Fundamental Instrumentation & Control Solutions, Inc.

PRODUCT CATALOG

**cFlex** Reciprocating Compressor Control Systems
**lFlex** Cylinder Lubrication Systems
**pFlex** Buffer Systems
**mStep** Capacity Control Systems
**pStep** Capacity Control Systems
**uFlex** Integrated System Panels
The cFlex Control System is a package designed to monitor and control reciprocating compressors in accordance to the API618 standards. The systems are configurable to meet the many demands of the industry. The systems are also suitable for installation in most hazardous area applications and harsh environments.

**Advantages**

- **Configurable:** Can be configured to meet most reciprocating compressor monitoring and control requirements
- **Hazardous Area Ratings:** Meets most international ratings for use in Hazardous Area applications
- **Harsh Environments:** The system is designed to handle harsh conditions that are typical of the petrochemical industries
- **Reduces Cost:** The system reduces cost by providing a pre-engineered system that is flexible to meet multiple applications
- **Minimal Termination Points:** By minimizing termination points you can reduce installation cost and potential failure points
- **Proven System:** Minimizes startup cost and provides ease of debugging due to product familiarity from system to system

**Hazardous Area Suitability**

The cFlex Control System can meet most international rating systems for hazardous environments including—but not limited to:

- UL
- UL Class I, Div. 2
- CE
- CE/ATEX
- CSA Class I, Div. 2
- C-Tick
- Marine Certifications
- SIL 2
POWER DISTRIBUTED TO ALL SYSTEM ENCLOSURES FROM COMMON SOURCE ENCLOSURE

- **POWER SUPPLY ENCLOSURE**
- **MOTOR CONTROL CENTER**
- **CAPACITY CONTROL JUNCTION BOX**
- **CAPACITY CONTROL SOLENOID BANK**
- **FIELD TERMINATION BOXES**
  - LUBE OIL CONSOLE
  - CYLINDER COOLANT CONSOLE
  - CYLINDER LUBRICATOR
  - PURGE PANEL

ETHERNET or CONTROLNET
The cFlex Control System offers a power supply that will interface to all international power sources and is compliant for hazardous area applications. The power supply comes with a disconnect that allows the system to comply with the new arc flash requirements for personal protection of your maintenance personnel.

Multiple power supplies can be used to minimize long power runs for systems that are distributed throughout a facility.

**Features**
- Disconnect for Hazardous Area Applications
- Suitable for all international power sources
- Solo or Redundant Powers Supplies
- Remote Monitoring
- Meets most National Standards for Hazardous Area Applications

**Electrical Ratings**
- Input Power: 85…132VAC / 176…264VAC
- Frequency: 47…63Hz
- Current Draw: <6A / <2.8A
- Output Power: 24VDC @240Watts

**Hazardous Area Ratings**
CE, C-Tick, ODVA, ATEX, UL, CSA

**Environmental Ratings**
- Operating Temperature: -20…55°C
- Storage Temperature: -40…85°C
- Humidity: 5…95%, Non-Condensing
- Vibration: 5g @ 10…500Hz
- NEMA 4 or 4X Enclosures
### Part Number Selection

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCCS</td>
<td>cFlex Control Systems</td>
</tr>
<tr>
<td>*</td>
<td>Field Left Blank for no Included Enclosure &amp; Disconnect</td>
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<tr>
<td>JB</td>
<td>304 Stainless Steel Enclosure, NEMA 4</td>
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<tr>
<td>JBS</td>
<td>316 Stainless Steel Enclosure, NEMA 4X</td>
</tr>
<tr>
<td>PWR</td>
<td>Power Supply, 24VDC</td>
</tr>
<tr>
<td>STD</td>
<td>Standalone Power Supply, Standard</td>
</tr>
<tr>
<td>RND</td>
<td>Redundant Power Supplies</td>
</tr>
</tbody>
</table>

The codes RCCS, JB, PWR, and STD are used to customize the system configuration.
The cFlex Logic Solver includes a PLC based controller that provides all logic necessary to control and monitor the reciprocating compressor.

The Logic Solver includes cFlex logic that is field configurable for all control features and custom P&ID tags.

The processor is available as a basic solo controller, a redundant hot standby controller and an extreme temperature controller for outdoor applications.

