UNIVERSITY OF SOUTHERN CA

Vertical-Flame Fireplace Design Graces Ronald Tutor Campus Center

THE CHALLENGE

This is not just a fireplace. It's a focal point for more than 44,000 students and 26,000 faculty members who enter the University of Southern California's Ronald Tutor Campus Center.

This busy campus facility hosts student and alumni activities around admission, office and boardroom gatherings, studying, events, technology resources, games and entertainment, and dining.

USC's campus architect wanted a visually attractive fireplace to greet visitors at the main entrance, which features a huge student lounge space with a high-domed ceiling. Given the size of the space, a fireplace low to the floor could not be seen. They wanted a highly visible vertical-flame fireplace to enhance the space, as well as safe, efficient draft control and combustion air supply.

Having already implemented a manifolded fireplace vent system at the USC's on-campus School of Cinematography, Tudor-Saliba Corp. (GC) and A.C. Martin (architect) invited ENERVEX rep Richard Freet of Ventenergy to a brain-storming session to discuss fireplace design possibilities to meet their goals. After exploring a number of concepts, A.C. Martin's principals suggested that USC Facilities enter into a contract with Ventenergy to develop the fireplace concept.

Ventenergy developed the fireplace design and provided trade coordination details to support construction, as well as obtained the Los Angeles City plan check approval. The approval process was particularly challenging because the design didn't carry any certification or approval. The plan checker deferred the design to the City Test Lab for review. In turn, they required the fireplace design to be certified by UL after the fireplace was constructed. This imposed a measure of risk, given the timing of the building's opening. ENERVEX was the selected manufacturer for fans and fan controls because of our UL Listed chimney products, which provide maximum safety, reliable draft control and combustion air supply.

Ventenergy also teamed with Michael Setting of Total-Western, Inc. for additional expertise in combustion, development of the flame supervisory systems, and field support capabilities.

JOB PROFILE

Location:

- Los Angeles, CA

Completion:

- August 2010

Owner:

- University of Southern California

Contractor:

- Tudor-Saliba Corp.

Architect:

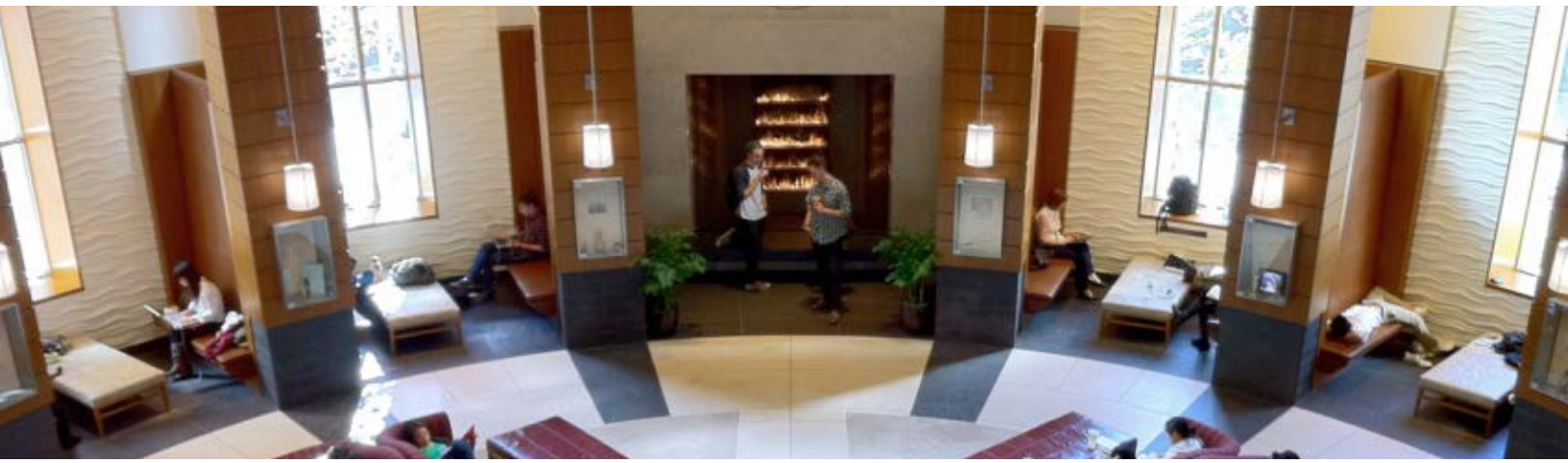
- A.C. Martin

ENERVEX Rep:

- Ventenergy

THE SOLUTION

The vertical-flame fireplace design entails a series of five drilled burner lances stacked approximately 12" apart. Each lance



The vertical-flame fireplace in the Ronald Tutor Campus Center

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The inside of the fireplace

A view of the hardware in back of the fireplace

has a standalone ignition/pilot system as well as a flame rod sensor at the far end of the lance. Light off is staged sequentially from top to bottom, with each lance's flame supervision system required to allow next stage lighting. The entire sequence is controlled by PLC logic for staging and safety monitoring.

Fireplace bricks with notches were installed, allowing the lances to be nested in channels and supply air to be introduced to each lance from the back side of the brick wall. This alone required precise detailing of the brick cutting and notching to implement the hardware after the masons had constructed the firebox. Each brick was detailed on fabrication prints and noted in the assembly with allowance for grout lines.

The fireplace design uses an ENERVEX RSIB400 inline draft inducer with an EBC30 modulating fan controller to achieve proper draft control and chimney effect, as well as a forced over-fire air supply.

The RSIB is an energy-efficient, totally enclosed, variable-speed motor mounted outside of the air stream. It has a backward inclined impeller made of cast aluminum and is fully Listed for temperatures up to 575°F (300°C). Our EBC30 multi-use draft controller monitors and varies the speed of the fan to deliver a constant draft at all times. Finally we added a BESF160 box ventilator to deliver energy-efficient combustion air supply in a compact design — while reducing noise level and the risk of condensation.

THE RESULT

USC now has an attractive and efficient fireplace that carries on the prestigious legacy envisioned by the institution's founders when it opened in 1880. In addition, the risk for safety problems and project delays is significantly lower due to the design's UL Listed parts with built-in safety for both proof of chimney draft and air supply conditions.

> "The commissioning process went relatively smoothly since the design allowed for tweaking the gas and air supplies to manipulate the flame patterns on individual lances."
>
> - Richard Freet, Ventenergy Manager
> Orange County, CA

The handcrafted notching of the fireplace bricks hides the burner hardware from view at the fireplace opening, while the forced over-fire air supply allows operators to tweak gas and air supply introduction to maintain beautiful yellow flame patterns.

From a combustion safety and code compliance perspective, USC has peace of mind knowing that the flame supervision safeguards were selected, installed and tested to NFPA 86 standards and approved by a reputable testing agency.

ENERVEX products installed:

- RSIB400 inline draft inducer
- EBC30 modulating fan controller
- BESF160 air supply fan

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