



## TurboGuardian

TurboGuardian is a family of products and services designed to save power, enhance compressor reliability and guard against unplanned downtime.

### TurboLogix® Controls System Products

#### TurboLogix® BASIC

- Allen-Bradley CompactLogix hardware standard
- Open software architecture
- Modbus & Allen-Bradley communication included
- 7" - 15" color touch-screen operator interface standard
- Extensive data trending/event logs plus backup
- Energy saving compensated turn-down
- Fully field-configurable
- Simplified installation and startup
- DCS-friendly
- Enhanced reliability
- TurboGuardian Cloud compatible



#### TurboLogix® ENGINEERED

- Includes all of the features of TurboLogix® BASIC
- Customized design panel to fit your needs.
- Allen-Bradley ControlLogix upgrade hardware available
- Replace or integrate with current or obsolete system

#### TurboLogix<sup>ev</sup> RETROFITS

- Includes all of the features of TurboLogix® BASIC and ENGINEERED
- Designed for quick, easy drop-in retrofit upgrades
- Retrofit solutions available for any OEM
- In-house manufacturing to ensure quick delivery
- Modbus RTU, TCP/IP and Allen-Bradley Ethernet IP communication interfaces standard





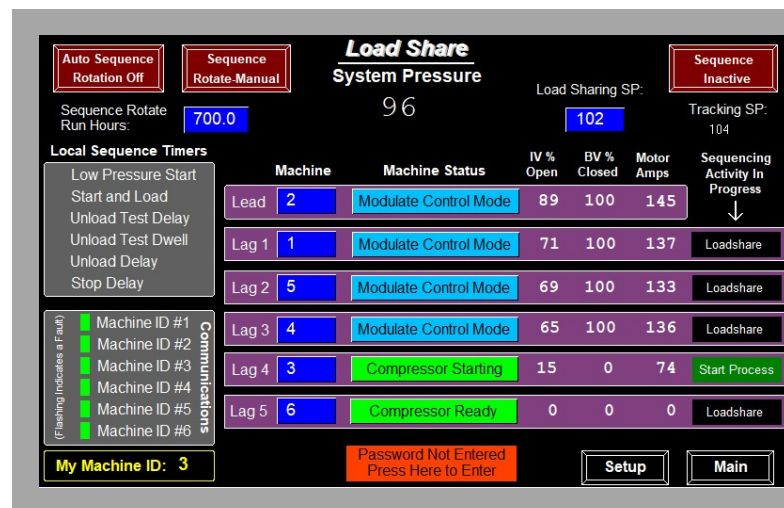
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## TurboLogix® Controls System Products

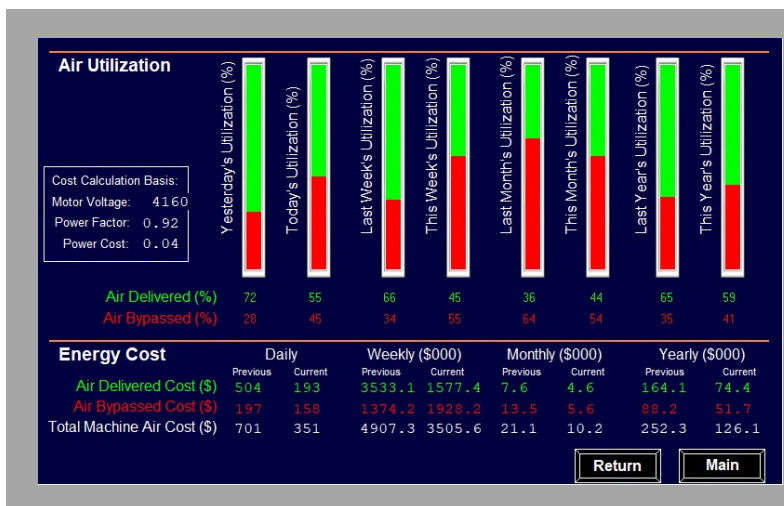
### Loadsharing **POWER SAVINGS**

- Energy saving throttle valve alignment and compressor management system to provide utmost in savings from the "inlet guide vane effect" from all units
- "Peer-to-Peer" design - no external black box or special hardware required
- Ethernet-based communication network
- Automated management system (start/stop, load/unload) of compressors
- Compatible with electric and turbine driven centrifugal compressors
- Fastest installation and setup anywhere in the world



### Enhanced **PERFORMANCE MONITORING PACKAGE**

- Hardware/software enhancement to pinpoint issues that cause frequent downtime
- Features include performance measurements for electricity usage/costs, inlet and bypass valves performance, compressor performance loss due to dirty inlet filters, oil pressure loss due to dirty oil filters and maintenance alerts.
- Highly desirable upgrade for preventative maintenance, enhanced troubleshooting, field performance analysis and cloud-based analytics.
- Helps minimize field service calls and prevents downtime - saving customers money.





