

# Comprehensive Portfolio of Actuation Technologies



## Bettis™ Actuation Solutions

Electric, Electro-Hydraulic, Hydraulic and Pneumatic Valve Automation,  
Including Network Masters, Controls and Software





**BETTIS**<sup>TM</sup>

# *Actuation Solutions*

Bettis™ is a leading brand in Emerson's broad product portfolio. Our actuators and controls are used in almost every energy-related industry, including oil and gas production, transportation and refining. We also provide solutions for many other sectors, such as chemical, power (including nuclear and renewables), mining, municipal water and waste, pulp and paper, and others.

To serve our customers with the latest technology and complete valve operating systems, Emerson has established a knowledgeable worldwide sales force. Bettis products are specifically engineered for their intended application, are guaranteed for minimum torque and thrust values, and undergo thorough testing and quality checks before being shipped.



## **Bettis RTS Mechanical Fail-Safe and Precise Process Control Electric Actuators**

### **Key Features**

- Highly configurable and intelligent actuator with options for continuous modulation and mechanical fail-safe
- Independently adjustable operating and fail-safe speed and torque
- Non-intrusive setup via local interface, Bluetooth® or DCMLink
- Certified explosion-proof and weatherproof

### **Protocols**

Modbus®, HART®, PROFIBUS, PROFINET

### **Torque/Thrust**

- Multi-turn torque up to 64 Nm (47 ft-lb)
- Quarter-turn torque up to 5,000 Nm (3,687 ft-lb)
- Linear force up to 40 kN (8,992 lb)



## Bettis XTE3000 Intelligent, Versatile and Reliable Electric Actuator

### Key Features

- Intelligent and versatile actuator with a wide range of torque and speed for on/off and control
- Non-intrusive setup via local interface, Bluetooth or DCMLink
- Certified explosion-proof and weatherproof

### Protocols

- Modbus, HART, FOUNDATION™ Fieldbus, PROFIBUS, LonWorks®

### Torque

- Multi-turn torque up to 57,000 Nm (42,000 ft-lb)
- Quarter-turn torque up to 1,000,000 Nm (737,500 ft-lb)
- Linear force up to 150 kN (33,720 lb)



## Bettis M2CP Rugged, Heavy-Duty and Easy-to-Service Quarter-turn/Multi-turn Electric Actuator

### Key Features

- Robust, easy to service conventional actuator
- Compatible with DCMLink
- Certified explosion-proof and weatherproof

### Protocols

Modbus, HART, FOUNDATION Fieldbus, PROFIBUS, DeviceNet™, Ethernet

### Torque/Thrust

- Multi-turn torque up to 21,693 Nm (16,000 ft-lb)
- Quarter-turn torque up to 370,000 Nm (273,000 ft-lb)
- Linear force up to 2,224 kN (500,000 lb)



## **Bettis SCE300 Smart, Compact Quarter-Turn Actuator**

### **Key Features**

- Highly configurable with variable speed and torque settings
- Non-intrusive setup via Bluetooth
- Certified explosion-proof and weatherproof

### **Torque/Thrust**

- Quarter-turn torque from 63 Nm to 2,000 Nm (46 ft-lb to 1,475 ft-lb)

### **Protocols**

PROFIBUS, DeviceNet



## **Bettis TorqPlus Robust, Easy-to-Service, Fail-Safe Compact Quarter-Turn Actuator**

### **Key Features**

- Robust, easy to service conventional actuator
- Compact design with mechanical fail-safe option
- Certified explosion-proof and weatherproof

### **Torque/Thrust**

- Torque from 11 Nm to 2,260 Nm (8 ft-lb to 1,667 ft-lb)

# SOFTWARE AND NETWORK CONTROLS

INNOVATIVE SOFTWARE PLATFORM



## DCMLink Software

DCMLink provides a common platform to diagnose, configure and monitor all Bettis electric actuators.

