Retrofit Case Study: Lab VAV Systems, and Kitchen Demand Control Ventilation

Turnkey Retrofit of 38 Chemical Fume Hoods and 18 Labs from CAV to VAV

Fume Hood Safety Concerns

Arkansas Tech University was concerned about lab conditions that sometimes created safety issues:

1. Fume hoods losing exhaust fan belts
2. Fume hood low-airflow alarms malfunctioning
3. Students using poorly functioning/broken hoods
4. Lost fume hood airflow containment allowed unhealthy gases into laboratory spaces
5. When negative lab air-pressurization was lost, foul air entered adjacent building spaces

Lab Conversions (CAV to VAV)

TEL retrofit 38 fume hoods from Constant Air Volume (CAV) to Variable Air Volume (VAV) systems in 18 laboratories. The equipment included TEL VAV controllers, Auto Sash Automatic sash closers, and automated volume dampers.

Exhaust fans were retrofit with Fresh Air Bleed dampers to modulate outdoor air and maintain a consistent discharge-air velocity while varying the amount of air exhausted from the building interior.

The 18 Labs were fitted with a new AFA 5000 Lab Space controller to maintain lab pressure, temperature, and ventilation rates. New Supply Actuators and Reheat Valve Actuators were retrofit to existing supply air boxes.

ATU, McEver Hall

Industry:	**Higher Education**
Location:	**Russellville, AR**
Annual Savings:	***$109,000***
Simple Payback:	***7.66 years***
Energy Savings:	***1,179,489 kWh/yr***
	132,267 Therms/yr

Kitchen Conversion (CAV to VAV)

TEL converted 12 of the 16 CAV systems to VAV systems in two dining areas. These ventilated cooking equipment, food serving lines, pizza oven, and dishwashing area. In a second area, they served food court vendors. These areas were fed by 9 make-up air units that heated, outdoor air.

Systems were excluded if a retrofit was unmerited due to low exhaust flows or if they needed to operate continuously.

We also installed TEL microprocessor-based, kitchen control systems whose sensors automatically regulate fan speed (via new VFDs) based on cooking load, time of day, exhaust temperature and smoke/ steam dispersion.

In addition to energy savings, the new systems provide a quieter kitchen, reduce wear and tear on the equipment, and decrease grease entrapment.

"TEL retrofit an aging system and made it better than new. TEL did a great Job"

Jerry Philmon, Senior Project Manager
Performance Services

TEL provides laboratory and kitchen solutions that deliver a safer workplace environment, increased energy efficiency, and improved operational performance. TEL is a world leading manufacturer of laboratory airflow controls and monitors. In North American, TEL also provides engineered turn-key retrofits, retro-commissioning, and other products for new and existing laboratories. For more information, please visit www.tel-americas.com, or call us at 920.267.6111.