
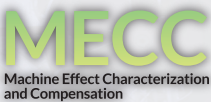


Software like WVC, MECC, Air Learn, TDAQ, and improved motion algorithms allow a testing machine to test, mark, and sort more than 3 tires every minute.



**WVC**  
Waveform Validation  
& Correction

Waveform Validation & Correction provides the most accurate and consistent measurement possible, with industry-leading speed and measurement repeatability sigma.



**MECC**  
Machine Effect Characterization  
and Compensation

MECC is a patented concept for characterization of mechanical deficiencies and then compensation to mitigate the effect they have on the measurements.



**TAIR**  
Tire Automatic  
Inflation Regulator

TAIR quickly stabilizes tire inflation to the desired set point, delivering a faster load cycle, better measurement, and a greatly reduced cycle time.



**TDAQ**  
TIRE DATA ACQUISITION

Simplified wiring, combined with data acquisition located closer to the source, produce stronger and cleaner signals to bring about a substantial increase in resolution.




## Improved Capability

- › In addition to WVC and MECC software, the TTOC6 is equipped with Air Learn software that monitors the machine's air regulation performance statistics to quickly stabilize tire inflation to the desired set point.
- › Integrated with our Tire Data Acquisition (TDAQ) product to substantially increase measurement resolution and improve noise immunity.
- › Tire motion algorithms, along with WVC and TDAQ, allow a testing machine to test, mark, and sort more than 3 tires every minute, while maintaining industry-required measurement repeatability.



## Adapts to Your Control Methodology

- › Variety of customizable architectural implementations
- › Choose your PLC (Allen-Bradley/Rockwell, Siemens, etc.)
- › Distributed or rack I/O
- › Same full-function TTOC6 on new CX111 or machine upgrade



## Simplified Maintenance

- › Fewer electronic components, fewer points of failure, better reliability
- › Online help with video for tooling changes
- › Web-based message logs, servo setups, and machine configuration
- › "Instant Message" support at machine any time, all the time



## Fits Your Business

- › Modular design for scalability enables phased approach to tire testing improvements
- › Compact flash drive allows standalone operation and no data loss if plant network fails
- › Built-in and optional data acquisition and integration help you achieve shop floor and product traceability requirements

TTOC6 features an easy-to-use, graphics-based UI

**MACHINE # 1** ID: demo  
User: 4:53:16 PM Mar 29, 2021  
Recipe: dueler20.0  
Machine Sequence Waiting For  
MAJOR FAULT  
Status: MAJOR FAULT: TTOC initialization.

**Bits Forced:** 0 / 1/12 B30[6].5

LI	2BC_NEXT	GI	ALLPROB_TB	LI	BLRO_LDED
LI	2BC_READ	LO	ALUMIWHEEL	LI	BLRO_OUT
LO	2BC_STEP1	LI	ARG_2SPT	GI	BLRO_RET
LO	2BC_STEP2	LI	ARG_2SPT2	LI	BLRO_RETR
GI	ABORT_TSYS	LI	ARG_ATSPT	PI	BOTGRDSTPD
LI	ABRT_RTRY	LI	ARG_ATSPT2	PI	BOTG_OTLS
PO	AB_DRV_CCW	GI	ARG_CHAR	LI	BOTG_RETR
PO	AB_DRV_CW	GI	ARG_JOG_D	LI	BOTG_SKIM
PI	ACCLWS_UNL	GI	ARG_JOG_HL	GI	BOTVHSMADV
PO	ACCOPLS_LT	GI	ARG_JOG_U	GI	BOTVHSMRET
PI	ACCOPLS_UNL	LI	ASM_MARKER	PI	BRROFWOTLS
LI	ACHK_2SV0	LI	AUTO_CYCLE	PI	BRRORVOTLS
LI	ACHK_ATSP	LI	AUTO_GATES	PI	BSEPFWOTLS
LO	ACHK_CDN	LI	AUTO_INFL	PI	BSEPRVOTLS
LO	ACHK_CUP	LI	AUTO_MAN	LI	BSEP_2HOME
LI	ACHK_HOME	LI	AUTO_SETUP	LI	BSEP_2SPT
LO	ACHK_JCDN	LI	BAR1_LOUT	LI	BSEP_HOME
LO	ACHK_JCUP	LI	BAR2_LOUT	LI	BSEP_SPT
PO	ACTV_LITE	LI	BAR3_LOUT	PI	BTLTFWOTLS
PO	ACTV_PINS	LI	BAR4_LOUT	PI	BTLTRVOTLS
PO	AC_ENABLE	PO	BCR_CONV	LI	BTLT_2HOME
LI	ADJ_CHUCK	LI	BCR_DISBLD	LI	BTLT_2SPT
PO	AIRJGMINUS	PO	BCR_ENABLE	LI	BTLT_2SPT2
PO	AIRJOGPLUS	PO	BDSPSI_SOL	LI	BTLT_HOME
PO	AIRPRG_SOL	PI	BGRD_FAULT	LI	BTLT_SPT
LI	AIR_PRES2	PI	BGRD_MTR0L	LI	BTLT_SPT2
LI	AIR_PURGE	GI	BHSMARK	GI	BYPASSTIRE
LI	AIR_STABLE	GI	BHSMTILT	LI	BYTEWISE
PO	ALARM_LT	GI	BLRO_ADV	GI	CALC_DATA
GI	ALARM_TSYS	LI	BLRO_IN	LI	CALIB_OK

