (WITH UTILITY REBATES) OF 10 MONTHS.**

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