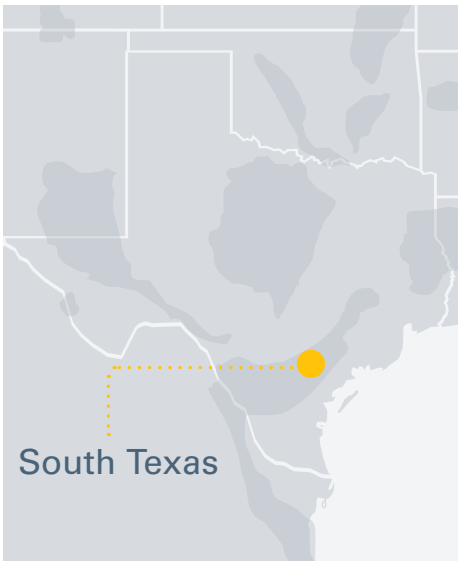
# SPM® SafeEdge™ ARC System Reduces Costs and NPT in South Texas

Third-gen technology maximizes and simplifies simul-frac configurations

SPM™ Oil & Gas
A Caterpillar Company

**Case Study**

Oilfield services company eliminates the need for two separate systems while increasing site safety.




## TOTAL SAVINGS

**50x longer**
nitrogen valve life

**Five millisecond**
real-time sampling

Second system
**Eliminated**

## THE CHALLENGE

Reducing completion times can significantly reduce average well costs for completion services and oilfield services companies. The simul-frac completions technique, which involves stimulating two horizontal wells at the same time, is being increasingly embraced industry-wide, as it can cut completion times by more than half as compared with zipper fracturing.

An oilfield services company began using the simul-frac completions technique in South Texas with a six-well pad configuration in order to double its pumping time. However, the solution the company was using to set its relief valves and monitor treating-line pressure was expensive and difficult to set and also slower-acting (which led to more pressure spikes).

## THE APPROACH

SPM™ Oil & Gas installed the SPM® SafeEdge™ Automated Relief Valve Control (ARC) System, a proven, field-tested SMART emergency nitrogen system that quickly reduces expenses and maintenance costs while enhancing safety in the field. The ARC system has helped companies save tens of thousands of dollars on valve component replacement kits, all while improving safety. Its third-generation technology dramatically reduces the amount of nitrogen used and eliminates chatter – ensuring valves open and close as programmed – which significantly increases the life of the nitrogen valve.

The ARC system opens its nitrogen valve faster than hydraulics, which lowers the maximum pressure spike for each event. This could mean the difference between having to take all iron in for inspection, which can result in the loss of a minimum of four days of downtime, rather than being able to continue pumping.

## THE RESULTS

The SPM® SafeEdge™ ARC System is ideal for simul-frac configurations, because it's the only technology that allows companies to run two separate valves at two separate pressures using the same controller, as compared to competitors' technologies which require two separate systems.

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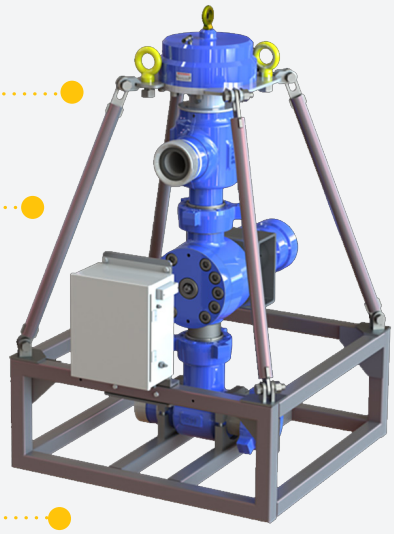
## THE FACTS

- Easy to use
- Compact, electric-powered design
- Longer pumping hours with less NPT
- Increased site safety
- Prolongs $N_2$ valve kit life by 150%+



# CASE STUDY

The company was impressed that the ARC system measures the treating line pressure and can trigger the system to react as quickly as five milliseconds, compared to the 40 milliseconds of competitive technologies. The valve was triggered 200 times in a four- to six-month period, and the company had a pressure relief event during this timeframe. Each time the valve popped, personnel received a real-time graphed report of the high-speed data 30 seconds before and 30 seconds after the event via email – which also broadcasts to a web portal without human interaction – a capability unique to the ARC system.

Since the ARC system is a safety system, ongoing testing of the system requires that the company pop the valve twice a day to test the system at each shift change. The repeatability and reliability of the ARC system proved to be an invaluable preventative safety measure that lasted beyond the entire job before requiring re-kitting the valve.

Since implementing the ARC system, the oilfield services company's nitrogen valves have lasted 50x longer, and the company went through only 1.5 valve kits per year. Additionally, it saved time due to ease of use. Once installed, crews only needed to digitally change two numbers – set value and reset value – as the system is completely automated.

The ARC system's compact, electric-powered design with battery backup – about the size of a backpack – proved advantageous as well, compared to other solutions which require a trailer, forklift, auxiliary power, fuel engines and heated tarps during extreme weather.

The company experienced several positive results from the ARC system. It prevented iron from breaking, reduced costs and kept peak pressure low – all of which created a safer environment for personnel. These outcomes, combined with the system's ease of use, led the company to implement ARC systems not only for the remainder of its South Texas fleets, but also for all of its Permian fleets.

## THE INNOVATION

The SPM® SafeEdge™ ARC System is an intelligent solution that enables operators to remotely set and control SPM™ Oil and Gas's proven line of nitrogen back pressure relief valves while monitoring treating-line pressure to prevent over-pressuring of treating iron. This system also allows the user to enter a reset treating line pressure so the valve will reverse the nitrogen bleed-off and recharge automatically. This allows operations to be maintained after a discharge event without full shutdown if pressure in the treating line allows.

The ARC system is so compact it could easily fit into a small car and does not require a forklift or heavy machinery for onsite set up. It's equipped with a battery-powered UPS and its own secure network infrastructure that's built into a durable field case, which allows the operator to control the system in real-time with a web interface or any Wi-Fi-enabled device, such as a Datavan computer, smartphone, tablet or laptop.

Setup is quick and easy with this SMART system, with fully customized settings to meet individual needs and generate automatic notifications and emails while workers are safely away from the flow line. The ARC system is so technically advanced that its five-millisecond monitoring and recording capabilities can react and relieve pressure faster than other systems. If a pressure-relief event occurs, the system automatically and locally logs high-speed data and publishes it to a secure web portal. Quick reset helps to minimize downtime, and adjustable reaction filters allow the system to correctly function with any variation of fluid system or specialty site requirements.

The ARC system also reduces $N_2$ consumption and prolongs the life of $N_2$ valve kits by as much as 150 to 200 percent, which can affect companies' bottom lines.

To increase in-field safety and save money, the ARC system is an easy-to-implement investment that quickly pays for itself.

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