

# INTEGRATED INNOVATIONS

A top US fabricator is driving industry digitalization with all-in-one detailing software and precision equipment

## A PVS Structures Case Study

PVS Structures is one of the top industrial fabricators in the United States. As technological advancements push the industry forward, they maintain their competitive edge through digitalization and automation, integrating state-of-the-art precision equipment like the Zeman robotic welder with the automated design capabilities of SDS/2's 3D steel detailing software.

### Leading through digitalization

With a history stretching back to 1885, PVS Structures—first founded in Omaha, NE, as Paxton & Vierling Iron Works—has a long-standing reputation for quality and reliability in the structural steel fabrication industry. But they're not about to ride on the coattails of yesterday. As a company committed to continuous quality improvement, striving for data-driven improvements in efficiency, effectiveness, and flexibility, their sights are set on today—and tomorrow.

To stay on the leading edge of an evolving industry, PVS Structures has turned to automation and digitalization, leveraging precision equipment in their shop and the streamlined design capabilities of SDS/2 Detailing.

"The industry as a whole is moving more towards electronics, robots, and digital drawing," said Mike Marian, project engineer at PVS Structures. "People want things built faster and cheaper all the time."

### PVS STRUCTURES

#### Primary sector

Structural steel fabrication

#### Markets

Nuclear, Commercial  
Industrial/Power, Bridges

Projects up to  
**20,000** tons

**400+** employees

**500,000** square feet

**30** acres of storage

## PVS STRUCTURES & SDS/2

### Customer since

1988

### Solutions

SDS/2 Detailing

### In-house users

10-15

### Used for

Estimating, detailing, connection design, shop drawings, BIM coordination, clash detection, model sharing

## KEY BENEFITS

- Fabrication-driven set-up options drive adaptability and flexibility in fabrication plans
- Seamless integration with Zeman robotic welder improves overall efficiency, accuracy, and throughput
- Using an all-encompassing detailing software with automated connection design streamlines operations, drives collaboration, and helps deliver daily success

**“Since we’ve integrated SDS/2 with the Zeman robot ...we’re able to take on more projects, get more work through our shop, and get work through our shop faster. SDS/2 integrates directly to our machine. It’s a seamless plugin.”**

**MIKE MARIAN**, PROJECT ENGINEER  
PVS STRUCTURES

COVER PHOTO: Erection of HDR building in Omaha, NE, fabricated by PVS Structures

P. 3 LEFT: A SidePlate® connections designed by PVS Structures using SDS/2 and erected for the HDR project. // RIGHT: Mike Marian, project engineer for PVS Structures.

## Automated connection design streamlines fabrication

One investment PVS Structures has made is in the Zeman robotic welder. Paired with SDS/2 Detailing solutions, the robot is changing the way they do connection design.

“The old adage in the shop was that bolted connections are always better,” Marian said, but since implementing the Zeman, they have been working in more welded connections like shear tabs, angles, base plates, cap plates, and gusset plates.

The fabrication-driven set-up options available in SDS/2 help them take the automation to the next level. Most other detailing software solutions would require them to manually update the connections when the fabrication plans change. SDS/2 helps fabricators stay nimble by handling changes like this automatically, making it easy to change and update plans, even in the middle of the job.

They might, for example, design bolted connections for a project that’s intended for their main bay with manual fitters and welders. If plans change and they move the project to their automated bay with the Zeman, Marian said, they can shift towards welded connections “at a whim.”

“We can tell in real time if the connections will work,” Marian said, “and we can cater the connections to what goes best in our shop. Since we’ve integrated SDS/2 integration with the Zeman robot, we’ve seen a lot of increases in efficiency in our overall throughput. We’re able to take on more projects, get more work through our shop, and get work through our shop faster. SDS/2 integrates directly to our machinery...it’s a seamless plugin.”

It is also—and more importantly—reliable. As an “always paranoid” project engineer, Marian said he likes to double-check the automated calculations, which SDS/2 provides. “It’s always right,” he said.

Being able to deliver the calculations and a clear, visual model to the engineers and general contractors makes for seamless communication and approval processes—another major factor in PVS Structures’ ability to quickly adapt and optimize fabrication.

## Capitalizing on the right opportunities

A streamlined process enables PVS to consistently deliver on projects small and large all around the world, but first they must secure project bids. SDS/2 can help users capitalize on the right opportunities—and walk away from the wrong ones.

It enables fabricators like PVS to take on BIM coordination and clash detection, which Marian said more and more projects are asking for. It also helps them draft more accurate bids. “If we can rough in the model in SDS/2,” Marian said, “we can do a better material takeoff and get a better idea of what a structure actually looks like.”



“And not only winning projects,” he added. “It helps us stay out of projects we don’t want.” Particularly when dealing with a backlog, they can use SDS/2 to help formulate estimates and go after projects with the highest profit margins.

Among PVS Structures’ recent portfolio of the “right projects” is the global headquarters building for HDR, an architecture and engineering firm in Omaha, NE. The project was featured in the [March 2020 issue of Modern Steel Construction magazine](#).

SDS/2 helped them work through difficult connections required for the building’s complex geometry, particularly the [SidePlate® connections](#), which had never before been implemented in Nebraska.

“Being able to have the SidePlate® connection already in SDS/2 really sped the detailing along,” Marian said. “It helped to familiarize our shop, the engineer, and even the erector with that connection.”

## The all-in-one solution driving daily success

PVS Structures has been using SDS/2 since 1988. The software has become ingrained in their daily operations, used for everything from estimating jobs to sharing models with customers.

“We use it for everything we do—estimating, detailing, BIM, fabrication, connection design, feeding our automated shop equipment,” Marian said. “Honestly, it would be tough to say what our workflow would be like without SDS/2.”

From the shop to the construction site, SDS/2 saves

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MIKE MARIAN

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them time and costs. “I definitely see cost savings in the connection design, fewer questions coming from the shop floor,” Marian said. “But especially when it gets to the field, they know it’s going to fit.”

“A good detailing program and good details lead to good fabricated parts at the end of the day.”

PVS Structures also prefers to work with businesses and subcontractors who use SDS/2. Marian estimated that 95 percent of the subcontractors they go to use SDS/2.

While he has used other detailing software solutions before, Marian said he prefers SDS/2 because it is the only solution that includes connection design. When connections are designed in another program before being implemented into the detailing model, Marian said, it adds time and introduces opportunities for error to the process.

“I really like that SDS/2 is an all-encompassing program,” Marian said. “You do the connection design as you’re going, and you know it’s going to be dependable. It’s hard to imagine anybody selecting another detailing solution that doesn’t excel in that.”



SDS/2 leads the industry in 3D steel detailing software, providing the only all-in-one solution with automated connection design and intelligent tools for optimal efficiency and accuracy in steel fabrication. SDS/2 is part of the Nemetschek Group, home to 16 leading brands that have been driving digitalization in the AEC industry for over half a century.