### Key Features

- Diagnose, configure, calibrate and monitor all electric and smart electro-hydraulic from a central location
- Real-time monitoring and control of asset data, profiles, and alarm and event logs
- Integrates with AMS Snap-On and Bluetooth
- Downloadable from Emerson.com



## Controlinc Network Master

### Key Features

- Control and monitor up to 250 actuators
- Graphical, full-color touch panel interface
- Hot standby redundant units to eliminate downtime
- Common functions come pre-configured
- Connect multiple masters to automate 1000+ actuators
- Supports redundant RS-485 ring networks

### Protocols

Modbus, Ethernet



# ELECTRO-HYDRAULIC

## Actuator

DESIGNED FOR CRITICAL SHUTDOWN APPLICATIONS WHERE RELIABILITY IS CRUCIAL



### Bettis EHO Electro-Hydraulic Operator

**A smart, self-contained, electro-hydraulic, quarter-turn valve actuator combining field-proven technologies, designed for reliable, critical shutdown applications.**

#### Key Features

- Utilizes a dependable spring-return actuator for the fail-safe stroke combined with an integral hydraulic power pack and electronic control module
- Designed as an emergency shutdown actuation solution to stop process flow upon the detection of a command signal or loss of power, protecting personnel, equipment, and the environment
- Consistently operates in challenging, hostile and remote environments, and even when the power source is challenged
- Over 25 system alerts and alarms

#### Torque/Thrust

143 Nm to 79,959 Nm  
(1,264 in-lb to 707,696 in-lb)

#### Operating Pressure

Up to 207 bar (3,000 psi)

#### Operating Temperature

Standard:  
-29 °C to +60 °C  
(-20 °F to +140 °F)

Optional Temperature:  
-40 °C to +60 °C  
(-40 °F to +140 °F)

#### Typical Application

Biofuels, industry gases, petrochemical, marine, metals and mining, oil and gas, refining, renewable energy, pulp and paper, water and waste





**Bettis actuators can be powered by compressed gas, hydraulics or electricity to satisfy a range of automation requirements**



# HYDRAULIC

## Actuator

HYDRAULIC ACTUATORS ENGINEERED FOR TOUGH ENVIRONMENTS AND ESD APPLICATIONS



### Bettis GH-Series Scotch Yoke, Gas Hydraulic Valve Actuator

Designed specifically for gas transmission pipelines, the Bettis GH uses high pressure pipeline gas as the power source for the actuator.

#### Key Features

- Converts pipeline gas pressure into powerful hydraulically controlled torque to open and close pipeline valves
- The standard actuator design is well suited for cold temperature applications
- Provides local valve control, remote control or automatic control depending on our client's needs

- Field-proven design has been in service for over 40 years
- Linear versions for gate valves are also available

#### Torque/Thrust

Quarter-turn models with torque up to 678,000 Nm (6,000,000 in-lb)

#### Operating Pressure

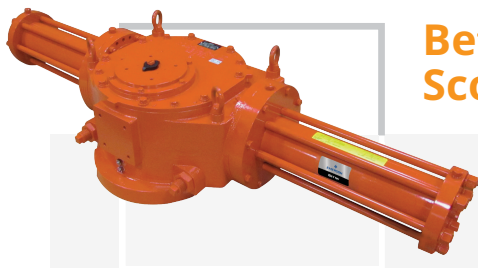
20.6 bar to 102 bar (300 psi to 1,480 psi)

#### Operating Temperature

-46 °C to 66 °C (-50 °F to 150 °F)

#### Typical Application

Mainline valves, compressor station ESD, remote valve control, linebreak and low pressure shutdown



### Bettis G-Series Scotch Yoke Hydraulic Valve Actuator

A hydraulic, scotch yoke valve actuator for operating ball, butterfly or plug valves along with louvers, dampers and other 90 degree rotating mechanisms, the Bettis G-Series is suitable for use in demanding SIL-required applications.

#### Key Features

- Consistently operates in challenging environments, hostile environments, and when power is challenged
- Modular design improves efficiency, reduces wear and extends life
- Tension-Lok™ device positively locks the spring module to allow its safe removal and installation, eliminating accidental release of the spring force
- PED 97/23/EC compliant to meet the stringent requirements of pressure mounting vessels

- Meets both IP66 and IP67M specifications for submergence and high pressure water deluge test and offers superior water ingress and corrosion protection

#### Torque/Thrust

Up to 56,492 Nm (500,000 in-lb)

#### Operating Pressure

Up to 345 bar (5,000 psig)

#### Operating Temperature

-54 °C to +204 °C (-65 °F to +400 °F)

#### Typical Application

Severe environmental conditions, e.g., corrosive salt spray, submergence, wash down, harsh chemical exposure, or even extreme low or high temperatures



## Bettis GS-Series Subsea Actuator



The GS-Series is a scotch-yoke, hydraulic powered actuator especially suited for fail-safe or spring-return operation. The pressure compensated design gives the actuator the capability for shallow or deep water installation.

