

# Silver + Black = Green

## METAL HELPS AN ENERGY COMPANY PROPEL INTO THE FUTURE

BY LISA ANDERSON MANN

**CONSOL ENERGY'S ROOTS** are in coal. The company has been mining coal since 1864 and is a leader in the production of coal-bed methane gas and high-Btu bituminous coal. Its long history melds with a strong modern technology focus; CONSOL Energy operates the largest private research facility devoted exclusively to coal-energy utilization and production. "Our goal is to be a major stakeholder in projects that ensure the environmentally sound and efficient use of coal, methane gas and alternative fuels," says J. Brett Harvey, chief executive officer.

Designing the company's new offices in Canonsburg, Pa., to reflect the duality of old and new was a challenge. "The CONSOL team was great," says Kevin Turkall, AIA, lead architect and president of Designstream Architectural Studio, Pittsburgh. "The company wanted the building to be unique and the design to reflect the character of the company. They were very open to our design creativity."

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long history of CONSOL while using state-of-the-art materials to reflect its future. We knew from the onset we would use metal," Turkall says. "We wanted contemporary, highly polished materials that would afford the opportunity to create crisp lines."

In addition, as one of the nation's largest producers of energy, CONSOL Energy administrators wanted to lead by example. They expect the new headquarters building, which is 27 percent larger than the previous building, to consume significantly less energy.

### GOING GREEN

The metal and glass provide the desired modern aesthetic to CONSOL Energy's facility. Predominant colors of silver and black were chosen to represent technology and coal, respectively. But CONSOL Energy's headquarters actually is pretty green.

The project, which is seeking LEED for New Construction Silver certification from the Washington, D.C.-based U.S. Green Building Council, is oriented to take advantage of ambient light and has controls that favor task lighting instead of general illumination. To help bring in natural light, the building has a 10,000-square-foot (929-m<sup>2</sup>) central atrium. The project features a 12-inch- (305-mm-) deep vegetated roof with a grass and succulent garden, picnic tables and plaza seating. "The use of vertical metal panels, metal soffit panels, metal surrounds on the mechanical penthouses and metal roofing panels allowed us to create really nice ambient light for people on the roof garden," Turkall says.

The predominance of metal in the design was useful in meeting LEED goals.

For example, the aluminum roofing panels feature an Energy Star-compliant finish in platinum silver that reduces the heat-island effect commonly found in urban areas. The metal wall panels feature 20.6 percent postindustrial recycled material based on weight.

### A SIGNATURE BUILDING

The project consists of a 75,000-square-foot (6968-m<sup>2</sup>) building that houses Fairmont Supply Co., an industrial products distributor that is a subsidiary of CONSOL Energy, and the 365,000-square-foot (33909-m<sup>2</sup>) main building. From the air, the main building's roof forms the company's logo. According to Turkall, the canopy roof



abstraction represents a conveyor belt, and tall metal silos that flank the entrance represent coal-mine ventilation towers. The blue neon at the upper roof where the metal panels meet the glass curtainwall is a gesture toward coal-bed methane gas. Tinted sloping glass and polished granite panels represent coal seams in the earth.

The sweeping rooflines created some construction challenges. The aluminum standing-seam roof panels were factory-formed, crated and shipped in lengths up to 72 feet (22 m). They then were field curved for an exact fit to the individual radii dimensions of each vaulted roof area. To protect the glass façade during installation, field curving for the upper roof areas was performed on the concrete deck of the mezzanine level, nearly 6 stories above the ground.

The entire roof area is approximately 47,000 square feet (4366 m<sup>2</sup>). The metal roofing, which is the signature of the main entrance and upper penthouse level, totals 33,000 square feet (3066 m<sup>2</sup>). A rubber roof system was utilized on low-slope portions of the roof, including under the 8,000-square-foot (743-m<sup>2</sup>) vegetated roof.