**Chat Panel** SHOW

**Main**

	SETPT	ACTUAL
Inflation	35.000	-0.357
RPM	60.000	0.000
Segment	25	0
Encoder Position		0
Encoder Degrees		0.0
Lower Rim Encoder		0
Lower Rim Encoder Degrees		0.0
Rim 1 Diameter		20.0
Rim 1 Width		6.50
Rim 2 Diameter		0.0
Rim 2 Width		0.00
Rim Type		

**Control Panel:** MAJOR FAULT, MANUAL MODE, FORCE ON, JOG ON, NO FORCE, JOG OFF, FORCE OFF, FORCE OFF PLC BITS, REMOVE FORCES, SORT, GO BACK, SEARCH, TIRE ENTRY, TIRE EXIT, CALCULATE DATA, CHUCK IS DOWN, CHUCK SEQUENCE, RETRACTING, LOADWHEEL, INACTIVE, STRIP, INACTIVE, TIRE EXIT, STOPPED, SPINDLE ROTATE, CLOCKWISE, SPINDLE DIRECTION.

## Diagnostics


Extensive Diagnostics allow maintenance to control various PLC bits.

Customize a "favorites" screen, mixing analog and PLC I/O to display status for any machine function. The search function also makes it easy to find I/O of interest.

The data window contains current settings and actual values related to a specific area of control.

 **TTOC6 features an easy-to-use, graphics-based UI**



**MACHINE # 1** ID: demo  
User:  4:57:05 PM Mar 29, 2021  
Recipe: dueler20.0  
Machine Sequence Waiting For  
**MAJOR FAULT**  
Status: MAJOR FAULT: TTOC initialization.

**Alarm Message 568**

**MAJOR FAULT: TTOC initialization.**  
This message is generated when the TTOC logic sequencer program first starts, such as after a reboot.

**Chat Panel** SHOW

**Main**

	SETPT	ACTUAL
Inflation	35.000	-0.357
RPM	60.000	0.000
Segment	25	0
Encoder Position		0
Encoder Degrees		0.0
Lower Rim Encoder		0
Lower Rim Encoder Degrees		0.0
Rim 1		
Diameter		20.0
Width		6.50
Rim 2		
Diameter		0.0
Width		0.00
Rim Type		

**Operation Modes**

BYPASS SORTING	UPSTREAM DISABLE	RESET TRACKING	AIR SERVO CHARACTERIZE	RESET	CONTROL MODE	CYCLE
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**Calibration**

LUBER CYCLE	MARKER SEQUENCE	SAVE WAVEFORMS	CHUCK IS DOWN	CHUCK SEQUENCE	INFLATE	SPINDLE ROTATE
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**Dagnostic**

MIXED MODE	LOADWHEEL	STRIP	SPINDLE DIRECTION
TIRE ENTRY	TIRE EXIT	CALCULATE DATA	

**View Log (Leave Help)**

## Customized Online Help

We customize our help to match our customized test equipment. It includes photos and video to explain operational procedures and troubleshooting methods.

Users can select topics for general help, while calibration help appears automatically to guide users through these specialized tasks.

For help with responding to the current machine problem, just touch the alarm message in the status window.