Features
- Real-time Monitoring & Control
- Field Configurable
- Available in a Redundant Platform
- Standard Control & Monitoring Functions
- Alarm History and Trending
- Meets most National Standards for Hazardous Area Applications

Typical Control Routines
- Main Motor
- Auxiliary Lube Oil
- Coolant Consoles
- Cylinder Lubricator
- Purge Panel
- Step Capacity Control

Hazardous Area Ratings
CE, C-Tick, ODVA, ATEX, UL, CSA

Environmental Ratings
- Operating Temp.: -20...55°C
- Extreme Temp.: -25...70°C
- Storage Temperature: -40...85°C
- Humidity: 5...95%, Non-Condensing
- Vibration: 5g @ 10...500Hz
- NEMA 4 or 4X Enclosures
Part Number Selection

RCCS  cFlex Control Systems

E  Ethernet Communications
C  ControlNet Communications

CNT  Logic Controller

STD  Standalone Controller, Standard
EXT  Standalone Controller, Extreme Temperature
RND  Redundant Controllers
RND-EXT  Redundant Controllers, Extreme Temperature
A communications interface is available when using the cFlex Logic Solver. The communications interface is available in the RSLogix 5000 protocol or the Modbus protocol.

RSLogix protocol is available in Ethernet.

Modbus protocol is available in Ethernet or Serial RS-232/485/422.

All Communications interface options come with an extensive memory map.

Features
- Standard Ethernet Communication for Allen Bradley
- Modbus with Ethernet or Serial Interface
- Modbus Master/Slave
- Memory Map Documentation
- Meets most National Standards for Hazardous Area Applications

Hazardous Area Ratings
CE, C-Tick, ODVA, ATEX, UL, CSA

Environmental Ratings
- Operating Temp.: -20...55°C
- Extreme Temp.: -25...70°C
- Storage Temperature: -40...85°C
- Humidity: 5...95%, Non-Condensing
- Vibration: 5g @ 10...500Hz
- NEMA 4 or 4X Enclosures
### Part Number Selection

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>COM</td>
<td>Communications Interface</td>
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<tr>
<td>MBS</td>
<td>Modbus Serial</td>
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<tr>
<td>MBS-XT</td>
<td>Modbus Serial, Extreme Temperature</td>
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<tr>
<td>MBE</td>
<td>Modbus TCP/IP</td>
</tr>
<tr>
<td>MBE-XT</td>
<td>Modbus TCP/IP, Extreme Temperature</td>
</tr>
</tbody>
</table>
The cFlex Control System offers most typical configurations of operators required to operate a reciprocating compressor. These include Hazardous Area Rated pushbuttons, pilot lights, and selector switches.

Operators can be configured to interface with a client-provided logic solver or with the cFlex Logic Solver.

Typical configurations include:

- Compressor Operator Controls
- Lube Oil Console Operator Controls
- Cylinder Coolant Console Operator Controls
- Cylinder Lubricator Operator Controls
- Capacity Control Operator Controls

**Features**

- Distributed I/O Platform to match compressor function
- Available in Ethernet or ControlNet Communications
- Meets most National Standards for Hazardous Area Applications

**Operator Types**

- Operators Only for use with client-provided DCS System
- Operators with I/O for use with cFlex Distributed I/O Control Package

**Hazardous Area Ratings**

CE, C-Tick, ODVA, ATEX, UL, CSA

**Environmental Ratings**

- Operating Temperature: -20...55°C
- Storage Temperature: -40...85°C
- Humidity: 5...95%, Non-Condensing
- Vibration: 5g @ 10...500Hz
- NEMA 4 or 4X Enclosures
Compressor Operator Controls
Includes:
- Compressor Start PB (Green)
- Compressor Stop PB (Red)
- Compressor Running PL (Green)
- Permissive to Start PL (White)
- Heater SS (On-Auto)
- Heater On PL (Green)
- Common Alarm PL (Amber)
- Common Shutdown PL (Red)
- Alarm Acknowledge PB (Black)
- Shutdown Reset PB (Black)
- E-Stop PPMH (Red)

Lube Oil Console Operator Controls
Includes:
- Auxiliary Oil Pump SS (On-Off-Auto)
- Auxiliary Oil Pump Running PL (Green)