Turkall chose metal for the roof and wall panels primarily for design purposes; blending man-made materials with earthen products was central to the design concept. But, he says, the fact that the wall panels are smooth and install without caulking adds to life expectancy and ease of installation. The panels can be fabricated in custom widths and tapered in shape, which helped with the tricky installation on the rounded fascia and soffit.

John Hyde, project manager of East Coast Metal Systems, Bellaire, Ohio, agrees the tapered and rounded surfaces were the

trickiest parts of the wall-panel fabrication. Because of the building's curves and inconsistent substrate conditions, the fabricators had to be vigilant. "There was nothing straight or square about this building," he says. "Everything was radiused and tapered. There was nothing inherently difficult, but it was a quirky fabricating project. The complexity of the shape, profiles of the panels, inconsistent substrate conditions and the sheer size of the building made the logistics complicated."

The rout-and-return fabricated wall panel system was a good choice, according to Hyde, because it is damage resistant and fabricates quickly. "You also have a little bit more flexibility with the system; you can grow or shrink the caulk joints to compensate for inconsistent substrates and complex shapes."

The building's design also presented challenges to Mark Viehman, senior project manager with McMurray, Pa.-based Mohawk Construction & Supply Co. Inc., the wall panel installer. "The cornices

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were sloped and concave, convex and flat in shape," Viehman explains. "And the upper and lower fascias were at different radii in the curved areas, all of which would create problems for fabrication and installation. We also determined the substrate we were attaching to was not square and plumb, which further exacerbated the entire process. Realizing all of this, we knew we had to plan the job properly before going into mass production of the panels."

Through extensive field measuring and trial and error with sample panels, the six installers determined the shape and configuration of the metal wall panels would vary throughout the elevations. "Knowing this, we were able to minimize mis-fabricated panels along with added reinstallation costs," Viehman notes. "Because the building, if split in half from north to south, is a mirror image of itself, the second half of the building went significantly better than the first from a fabrication and installation standpoint."

### CURVACEOUS LINES

According to Turkall, there was a lot of purpose to the design of CONSOL Energy's



new headquarters. "CONSOL Energy's CEO challenged us to break down what he calls the silos between departments," Turkall says. "He wanted to encourage people to get out of their offices and interact with people in other departments, aiding in the cross-pollination of ideas. To do that, we moved common areas, like lunchrooms and copy centers, to central locations. And we penetrated the innermost parts of the building with an abundance of natural light."

The sinuous lines of the architecture reflect CONSOL Energy's desire to integrate

new ideas into a historic company. Today, the building stands as a source of pride not only for those working inside, but also for those who had the experience of designing and constructing it.

"It was a quirky project," Hyde says. "But it turned out really well. It's a beautiful building. Every time I drive past it, I smile to myself." ■

*Lisa Anderson Mann writes about architecture and metal construction from Petaluma, Calif.*

STEVE WANKE

### Panel Discussion

CONSOL Energy's new headquarters in Canonsburg, Pa., features 37,000 square feet (3437 m<sup>2</sup>) of Indianapolis-based Citadel Architectural Products' Envelope 2000 metal composite material installed using the Rout and Return System. The panel system meets ASTM D1781, "Climbing Drum Peel for Adhesives;" ASTM E84, "Surface Burning Characteristics;" ASTM E108, "Standard Test Methods for Fire Tests of Roof Coverings;" ASTM E72, "Strength Tests for Panels for Building Construction;" ASTM E330, "Uniform Structural Loading;" ASTM E331, "Test for Water Penetration of Exterior Walls by Uniform Static Air Pressure Difference;" and ASTM E283, "Test Method for Rate of Air Leakage through Exterior Walls." More information is available at [www.citadelap.com](http://www.citadelap.com).

About 33,000 square feet (3066 m<sup>2</sup>) of aluminum Series 300 Symmetrical Standing Seam Metal Roofing from IMETCO, Tucker, Ga., was installed on the building's roof. The panels, which have a 25-year warranty, feature a platinum silver Kynar 500 finish that is Washington, D.C.-based U.S. Environmental Protection Agency Energy Star compliant. More information is available at [www.imetco.com](http://www.imetco.com).