### Key Features

- Subsea valve control at depths up to 2,000 meters
- ROV intervention and override
- Subsea installation and retrieval capability

### Torque

End to close or spring ending torque up to 14,872 Nm (131,637 lbf-in)

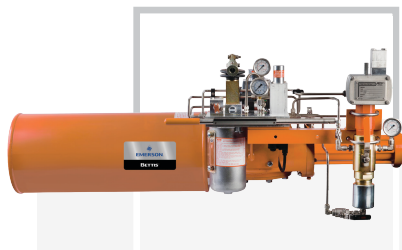
### Operating Pressure

Up to 207 bar (3,000 psi)

### Typical Application

Platform riser, fail-safe valves, subsea isolation valves, PLEM valve control

## PressureGuard™ Self-Contained Hydraulic Emergency Shutdown (ESD) Systems with Bettis G-Series



**This hydraulic actuator provides reliable valve shutdown capability when an external power source is either not available or not dependable. It can be used with rotary hydraulic operators to provide a fail-safe solution for use with ball, plug and other quarter-turn valves, as well as non 6A linear operated valves.**

### Key Features

- Adaptable for use with SCADA systems or remote signals
- Suitable for remote, unmanned, unpowered and critical service
- Adaptable to quarter-turn or linear operated valves
- Standard hydraulic model available for all valve sizes and configurations
- Adaptable to 6A, 6D linear or quarter-turn operated valves

### Operating Pressure

Up to 138 bar (2,000 psi)

### Operating Temperature

-29 °C to 82 °C (-20 °F to 180 °F)

### Typical Application

Gas processing, oilfield services, onshore and offshore exploration and production, and terminals and storage





## Bettis GVO-Series Hydraulic Linear Valve Actuator

**A linear valve actuator designed for shutdown and control applications, this actuator has proven suitable for automating most types of rising stem valves.**

### Key Features

- Full stainless steel construction and standard carbon-fiber material for lightweight durability and low friction (steel, stainless steel, aluminum and brass optional)
- Suitable for dirty environments; scale build-up on the piston rod will not affect the cylinder performance
- Conventional linkage arms replace a fully-enclosed transducer, which is a major design innovation
- Backed by a five-year material and workmanship warranty

### Torque/Thrust

Up to 56,492 Nm  
(500,000 in-lb)

### Operating Pressure

Up to 200 bar (3,000 psig)

### Operating Temperature

-54 °C to +204 °C  
(-65 °F to +400 °F)

### Typical Application

Severe environmental conditions, e.g., corrosive salt spray, submergence, wash down, harsh chemical exposure, or even extreme low or high temperatures

**Reliable actuators for  
control applications  
from fail-safe to  
extreme environments  
without compromising  
performance**



# PNEUMATIC

## Scotch Yoke Actuator

LIGHTWEIGHT, EFFICIENT AND RELIABLE - ALL IN A COMPACT, MODULAR PACKAGE



### Bettis G-Series Scotch Yoke Pneumatic Actuator

A scotch yoke valve actuator for operating ball, butterfly or plug valves along with louvres, dampers and other 90 degree rotating mechanisms, the Bettis G-Series is suitable for demanding SIL-required applications.

#### Key Features

- Modular design improves efficiency, reduces wear and extends life
- Tension-Lok™ device positively locks the spring module, allowing safe removal and installation, eliminating accidental release of the spring force
- PED 97/23/EC compliant, meeting stringent requirements of pressure mounting vessels
- Meets both IP66 and IP67M specifications for submergence and high pressure water deluge test and offers superior water ingress and corrosion protection

#### Torque/Thrust

Spring-return models:  
in excess of 339,000 Nm  
(3,000,000 in-lb)

Double-acting:  
1,420 Nm to 678,000 Nm  
(12,581 in-lb to  
6,000,000 in-lb)

#### Operating Pressure

3 bar to 14 bar  
(40 psig to 200 psig)

#### Operating Temperature

-29 °C to +93 °C  
(-20 °F to +200 °F)

Optional high and low  
temperature trims available

#### Typical Application

Safety shutdown system,  
double block valves,  
bleed valves/blowdown  
valves, gas exhaust valves  
and compressor  
knockdown drum

## Bettis CBB-Series Scotch Yoke Pneumatic Actuator



A scotch yoke actuator that is economical, low maintenance and independently certified to IEC 60529 IP66 and IP67M for water ingress protection.

