

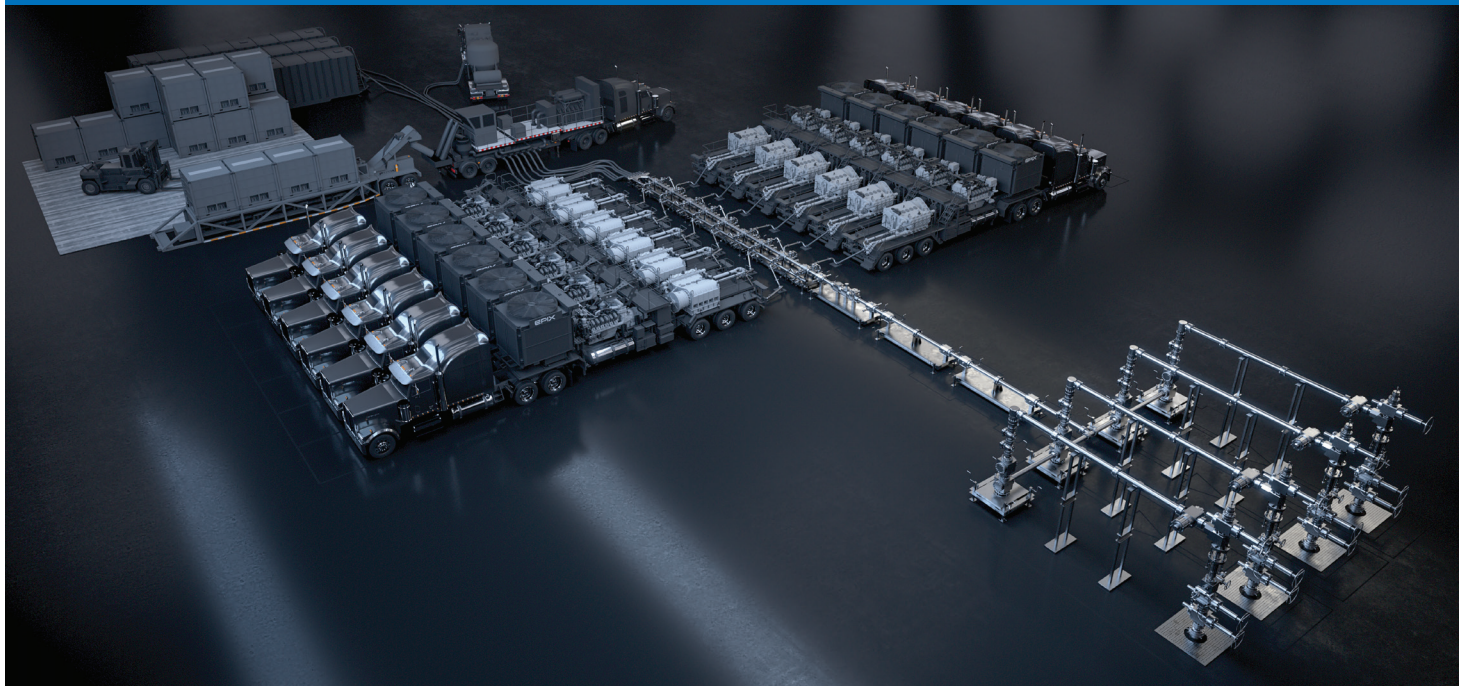
# One Straight Line, One Healthy Bottom Line

With a modular design and 88% fewer connections, the SPM® Simplified Frac Iron rewrites frac-site economics.

**SPM™ Oil & Gas**

**A Caterpillar Company**

## Case Study



### THE INNOVATION

Featuring a single, large-bore design and pre-assembled, modular components, the SPM® Simplified Frac Iron reduces by more than 88 percent the number of required connections on a frac site—along with much of the ground iron and other tripping hazards.

The 7 1/16" 15,000 psi main line is mounted on fit-for purpose skids, each with a single connection on each end, vastly simplifying and reducing rig-up time. Its design also features industry-unique, seven-inch SPM® Isolation and Directional Valves, one of which includes a hydraulic actuator for safe remote operations, allowing operators to keep high-pressure fluid in check.

Fewer connections mean fewer leak paths and failure points, facilitating a far safer and more efficient work environment, along with a smaller site footprint.

The SPM® Simplified Frac Iron is paired with SPM Oil & Gas' OSL, Vertical Zipper and Frac-stack technology to deliver cost savings through enhanced operational efficiency and reduced non-productive time (NPT). Robust and streamlined, it can be tailored to any basin or condition.

### THE CHALLENGE

A traditional frac site comes with a maze of multiple iron strings and numerous twists, turns, and connections. Rig-up is not only costly and time-consuming, but the work site is rife with potential trip hazards and leak paths. Small pipe diameters and contorted flow paths can wear hard on internal components. Every problem has to be addressed, adding additional maintenance costs and NPT.

One customer recently operating in the Eagle Ford Shale sought to significantly reduce this associated time and cost. At the time, they were spending more than \$1.1 million on 3-inch iron for each rig-up. Each rig-up procedure required 10-12 employees working 8-12 hours, which isn't out of the ordinary.

Company leadership was aware but skeptical of various monoline designs on the market, since most had only achieved mixed success at best.

### HIGHLIGHTS

- Single large-bore design with 88% fewer connections, potential leak paths, straps, and ground iron
- Reduced rig-up time with single connection at the end of each skid
- Redundant, seven-inch SPM® Isolation and Directional Valves—unique to the industry—keeping high-pressure fluids safely under control
- Reliable API flange connections instead of hammer-union, improving safety margins and fastener redundancy
- Smaller total site footprint
- 7 1/16" 15K API-6A style flanged iron
- 123 bbl/min max flow rate
- Modular skids featuring jacks for easy installation alignment
- Optional goat head
- 3" 15K Safety Iron® inlets on manifold skid

## THE SOLUTION

Having heard positive things about the SPM® Simplified Frac Iron, company leadership reached out to SPM Oil & Gas for an operational prototype of its large-bore design. We obliged, educating the customer that the unique advantages offered by the system could significantly reduce cost and NPT.

This was the first job/prototype unit as noted previously, the large-bore linear design had also demonstrably reduced fluid friction, along with the component wear associated with it. This, we explained, would further reduce costs.

Rig-up would require only 2-3 employees working 3-4 hours—versus the 10-12 employees working 8-12 hours currently required—achieving significant efficiencies in time and costs while creating a safer work environment.

## THE RESULT

The first unit has been running successfully for over a year now, with around a billion pounds of sand through it. In fact, it required nothing more than routine maintenance.

Anecdotally, the customer also observed fewer vibrations, reduced valve and seat wear, and a lower cycle rate for equipment components, further saving on maintenance and parts.

After the single installation, company leadership was fully convinced of its benefits, placing an immediate order for their fleets for the remainder of the year. Leveraging the technological advantage of the SPM® Simplified Frac Iron, the company has since won contracts from E&P companies they have never done business with before.

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