Cylinder Coolant Console Operator Controls
Includes:
- Coolant Pump SS (On-Off-Auto)
- Coolant Pump Running PL (Green)

Cylinder Lubricator Operator Controls
Includes:
- Cyl. Lub. Pump SS (On-Off-Auto)
- Cyl. Lubricator Pump Running PL (Green)

Capacity Control Operator Controls
Includes:
- Capacity Increment PB (Black)
- Capacity Decrement PB (Black)
- Capacity Step Indication PLs (Amber)

For dual pump operations (2) Lube Oil Console Operators will be required

For dual pump operations (2) Cylinder Coolant Console Operators will be required

For dual pump operations (2) Cylinder Lubricator Operators will be required

One indicator will be provided for each step required
(Example: 0% - 50% - 100% are considered steps)
Operator Controls - Operators Only
Part Number Selection

RCCS  cFlex Control Systems

OP   Operator Controls

COM  Compressor Control Operators
LOC  Lube Oil Console Operators
CCC  Cylinder Coolant Console Operators
CLU  Cylinder Lubricator Operators
PCC  Packing Coolant Console

Operator Controls - Operators with I/O and Communications Adapter
Part Number Selection

RCCS  cFlex Control Systems

E    With I/O and Ethernet Communications
C    With I/O and ControlNet Communications

OP   Operator Controls

COM  Compressor Control Operators
HMI  HMI, 12”
## Operator Controls - Operators with I/O

### Part Number Selection

<table>
<thead>
<tr>
<th>RCCS</th>
<th>cFlex Control Systems</th>
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<tbody>
<tr>
<td>I</td>
<td>With I/O</td>
</tr>
<tr>
<td>OP</td>
<td>Operator Controls</td>
</tr>
</tbody>
</table>

| LOC  | Lube Oil Console Operators |
| LOC-X| Lube Oil Console Operators, Dual Pump Operation |
| CCC  | Cylinder Coolant Console Operators |
| CCC-X| Cylinder Coolant Console Operators, Dual Pump Operation |
| CLU  | Cylinder Lubricator Operators |
| CLU-X| Cylinder Lubricator Operators, Dual Pump Operation |
| PCC  | Packing Coolant Console Operators |
| PCC-X| Packing Coolant Console Operators, Dual Pump Operation |
| CC-03| Capacity Control Operators, 3-Step |
| CC-04| Capacity Control Operators, 4-Step |
| CC-05| Capacity Control Operators, 5-Step |
| CC-06| Capacity Control Operators, 6-Step |
The cFlex Control System offers a wide range of field I/O termination boxes to interface with the many types of signals required on a compressor. The boxes are designed to handle the harsh environments that compressors are exposed too.

Boxes are configured to meet most typical configurations for the compressors and the auxiliary equipment that supports the compressor.
### Part Number Selection

<table>
<thead>
<tr>
<th>RCCS</th>
<th>cFlex Control Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>Ethernet Communications</td>
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<tr>
<td>C</td>
<td>ControlNet Communications</td>
</tr>
<tr>
<td>JB</td>
<td>304 Stainless Steel Enclosure, NEMA 4</td>
</tr>
<tr>
<td>JBS</td>
<td>316 Stainless Steel Enclosure, NEMA 4X</td>
</tr>
<tr>
<td>CF</td>
<td>Compressor Frame Field Termination</td>
</tr>
<tr>
<td>LOC</td>
<td>Lube Oil Console Field Termination</td>
</tr>
<tr>
<td>CCC</td>
<td>Cylinder Coolant Console Field Termination</td>
</tr>
<tr>
<td>CLU</td>
<td>Cylinder Lubricator Field Termination</td>
</tr>
<tr>
<td>PP</td>
<td>Purge Panel Field Termination</td>
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<tr>
<td>RTD-08</td>
<td>RTD Field Termination, 8 Input</td>
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<td>RTD-16</td>
<td>RTD Field Termination, 16 Input</td>
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<td>RTD-24</td>
<td>RTD Field Termination, 24 Input</td>
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<tr>
<td>DI-16</td>
<td>Switch Field Termination, 16 Input</td>
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<tr>
<td>AI-08</td>
<td>Transmitter Field Termination, 8 Input</td>
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<tr>
<td>AI-16</td>
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<td>AI-24</td>
<td>Transmitter Field Termination, 24 Input</td>
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<tr>
<td>MCC</td>
<td>Motor Control Center</td>
</tr>
<tr>
<td>PCC</td>
<td>Packing Coolant Console</td>
</tr>
<tr>
<td>CC-03</td>
<td>Capacity Control Field Termination, 3-Step</td>
</tr>
<tr>
<td>CC-04</td>
<td>Capacity Control Field Termination, 4-Step</td>
</tr>
<tr>
<td>CC-05</td>
<td>Capacity Control Field Termination, 5-Step</td>
</tr>
<tr>
<td>CC-06</td>
<td>Capacity Control Field Termination, 6-Step</td>
</tr>
</tbody>
</table>
cFlex offers Intrinsic Safe I/O for use with signals to devices that are located in a Division 1 or Zone 0 locations. When interfacing to these signals the IS Field Termination Box can itself be located in a non-hazardous, Division 2 or Zone 2 location.