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## TurboRemote - Remote Cell Access Products

### TurboRemote

- Cellular or Permanent Remote Access
- 24/7/365 Availability
- Portable Cell Modem, Wireless or Cloud interconnectivity
- Permanently Wired or Wireless
- Reduce field investigation costs
- Cloud interconnectivity (available in 2020)



### TurboRemote Cell<sup>TLX</sup>

#### Cellular Based Assistance, Remote Support and Troubleshooting

- Provisional use product that provides factory technical personnel, temporary remote access to compressors to view live operating data for real-time analysis, tuning and troubleshooting.
- Can be supported for short, intermediate or long-term use.
- Features safe and secure remote machine access via a cellular modem that is controlled by the user.
- Kits can be rented, leased or purchased.

### TurboRemote Cloud<sup>TLX</sup>

#### Cloud Based Management and Monitoring

- Available for a single compressor or world-wide fleet of compressors.
- A cloud-based IIOT product that provides remote operating status, event information, abnormal event notification, historical data, maintenance reminders, and service/PM reports via the Internet or smart device.
- Features safe, secure VPN technology for remote Cloud hosting of compressor activity, data and maintenance updates.
- Interface hardware is supplied as part of the agreement.
- Available as a subscription service.
- *Currently in beta testing (available in 2020)*

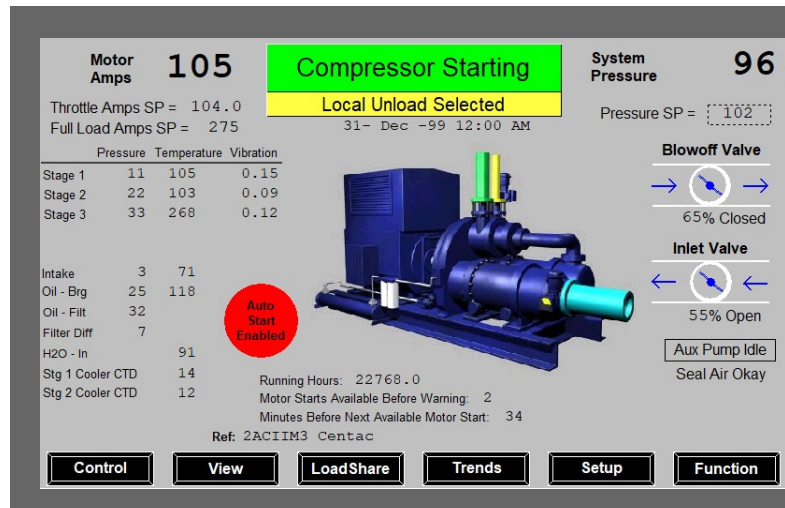
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## TurboAnalytix PROBLEM SOLVING SERVICES

### Enhanced Analysis, Products and Solutions

- A suite of enhanced analytics hardware and software with engineering consulting services to help users better manage, maintain and diagnose issues with their compressors, valves, instrumentation and controls.
- Provides the ability to acquire sophisticated analysis, software maintenance and remote compressor testing utilizing cellular or cloud-based data.
- Services are available as stand-alone, "as needed" basis or as an add-on to an on-going PM program.
- *Currently in beta testing (available in 2020)*



## TurboServ REBUILDING PERFORMANCE

### Field Service

- A specialized suite of field services dedicated to instrument calibration, installation, tuning, startup and training for centrifugal compressor control systems.
- Services performed by experienced field service technicians utilizing specialized calibration tools and methods to put compressor control systems into optimal operating condition.
- Services can be purchased as a stand-alone service or combined with a standard compressor PM, for a once per year, tune up of a compressor's instrumentation and control system.