### Key Features

- Symmetrical mounting pads allows field reversal of spring-return actuator failure mode with no disassembly required (CW or CCW)
- Compact and lightweight
- Economical jackscrew manual override available to ensure reliable valve control in the event of the power loss
- Backed by a five-year material and workmanship warranty

### Torque/Thrust

Double-acting:  
1,384 Nm (12,245 in-lb)  
Spring-return:  
up to 562 Nm (4,971 in-lb)

### Operating Pressure

3 bar to 10 bar  
(40 psig to 150 psig)

### Operating Temperature

Standard:  
-30 °C to +95 °C  
(-20 °F to +200 °F)  
High:  
-18 °C to +177 °C  
(0 °F to +350 °F)

### Typical Application

Safety shutdown system, double block valves, bleed valves / blowdown valves, gas exhaust valves and compressor knockdown drum



## Bettis CBA300 Scotch Yoke Pneumatic Actuator

A scotch yoke actuator that combines the strengths of the G-series actuator and is compact, lightweight, efficient and very cost-effective.

### Key Features

- NAMUR standardization allows direct or close coupling of accessory hardware
- Economical jackscrew manual override available to ensure reliable valve control in the event of the power loss
- ISO/DIN bottom mounting for close or direct coupling to the valve topworks
- Backed by a five-year material and workmanship warranty

### Torque/Thrust

Double-acting:  
835 Nm to 2,492 Nm  
(7,388 in-lb to 22,055 in-lb)  
Spring-return:  
286 Nm to 1,182 Nm  
(2,532 in-lb to 10,457 in-lb)

### Operating Pressure

3 bar to 10 bar  
(40 psig to 150 psig)

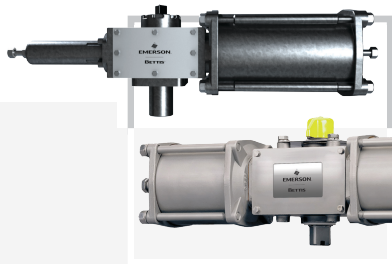
### Operating Temperature

Standard:  
-30 °C to +95 °C  
(-20 °F to +200 °F)  
High:  
-18 °C to +177 °C  
(0 °F to +350 °F)

### Typical Application

Safety shutdown system, double block valves, bleed valves / blowdown valves, gas exhaust valves and compressor knockdown drum





## Bettis Stainless Steel M-Series Actuator

**Engineered and manufactured to provide torque output with scotch yoke mechanism to maximize corrosion protection and minimize cost and dimensions impact.**

### Key Features

- Innovative 316 stainless steel construction as standard provides superior corrosion resistance both internally and externally
- Scotch yoke design using precision bearings eliminates dead band in the yoke mechanism, providing the greatest torque output at the beginning and end of stroke
- Air or any gas compatible with materials of construction, water hydraulic optional
- PTFE piston bearings, piston rod bushings and output shaft bushings provide longer life, reduce maintenance and require no lubrication

### Torque/Thrust

In excess of 13,560 Nm (120,000 in-lb)

### Operating Pressure

3 bar to 11 bar (40 psig to 160 psig)

### Operating Temperature

Standard:

-29 °C to 99 °C (-20 °F to 210 °F)

Optional trims:

-54 °C to 149 °C (-65 °F to +300 °F)

### Typical Application

Chemical process, food and beverage, iron and steel, offshore marine, pharmaceutical, power, oil and gas, pulp and paper, and textile industries

# PNEUMATIC

## Rack & Pinion Actuator

A TOUGH, RELIABLE RACK AND PINION ACTUATOR FOR COUNTLESS PROCESS APPLICATIONS



### Bettis RPE-Series Rack & Pinion Actuator

**This is a rugged, reliable rack and pinion actuator for countless process applications. Compact and lightweight, suitable for tight piping configurations, the Bettis RPE-Series is available in 13 sizes.**

