

# Modernizing gas lift with electric actuation—enabling emissions reduction and operational efficiency

## RESULTS

- Eliminated methane emissions from pneumatic actuators and met modernization goals with a fully intelligent electric actuator
- Enhanced well performance through improved automation and control of the gas injection process
- Improved equipment reliability and reduced maintenance costs by eliminating the need for gas line-dependent equipment



## APPLICATION

Gas lift is an artificial lift method used to increase oil production from a well by injecting gas into the production tubing at the wellhead. This reduces the fluid density and helps reservoir fluids flow more easily to the surface. Automated choke valves are used to enable precise control over gas injection, optimizing well performance.

## CUSTOMER

A major energy producer in Western Canada that has committed to becoming a net-zero emissions energy business.

## CHALLENGE

As part of its decarbonization efforts, the company began evaluating its use of pneumatic control systems across its upstream operations. It recognized that these systems pose significant limitations—not only in terms of meeting environmental compliance standards, but also in enabling advanced automation and improving operational efficiency.

Key challenges the company encountered with legacy pneumatic systems included:

### 1. Environmental and regulatory concerns

- Increased scrutiny from investors, regulators, and customers over emissions monitoring and reporting.
- Gas venting and leaks during operation contributed to methane emissions, complicating regulatory compliance.

### 2. Limited automation and control

- Limited integration with modern digital control systems hindered automation efforts.
- Slow system response constrained real-time production optimization, especially under dynamic well conditions.

*Legacy pneumatic actuators make it challenging for operators to meet environmental regulations while pursuing modernization and optimization goals. Intelligent electric actuators offer a zero-emission and high-efficient alternative.*

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### 3. Maintenance and reliability issues

- Frequent calibrations and failures from gas line debris, corrosion, and temperature swings increased manual intervention and maintenance.
- Moisture in pneumatic lines would cause the lines to freeze in cold temperatures, leading to equipment malfunctions.

### 4. Operational limitations

- Pressure drops over long pneumatic lines reduced actuator effectiveness and well performance.
- Poor compatibility with SCADA and digital oilfield systems hindered modernization and limited data-driven decision-making.

## SOLUTION

To align with sustainability goals and improve performance in harsh operating environments, the company partnered with their Emerson Impact Partner, Spartan Controls, to identify a more modern actuation solution. They selected the Bettis™ RTS CM Series linear fail-last electric actuator to upgrade their gas injection control choke valves.

A six-month trial was conducted on multiple existing gas lift wells. The field-proven actuator delivered the following benefits:

- **Fully electric, 24 V DC operation** – The actuator eliminated vented methane emissions with low power consumption.
- **High speed and precise control** – Greater control of the choke valves enabled more accurate gas injection and improved lift efficiency.
- **Fast response times** – Operators could respond immediately to changing well conditions.
- **Increased reliability** – The robust design eliminated issues caused by freezing, gas contamination and pressure drops.
- **Real time monitoring** – Modbus® and HART® protocols enabled data visibility and remote diagnostics to optimize operation and maintenance.

The successful implementation of the Bettis RTS CM Series electric actuator helped the operator reduce emissions and enhance control and reliability in its gas lift operations. This upgrade supports its net-zero targets and offers a scalable solution for future digitalization and operational improvements.



*The Bettis RTS CM intelligent electric actuator provides zero-emissions actuation with precise process control and high reliability.*

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