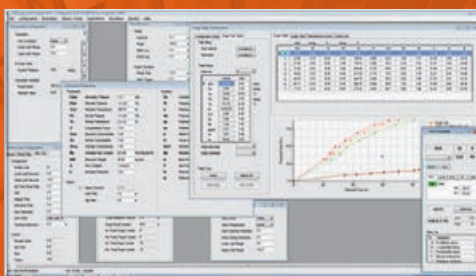


## Control solutions to the Energy, Chemical and Petrochemical industries world wide

Control-Care's Antisurge Control Application (ACA), designed for packaged compressor units, protects the compressor from surge efficiently and reliably.

An elegant and affordable solution for packaged compressor units. Control-Care's method of accurately defining the surge line over a wide range of changing process conditions allows setting of the control line for optimum surge protection without unnecessary recycling or blow-off, compatible with industry standard API672 (AIR).

The entire Control-Care compressor control scheme can include antisurge and performance control, load balancing optimization, parametric diagnostics and ESD system interfacing.



### Main components

- Industrial PLC
- Operator display
- PC based configuration tool
- Serial interfacing to DCS

### Two invariant coordinate systems

- Reduced head ( $h_r$ ) versus reduced flow ( $q_r$ )
- Compression ratio (RC) versus reduced flow ( $q_r$ )

### Calculated variables

- Invariant coordinate values are used for control; the ACA foresees in calculation of the compressor engineering variables for display purposes to the operator

### Four lines of protection

- Surge detect line
- Open loop response line
- Surge control line
- Predictive control line

### Feed forward control

- Interactions between multiple antisurge control loops or between antisurge control loop and a performance control loop for increased stability at process disturbances

### Sequencing

- Automatic loading and unloading of a compressor in conjunction with its companion performance controller

### Projected flow algorithm

- Enables running without a functioning flow transmitter or even without a flow measurement

### Compressor performance deviation alarming

- Expected and actual performance are compared and alarmed in case diverging

### Fallback strategies

- Continued and stabilized compressor running when one or more of the measurements used for protection fail

### Alarms and events

- Time stamped alarm and event reporting for signaling and troubleshooting purposes

### Sequence of event history on control system hardware, time stamped

- Standard (x) points\* history in stand alone mode

### Critical event (such as a compressor surge) back-up on control system platform

- High resolution recording of critical parameters, (x) minutes\* prior and (y) minutes\* after the event

### User friendly application configurator

- Upper screen provides for loop configuration settings
- Lower screen shows dedicated loop's contribution to overall output

### Surge tester

- Straight forward surge validation and testing
- Fully automatic configuration of tested surge points
- Easy interfacing for surge line modifications
- Password protected user level access

### Application control functions are selectable

- Customize each application individually by enabling or disabling site specific functionality (no programming)

### Configuration tool

- Hardware platform independent
- Compressor maps
- Faceplate
- Automated surge line testing and validation

\* ) Quantity is configurable