#### Key Features

- Electrophoretic finish on springs protects from corrosion, and good chemical resistance against acids, solvents, alkalis and oils at normal temperatures
- Housing and end caps have anodizing, chromate pretreatment prior to painting
- Excellent exterior and mechanical durability
- High grade and hard anodized aluminum pinions, passed a 1,000 hours salt spray test

#### Torque

Double-acting: ranging up to 4,537 Nm at 5.5 barg (40,293 in-lb at 80 psig)  
Spring-end for spring-return: 1,958 Nm (17,333 in-lb)

#### Operating Pressure

Up to 8.3 bar (120 psig)

#### Operating Temperature

-20 °C to +80 °C  
(-4 °F to +176 °F)  
Optional high or low temperature trims available

#### Typical Application

Chemical, oil and gas, industrial manufacturing, power, pulp and paper, refining, water and waste, metals and mining, life sciences, food and beverages, medical



## Bettis RPX-Series Rack & Pinion Valve Actuator



**This rack and pinion actuator is designed to automate the most popular quarter turn valves and is easily adaptable for almost any other quarter-turn (90° rotation) application.**

### Key Features

- Optimum corrosion resistance is achieved with anodized housing, zinc plated / chromated pinion, powder coated end caps, chromated pistons and stainless steel fasteners
- Equipped with O-ring seals, and low-friction piston and pinion bearing materials and grease for a low-maintenance and trouble-free cycle life
- Dual travel stops allow for fine adjustment of the open and closed positions

### Torque

Double-acting:  
11 Nm to 4173 Nm  
(197 to 36955 lbf-in)

Spring-return:  
6 Nm to 1663 Nm  
(151 lbf-in to 14729 lbf-in)

### Operating Pressure

MOP: 8.3 bar (120 psi) max

### Operating Temperature

-20 °C to +80 °C  
(-4 °F to +176 °F)

### Typical Application

Chemical, oil and gas, industrial manufacturing, power, pulp and paper, refining, water and waste, metals and mining, life sciences, food and beverages, medical

# PNEUMATIC

## Linear Actuator

FIELD-PROVEN FOR SAFETY SHUTDOWN AND CONTROL



### Bettis GVO-Series Pneumatic Linear Valve Actuator

**This is a field-proven linear valve actuator suitable for automating most types of rising stem valves in safety shutdown and control applications.**

#### Key Features

- Automates most types of rising stem valves: slab, wedge, knife and expanding gate, globe, rising stem ball, and dampers
- Extended stroke for each model
- Travel adjustment on top and bottom makes sure the piston stops on the actuator rather than on the valve, protecting valve seat
- Hard chromium plated and polished stainless steel piston rod guarantees corrosion protection and minimal frictions

#### Thrust

Double-acting: Up to 1600,000 N (360,000 lb)  
Spring ending: Up to 450,000 N (101,000 lb)  
Spring starting: Up to 540,000 N (121,000 lb)

#### Operating Pressure

Up to 207 bar (3,000 psi)

