AMETEK®

MicroPoise®
MEASUREMENT SYSTEMS

Tire Uniformity Machine Controller Upgrade

The TQC-PC® controller maintains the same performance, reliability, hardware stability and return on investment you have come to count on from your existing TQC-86.

As a direct replacement forTQC-86 controllers, the TQC-PC® controller interfaces easily to the existing electrical panel and PLC machine controls. This upgrade provides the user with improved operations data presentation and enables communications to factory host systems.

The TQC-PC also provides:

- A Universal Customer Interface (UCI), allowing the user to implement custom features and capabilities without special modifications.
- An optional electrical panel and push button station is available for those machines not equipped with Akron Standard controllers.
- Industrial Computer with Windows XP Operating Platform, enabling better data presentation and factory communications.
- Industrial Enclosure with side mounted air conditioner.

An architectural overview follows, highlighting additional features of the TQC-PC controller.

TQC-PC®

Tire Uniformity Machine Controller Upgrade

Architecture Overview

The TQC-PC® controller includes the following components and features:

- Industrial computer running Windows XP operating system, with keyboard and mouse device.
- Uniformity Control Processor (UCP) - Real time executive for tire uniformity measurement and process control.
- Rack Function Processors (RFP) - Real time low level uniformity measurement and process control.
  - 4 Standard
  - 1 Grinder
- Commercial Interface - Flexible interface to PLC or Remote I/O devices.
- Opto 22 Snap I/O for interface to hardware PLC - Digital Interface to PLC.
- Machine Control Hardware PLC.
- Industry proven data acquisition - Instrumentation signal and conditioning hardware.
- Industry proven control hardware
- Industrial enclosure with side mounted air conditioner.
- Flat screen color monitor.
- Signal Conditioning, with measurements as follows:
  - Radial Force – Analog Input.
  - Lateral Force – Analog Input.
  - Radius – Analog Input.
  - Carriage Drive – Analog Input.
- 1024 Pulse Spindle Encoder Kit.
- Documentation for installation, setup, calibration and maintenance.

The new computer based controller running Windows XP provides for more flexibility, expandability, additional memory, and the ability to connect to networks. The PC is designed with an industrial motherboard. This platform provides more stability than a commercial grade computer. The PC includes a utility that will back up the tire type database and the registry. This utility can be configured to back up other files located on the system.

The architecture is designed to support and interface with many Machine Control Hardware PLC's such Allen Bradley, Siemens and other brands. Please consult with your local sales representative for details.

Operational Features

The TQC-PC® controller provides several standard functions for the Tire Uniformity machine as follows:

As directed by the PLC, the TQC-PC® will control:

- Flex Positioning of grinders, probes, and chuck width.
- Automatic inflation to computer controlled setpoints.
- Automatic loading to computer controlled setpoints.
- Automatic advance and retract of probes.
- Customer-programmed testing of the tire includes:
  - Measure forces and runouts.
  - Compute peak-to-peak and harmonic magnitudes.
  - Grade.
  - Harmonic Mark.
  - Grade Mark.
  - Sort.
  - Display, Output for printing, Output for Host.

To support the user, the TQC-PC® includes the ability to:

- Setup (Configure)
- Edit
- Calibrate
- Maintain and Diagnose.

Functions supported also include:

- Automatic Shoulder and Center grinding.
- Hydraulic SAM and Runout function.
- Automatic Adjustable Width Chuck (AAWC).
- Computer controlled inflation.
- Computer controlled tire load.
- Geometry measurement
  - o TGIS-SL® with AkroSCAN
  - o TGIS- FPL

Tire Uniformity Machine Controller Upgrade

Architecture Functional Information

Industrial computer running Windows XP
The TQC-PC® software runs as a Windows XP multithreaded event driven process that performs the following functions:

- The User interface provides:
  - Machine Setup - Establishes process set points for automatic operation.
  - Machine Edits - Editing of machine measurement and process parameters that are not tire specific.
  - Machine Calibration - User prompted procedures for calibration of instrumentation and measurement devices.
  - TIGRE (Tire Grading Executive) - Basic program that establishes what tire uniformity measurements will be acquired and how they will be communicated to the outside world.
  - Tire Type Editor - Editing and storing of tire specific parameters important for tire uniformity measurement.
  - Viewing of machine diagnostic information.
  - Display of real time UCP / RFP process states.

- Plant Network Communications, RS232, Ethernet.
- Network Printing.
- Database Support.
- Recorder outputs.

Universal Customer Interface

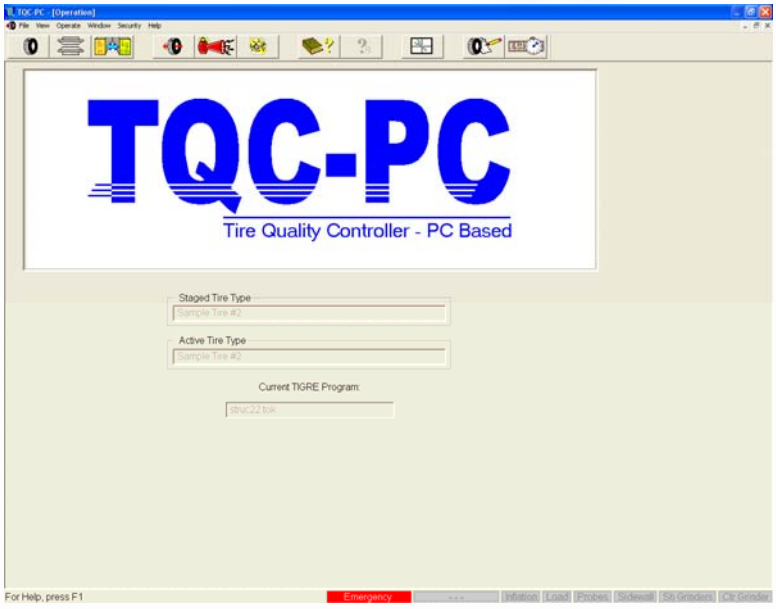
A Universal Customer Interface is available for the TQC-PC®. This UCI provides an application programming interface (API) to the controller. This API enables the user to implement internally designed custom features and capabilities without special controller software modifications.

Uniformity Control Processor (UCP) and Rack Function Processors (RFP)

- Handle real time processes involved in uniformity measurement and process control.
- Utilizes Intel technology.
- Processes are executed as real time interrupt driven state machine procedures on UCP and all RFP's.
- Manages all data acquisition processes.
- Responsible for tire uniformity process control loops such as inflation control, spindle speed control, load wheel positioning control, grinder control, probe control, and more.

Commercial Interface

The commercial interface connects the TQC-PC® application to the Machine Control Hardware PLC through the Opto 22 Snap I/O. This interface connects to a large array of PLC's and remote I/O devices and effectively decouples the PLC type from the TQC-PC® applications. This enables the TQC-PC® to a used with a broad range of PLC's and remote I/O without the need for software change. This interface is Ethernet to the Snap I/O which interfaces to the hardware PLC.



Globally Positioned to Serve You

Micro-Poise Measurement Systems LLC serves the tire and automotive industry all over the world.

- Micro-Poise Headquarters
- Corporate Offices, Stocking Locations and Services
- Sales Representatives

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