Features
- Intrinsic Safe I/O
- Suitable for Installation in a Safe Area, Div.2 or Zone 2 Area
- Distributed I/O Platform to match compressor function
- Available in Ethernet or ControlNet Communications
- Meets most National Standards for Hazardous Area Applications

I/O Types
- IS Discrete Inputs for 24VDC Signals
- IS Analog Inputs, 4 - 20mA
- IS RTD Inputs

Hazardous Area Ratings
CE, C-Tick, ODVA, ATEX, UL, CSA

Environmental Ratings
- Operating Temperature: -20...55°C
- Storage Temperature: -40...85°C
- Humidity: 5...95%, Non-Condensing
- Vibration: 5g @ 10...500Hz
- NEMA 4 or 4X Enclosures
### Part Number Selection

<table>
<thead>
<tr>
<th>RCCS</th>
<th>cFlex Control Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>Ethernet Communications</td>
</tr>
<tr>
<td>C</td>
<td>ControlNet Communications</td>
</tr>
<tr>
<td>JB</td>
<td>304 Stainless Steel Enclosure, NEMA 4</td>
</tr>
<tr>
<td>JBS</td>
<td>316 Stainless Steel Enclosure, NEMA 4X</td>
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<tr>
<td>IS</td>
<td>Intrinsically Safe</td>
</tr>
<tr>
<td>DI</td>
<td>DC Inputs, 16 Point</td>
</tr>
<tr>
<td>AI</td>
<td>Analog Inputs, 8 Point</td>
</tr>
<tr>
<td>RTD</td>
<td>RTD Inputs, 8 Point</td>
</tr>
<tr>
<td>CMB</td>
<td>Analog &amp; RTD Inputs, 8 AI and 8 RTD Points</td>
</tr>
<tr>
<td>E</td>
<td>IEC Suitability</td>
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<tr>
<td>N</td>
<td>NEC Suitability</td>
</tr>
</tbody>
</table>
The Vibration Monitoring Feature available in the cFlex System is ideal for continuous monitoring of low frequency vibrations typical of reciprocating compressors.

The system is adaptable to most vibration transducers commercially available.

Transducers can be provided upon request.
# Part Number Selection

<table>
<thead>
<tr>
<th>RCCS</th>
<th>cFlex Control Systems</th>
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</thead>
<tbody>
<tr>
<td>C</td>
<td>ControlNet Communications</td>
</tr>
<tr>
<td>JB</td>
<td>304 Stainless Steel Enclosure, NEMA 4</td>
</tr>
<tr>
<td>JBS</td>
<td>316 Stainless Steel Enclosure, NEMA 4X</td>
</tr>
<tr>
<td>VM</td>
<td>Vibration Monitoring</td>
</tr>
<tr>
<td>02</td>
<td>2 Channel</td>
</tr>
<tr>
<td>04</td>
<td>4 Channel</td>
</tr>
<tr>
<td>06</td>
<td>6 Channel</td>
</tr>
<tr>
<td>08</td>
<td>8 Channel</td>
</tr>
</tbody>
</table>
Step Capacity Control for cFlex System comprises of (3) components. These components consist of the Operators, Field I/O Termination Box and a Solenoid Bank. With this configuration, the cFlex Step Capacity Control can be configured for any number of Steps and can be logistically located to meet the application requirements.

