



STEEL FRAMING INDUSTRY ASSOCIATION



CASE STUDY

MODERN MARVEL

CHART INDUSTRIES FACTORY OFFICE
LA CROSSE, WISCONSIN

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OVERVIEW

PROJECT

Use

Factory office renovation

Size

2 stories, 6,000 sq.ft.

Opening

November 2014

Construction Cost

\$50 million (factory expansion
+ office renovation)

PEOPLE

Owner

Chart Industries,
La Crosse, WI

Architect/Engineer

Construction Express, Inc.,
La Crosse, WI

General Contractor

Fowler & Hammer, Inc.,
La Crosse, WI

Cold-Formed Steel Subcontractor

Poellinger, Inc.,
La Crosse, WI

STEEL

54 mil cold-formed steel
structural framing



Architect David Holstrom designed Chart Industries' offices to be distinctive from the rest of the factory. "We're trying to look new and modern and hint at what happens inside," he says.

Cold-Formed Steel Saves \$2.50 per sq. ft., Raises R-Value of Factory Office

Cold-formed steel framing — used in a 6,000 sq.ft. office renovation at the Chart Industries, Inc., manufacturing plant in La Crosse, Wisconsin — proved to be the perfect wall system to save costs and meet an architect's design intent.

Specifically, the cold-formed steel system saved about \$2.50 per sq.ft. on the exterior walls as opposed to masonry wall construction, says Mike Poellinger, President, Poellinger Inc., La Crosse. He says cold-formed steel was also specified for its durability and flexibility on the project.

"Using [cold-formed] steel allowed us to work with the existing [structural] steel columns and the existing foundation planes," says architect and structural engineer David Holstrom, AIA, PE, LEED AP of Construction Express Inc., La Crosse. "We blew out the old wall system, put in our steel and set the center lines to work with our exterior metal wall. The [cold-formed] steel framing was flexible. We could set it anywhere we wanted."

Holstrom praises cold-form steel's ability to integrate with other systems. It allowed him to specify, for example, Knight Wall Systems' rain screen on the outside plane of the foundation wall. The Knight system is a ventilated facade attachment with a rigid exterior foam insulation and a mineral fiber insulation rain screen. It provides the insulation, vapor barrier and anchoring points for the metal framing. Holstrom says it has a 15-year warranty.

"This is a unique project," Poellinger says. "It's one of the first cold-formed steel framing projects in our area that has a continuous insulation system applied on the exterior."

SAVINGS APPLIED TO THE EXTERIOR

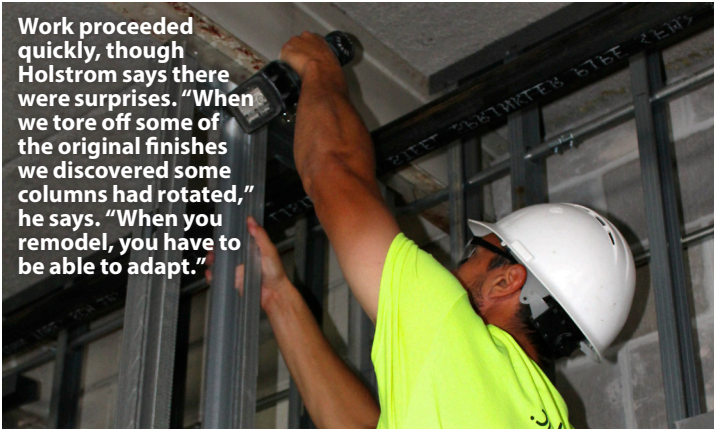
The \$2.50 per sq. ft. cost savings enabled the architect to upgrade the office look by using high-end exterior metal panels.

"We wanted to use an aluminum metal panel in a square grid pattern," Holstrom says.

The exterior of the office, Holstrom says, reflects the brazed aluminum heat exchang-



Cold-formed steel framing saved about \$2.50 sq.ft. on this job versus using standard masonry.



Work proceeded quickly, though Holstrom says there were surprises. "When we tore off some of the original finishes we discovered some columns had rotated," he says. "When you remodel, you have to be able to adapt."



The combination of cold-formed steel framing and spray foam insulation helped raise the R-value of the office.



Using cold-formed steel allowed Poellinger crews to work with existing structural columns and foundation planes.

ers that Chart Industries manufacturers at this factory.

"They take sheets of aluminum and stack them in a way that allows their heat exchangers to heat and cool gases," Holstrom says. "We wanted to mimic this pattern on the outside."

Cold-formed steel provided the ability to meet the design of the exterior, which involved aluminum panels and ribbon windows.

"We were looking for something architectural," Holstrom says, "not the heavy, institutional look of masonry, but a nice, light, modern exterior." Holstrom chose cold-formed steel "to create more light, more glass, more openness," he says.

BETTER R-VALUE THAN MASONRY

Chart Industries' heat exchangers are used throughout the world to purify gases, produce ethylene and propylene and liquify natural gas. In 2014, the company decided to expand its La Crosse manufacturing plant.

The work was done in phases. First came a 100,000 sq.ft. manufacturing addition,

featuring a new brazing furnace and a 40-percent increase in plant capacity. Next came the expansion and renovation of the factory's engineering offices. This involved converting a two-story receiving area to office space.

"They had [concrete] block halfway up and a very old, inefficient panel outside," Holstrom says. "I checked all of the structural components — they'd been up for 70 years — but they all met today's wind load requirements."

Holstrom considered using masonry for the exterior walls but, he says, "the energy code is getting so difficult to allow plain block walls to perform energy efficiently." So, he opted for cold-formed steel.

Poellinger says that the cold-formed steel framing raised the R-value of the structure. Where existing masonry walls remained in place in the renovation, Poellinger's team added cold-formed steel framing and spray foam insulation to improve the energy-efficiency and function of those walls.

"Cold-formed steel framing was the best choice for this job," says James Fowler, owner of Fowler & Hammer, Inc., the

La Crosse-based general contractor on the project.

"A GREAT EXPRESSION"

Cold-formed steel framing proved valuable in supporting the office's interior finishing systems.

"They used a thin-coat plaster system on the interiors walls, which is rare," Poellinger says. "The owner wanted interior corridors with a durable finish. The thin-coat and steel is an alternative to block with increased durability and a 1950s industrial look."

"The engineers go to the plant and come back all the time," Holstrom says. "We needed durable surfaces on the inside walls."

The owners are pleased with the results of the office renovation, and Holstrom is happy he specified cold-formed steel framing.

"There's nothing cheap about the systems we chose. The rain screen and the metal panels on the outside cost maybe twice as much as masonry walls," Holstrom says. "But, they're what we were looking for to make a great expression for this incredible manufacturing plant."



DETAILS

STRUCTURE

- Cold-formed steel framing
- Existing structural steel

EXTERIOR

- Aluminum metal panels over continuous foam insulation board and air barrier system
- Rain screen wall with water barrier
- Spray foam on the inside studs for an air barrier

INTERIOR

- Cold-formed steel framing with thin-coat veneer plaster system interior walls

Cold-formed steel framing was the best choice to accommodate the office's ribbon window design.



Architect Holstrom praises cold-form steel's ability to integrate with other systems.

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