#### Operating Temperature

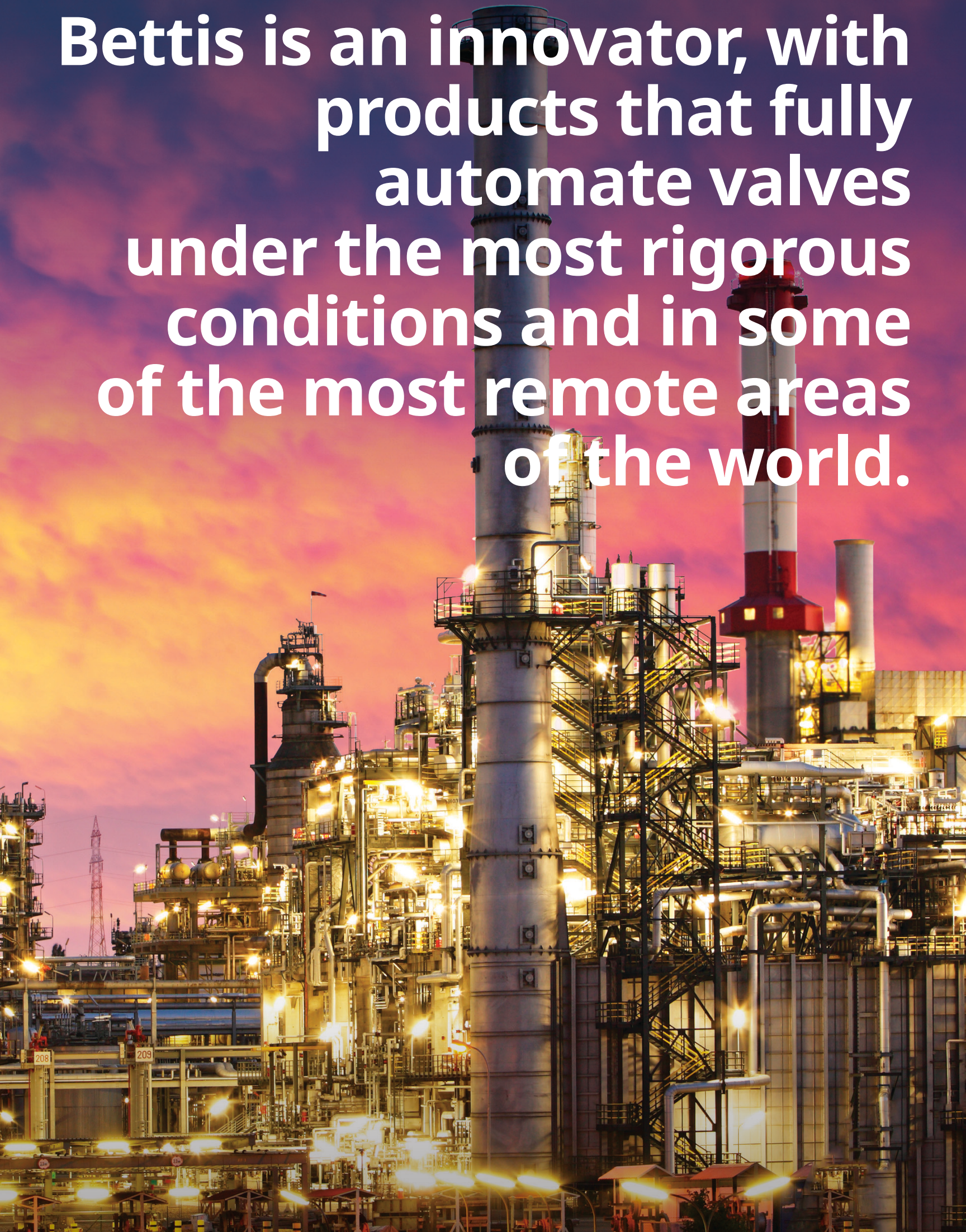
Standard: -23 °C to +74 °C (-10 °F to +165 °F)  
Low temperature option: -46 °C to +65 °C (-50 °F to +150 °F)  
High temperature option: -17 °C to + 204 °C (+1 °F to +400 °F)

#### Typical Application

Chemical, oil and gas, industrial manufacturing, power, pulp and paper, refining, water and waste, metals and mining, life sciences, food and beverages, medical



**Bettis is an innovator, with products that fully automate valves under the most rigorous conditions and in some of the most remote areas of the world.**





# VALVE OPERATING SYSTEM™

The Bettis VOS is a turnkey solution that includes an actuator, air filter regulators, relief valves, solenoid valves, limit switches and positioners, as well as the piping and engineering. It includes all related documentation from installation manuals, quick service guides and drawings to warranty certificate and maintenance schedules. Everything the end-user needs to maintain and operate their actuation package is included in this system.

## Bettis VOS-PAC™ Cataloged Actuation Package



**This pre-engineered and pre-specified turnkey solution allows instant quotes and pricing, and quicker deliveries. This standard package provides quick access to related documentation, and enables you to remotely maintain your actuation package with a unique QR Code.**

### Key Features

- Fast configuration, installation and commissioning
- Easy to maintain and repair with standardized design
- True modular control system; every part can be disassembled and replaced easily for maintenance and repair in the field
- Five-year warranty

### Operating Pressure

60 psig and 80 psig

### Operating Temperature

30 °C to +95 °C (-20 °F to +200 °F)

Optional high and low temperature trims available

### Typical Application

Chemical, industrial manufacturing, oil and gas, power, pulp and paper, refining, water and waste, metals and mining, life sciences, food and beverages, medical

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