Applications require different configurations for the Load/Unload Sequence. This cFlex system can field configured to meet any sequence required.

Air to Load or Air to Unload must be defined when ordering the Solenoid Bank.

Features
- Field Configurable Sequences
- Available in Ethernet or ControlNet Communications
- Meets most National Standards for Hazardous Area Applications

Types
- Air To Load
- Air to Unload
- Load on Electrical Failure
- Unload on Electrical Failure

Hazardous Area Ratings
CE, C-Tick, ODVA, ATEX, UL, CSA

Environmental Ratings
- Operating Temperature: -20...55°C
- Storage Temperature: -40...85°C
- Humidity: 5...95%, Non-Condensing
- Vibration: 5g @ 10...500Hz
- NEMA 4 or 4X Enclosures

Notes:
- A “Step” is defined as a load position.
- A load position may require multiple pneumatic outputs.
- A Step Control Sequence Matrix is required prior to configuring a system.
Step Capacity Control - Solenoid Banks

Part Number Selection

<table>
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<tr>
<th>Code</th>
<th>Description</th>
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<tr>
<td>RCCS</td>
<td>cFlex Control Systems</td>
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<tr>
<td>SB</td>
<td>Solenoid Bank</td>
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<tr>
<td>SCC</td>
<td>Step Capacity Control</td>
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<tr>
<td>03</td>
<td>3-Step Capacity Control</td>
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<tr>
<td>04</td>
<td>4-Step Capacity Control</td>
</tr>
<tr>
<td>05</td>
<td>5-Step Capacity Control</td>
</tr>
<tr>
<td>06</td>
<td>6-Step Capacity Control</td>
</tr>
</tbody>
</table>

For Capacity Control Field Termination Boxes, see Field I/O Termination Boxes Bulletin

For Capacity Control Operators, see Operators Bulletin
The cFlex System offers (2) enclosures for housing the cFlex Operators and Logic Solvers. The Logic Solver, Operators, and HMI can all be located in a single enclosure or placed in separate enclosures in multiple locations.

The enclosures are offered in 304 or 316 Stainless Steel.

**Features**
- Meets most National Standards for Hazardous Area Applications
- Corrosion Resistant
- Wall Mounting
- Single Door Front Access
- 760mm x 760mm x 300mm
- 28” x 28” x 12”

**Hazardous Area Ratings**
CE, C-Tick, ODVA, ATEX, UI, CSA

**Environmental Ratings**
- NEMA 4 or 4X
- IP66
### Part Number Selection

<table>
<thead>
<tr>
<th>RCCS</th>
<th>cFlex Control Systems</th>
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<tbody>
<tr>
<td>ENC</td>
<td>Enclosure</td>
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<table>
<thead>
<tr>
<th>4</th>
<th>NEMA 4, 304 Stainless Steel</th>
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</thead>
<tbody>
<tr>
<td>4X</td>
<td>NEMA 4X, 316 Stainless Steel</td>
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</table>

An enclosure is required for systems including a Logic Solver or Operators.
FICS offers many excellent solutions for cylinder lubrication. Pump-To-Point lubricators offer a streamlined, economical system that is easily maintained and installed. Series Progressive lubricators offer increased accuracy of lube delivery and additional customization options.

Lube reservoirs are also available to support lubrication systems. Reservoirs can be built to any desired capacity and connection specifications. FICS has built reservoirs as small as 5 gallons and as large as 80 gallons. Reservoirs can also be built for various mounting configurations for wall mounting, stand mounting, or foot mounting.
Series Progressive Lubricators

Series progressive lubrication systems are the most common and customizable lubricator option. These lubricators are operated by motor driven pumps—either a single pump, or multiple parallel pumps working in conjunction—that are set to output the total lubrication required by all lube points. This output is then run through divider valves that separate it into the proper ratios so that each lube point receives the proper, precisely calculated volume of lubrication. The precision of this variety lubricator is unmatched.

Common options integrated into series progressive lubricator panels include supply pressure regulation, lube reservoirs, filtration, output pressure gauges, output pressure transmitters, divider block proximity switch and monitor, among many others.

Advantages

- Accurate Lube Delivery
- Superior Monitoring Options
- Reliable

Hazardous Area Ratings

Lubricators can be designed for any Hazardous Area requirements that may be needed.
Pump-To-Point Lubricators

Pump-To-Point (PTP) lubricators provide lubricant to the compressor’s lube points through devoted pumps. Each lube point has its own pump with each pump being mounted into a common reservoir. PTP lubricators are economical and easily maintained as each pump can be removed and replaced individually as necessary.

PTP Lubricators are installed over a drip-pan that is constructed of 316 stainless steel or painted carbon steel according to client specifications. PTP Lubricators may include many options including immersion heaters, level controllers, level switches, and level alarms.

Advantages
- Economical Lube Solution
- Ideal for Compressor Mounting
- Simple

Hazardous Area Ratings
Lubricators can be designed for any Hazardous Area requirements that may be needed.

Lubricators are configured to the clients requirements on a project-by-project basis. Contact FICS’s sales department at sales@fics.cc for further information.

Hazardous Area Suitability
Lubricators can meet any international rating systems for hazardous environments including—but not limited to:
- UL
- UL Class I, Div. 2
- CE
- CE/ATEX
- CSA Class I, Div. 2
- C-Tick
- Marine Certifications
- SIL 2
- …and More!
The Lube Monitor System is a micro-processor based unit that retrieves input from a switch on the cylinder lubricator output. It uses this signal to determine the flow rate that the lubricator is producing and communicates this through a visual indicator as well as to facility control systems via Ethernet or analog output.

The Lube Monitor is configurable to include options such as an HMI interface, metering blocks, and pressure gauges.

**Features**
- Micro Processor Based
- Monitors up to 2 Units
- Built-In Ethernet
- Field Configurable via Web Browser
- Digital Display for Flow Rate
- Configurable Alarms / Shutdowns

**Requirements**
- 24VDC @ 100 Watts
- DC Proximity Switch or Reed Switch, 24VDC @ 100mA

**Hazardous Area Ratings**
UL, CSA
Class I, Div 1 or 2, Groups B, C, D

**Environmental Ratings**
- NEMA 12 or 4X
- IP66
## Part Number Selection

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<th>Lube Monitor System</th>
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<td>Suitable for Class I, Div. 2, Groups B, C, D Applications</td>
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<tr>
<td>Z1</td>
<td>Suitable for Class I, Div. 1, Groups B, C, D Applications</td>
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<td>No Included Metering Blocks</td>
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<td>No Included Analog Output</td>
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<td>Analog Output, 4-20mA</td>
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<td>Field Left Blank for no Included Pressure Gauge</td>
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<tr>
<td>P</td>
<td>Included Pressure Gauge</td>
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</tbody>
</table>
Reciprocating compressors are often exposed to hazardous gasses that can escape into the atmosphere or pose the risk of ignition if allowed to infiltrate high temperature components within the compressor. FICS offers a full line of purge systems (also referred to as fugitive emission purge systems) to aid in the reduction of these harmful emissions. Purge systems work by supplying a slightly pressurized inert gas to prevent any seepage of more harmful gasses.

Constant Pressure Buffer Systems provide the various purge points of a reciprocating compressor with inert gas that is regulated to a static pressure that is manually adjustable.

Variable Pressure Buffer Systems have pressure regulation that use the compressor frame pressure to determine and self-adjust to the optimum outlet pressure to purge the compressor.

Buffer Systems are configured to the clients requirements on a project-by-project basis. Contact FICS’s sales department at sales@fics.cc for further information.

Hazardous Area Suitability

Buffer Systems can meet any international rating systems for hazardous environments including—but not limited to:

- UL
- UL Class I, Div. 2
- CE
- CE/ATEX
- CSA Class I, Div. 2
- C-Tick
- Marine Certifications
- SIL 2
- …and More!

FICS Incorporated
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Fax: 607-359-4478
E-mail: sales@fics.cc
Web: www.fics.cc
Capacity control systems are an important inclusion to any reciprocating compressor. Capacity control systems maintain a compressor’s efficiency by partially loading the compressor, rather than running the compressor at full capacity when there is no need for full output.

FICS offers many solutions for Capacity Control including cFlex systems to incorporate with cFlex Reciprocating Compressor Control Systems, standalone capacity control units, and pneumatic controllers for a processor-free capacity control solution.
Features

- Micro-processor based control solution
- Field Configurable for Load Sequence
- Ethernet Interface
- Auxiliary Contacts for Feedback Status to a Supervisory System
- Offered in 304 SS or 316 SS
- Hazardous Area Rating: Class I, Div. 2, Groups B,C,D

Standalone Capacity Control Systems are offered for installation without the cFlex Reciprocating Compressor Control System. The standalone system includes a micro-processor based capacity control enclosure as well as a solenoid valve bank.
Part Number Selection

| MSCC | mStep Standalone Capacity Controller |
| S | 316 Stainless Steel Enclosure, NEMA 4X |
| 03 | 3-Step Capacity Control |
| 04 | 4-Step Capacity Control |
| 05 | 5-Step Capacity Control |
| 06 | 6-Step Capacity Control |

* A Sequence Chart is required when ordering. Contact FICS Sales Department (sales@fics.cc) for further information.

Example Sequence Chart:

<table>
<thead>
<tr>
<th>Step</th>
<th>Capacity</th>
<th>Crank #1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CE</td>
<td>HE</td>
</tr>
<tr>
<td>1</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>50%</td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>100%</td>
<td>X</td>
</tr>
</tbody>
</table>

Standalone Capacity Control also requires a Solenoid Bank. See cFlex Step Capacity Control - Solenoid Bank Bulletin.
pStep is a pneumatic Step Controller that a mechanical pneumatic switch to sequence a compressors load steps. This is a great solution to Capacity Step Control when a controller is not available to perform this function. This is a great solution in Zone 1 or Div. 1 areas, due to the fact that it doesn’t require electrical power to operate. When feedback is required, Intrinsic Safe proximity switches are available.

Features
- Pneumatic Operated System
- Pneumatic Control Air, 30 - 100PSI
- Available with Piloted Valves
- Available with Position Feedback for Supervisory Systems
- Feedback 24VDC PNP Proximity Switch
- Hazardous Area Rated
Pneumatic Capacity Control - Controller

Part Number Selection

- **PSC**: pStep Pneumatic Capacity Controller
- **S**: Field Left Blank for 304 SS Enclosure, NEMA 4
- **3**: 316 Stainless Steel Enclosure, NEMA 4X
- **03**: 3-Step Capacity Control
- **04**: 4-Step Capacity Control
- **05**: 5-Step Capacity Control
- **06**: 6-Step Capacity Control
- **PX**: Field Left Blank for no Included Remote Indication
- **Includes Proximity Switch Remote Indication**

* A Sequence Chart is required when ordering. Contact FICS Sales Department (sales@fics.cc) for further information.

**Example Sequence Chart:**

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<td>X</td>
</tr>
</tbody>
</table>
**Pneumatic Capacity Control - Valve Bank**

**Part Number Selection**

- **PSC**  pStep Pneumatic Capacity Controller
- **VB**  Valve Bank
- **03**  3-Step Capacity Control
- **04**  4-Step Capacity Control
- **05**  5-Step Capacity Control
- **06**  6-Step Capacity Control
- **AL**  Air to Load
- **AU**  Air to Unload
FICS offers panels incorporating multiple functional systems into a single panel to provide a more economical option that also saves on installation space.

uFlex panels can include:

- Compressor Local Controls
- Compressor Frame Instrumentation
- Cylinder Lubrication Systems
- Buffer Systems
- Capacity Control

**Advantages**

- Present multiple systems in one location for ease of access
- Reduce costs by limiting materials required to house multiple systems
- Reduce space required on-site

**Hazardous Area Suitability**

uFlex Integrated Systems are configured to the clients requirements on a project-by-project basis. Contact FICS’s sales department at sales@fics.cc for further information.

**uFlex Integrated System Panels**

- UL
- UL Class I, Div. 2
- CE
- CE/ATEX
- CSA Class I, Div. 2
- C-Tick
- Marine Certifications
- SIL 2
- ...and More!