TTOC6 features an easy-to-use, graphics-based UI

The screenshot displays the TTOC6 machine control interface. At the top left, it shows machine information: MACHINE # 1, ID: demo, User: P, and a timestamp of 4:51:55 PM on Mar 29, 2021. A status message indicates a 'MAJOR FAULT: TT0C initialization.' The interface includes a central 3D visualization of the machine. To the right, a 'Chat Panel' shows a message from Dan: '[09/02-18:52]: Go to the PLC diagnostic screen.' Below the chat panel is a 'Main' data table:

	SETPT	ACTUAL
Inflation	35.000	-0.356
RPM	60.000	0.000
Segment	25	0
Encoder Position		0
Encoder Degrees		0.0
Lower Rim Encoder		0
Lower Rim Encoder Degrees		0.0
Rim 1		
Diameter		20.0
Width		6.50
Rim 2		
Diameter		0.0
Width		0.00
Rim Type		

The bottom section of the interface contains 'Operation Modes' and 'Calibration' buttons, including options like 'BYPASS SORTING', 'UPSTREAM DISABLE', 'RESET TRACKING', 'AIR SERVO CHARACTERIZE', 'LUBER CYCLE', 'MARKER SEQUENCE', 'SAVE WAVEFORMS', 'CHUCK IS DOWN', 'CHUCK SEQUENCE', 'INFLATE', 'SPINDLE ROTATE', 'MIXED MODE', 'LOADWHEEL', 'STRIP', 'SPINDLE DIRECTION', 'TIRE ENTRY', 'TIRE EXIT', and 'CALCULATE DATA'.

## Machine Visualization and Remote, Real-time Support

The machine visualization screen displays status. The thumbnail version of the screen includes cycle status indicators, while the full-size version includes tracking data and fault details. This information is also instantly available for plant supervisors and engineers -- from their desktop computer!

Real-time support is only a touch away in the Chat Panel. The Chat Panel blinks to alert machine personnel to incoming messages. Once expanded, this instant messaging application allows direct communication with Poling Group engineers to solve problems -- without waiting for support to arrive on-site.

 **TTOC6 features an easy-to-use, graphics-based UI**



The screenshot displays the TTOC6 software interface. On the left is a vertical navigation menu with buttons for Plotting, UISGTerm, Main Menu, Remote PC, Messages, Logic Table, and TAIR. The top left corner shows machine information: MACHINE # 19, ID: a5fv19, User: setup, and a timestamp of 16:09:58 on Mar 29, 2021. The main area is a large plot showing multiple data series (red, orange, green) over time. Below the plot are several smaller waveform displays. The bottom left contains a data table with parameters like Air Pressure, Radial Load, Lateral Load, and Reg Air, each with Y and V values and an EDIT button. The bottom right features a control panel with status indicators (NO FAULTS, AUTO MODE, STARTED) and buttons for RESET, CHUCK SEQUENCE, LOADWHEEL, TIRE ENTRY, and others. A speed control section shows a value of 1200 with zoom and scroll controls.

## Integrated Plotting Software

Diagnose machine problems with ease. The plotting software provides engineers quick and easy access to watch any of the machine's PLC status bits, I/O points, or analog channels in real-time. Plots can be started manually or set to trigger based on machine events, such as capturing the data of a full tire sequence from chuck-up to chuck-down.

Three operation modes are available: Standard plot mode records a single revolution of tire data. Oscilloscope mode records each tire revolution on top of the previous, allowing engineers to view differences in machine behavior between each revolution. Last, chart recorder mode stores up to 5 minutes of plot data, which can either be printed directly to PDF or saved to disk as a CSV file for later review.

TTOC6 features an easy-to-use, graphics-based UI

**MACHINE # 19** ID: a5fv19  
 User: setup  
 16:11:15  
 Mar 29, 2021  
 Recipe  
 751 627 024  
 Machine Sequence Waiting For  
 MANUAL MODE  
 Status  
 EVENT: Machine switched into MAINTENANCE MODE!

**MIXED MODE**

**Chat Panel** SHOW

**Part Name:** Lower Spindle Bearings  
**Last Serviced:** Feb 15, 2021 00:10:17  
**Next Service Due:** Aug 14, 2021 01:10:17  
**Serviced By:** setup

**SECTION C-C**  
 FIGURE 5.1

	SETPT	ACTUAL
Inflation RPM	30.000	30.014
	60.000	60.060
Segment Encoder Position	35	43
		3462
Rim 1 Diameter		19.0
		3.00
Rim 2 Diameter		21.0
		6.00
Rim Type		stan

**Operation Modes**  
 OFF LUBER CYCLE OFF UPSTREAM DISABLE OFF RESET TRACKING OFF BYPASS TIRE NO FAULTS RESET MANUAL MODE CONTROL MODE STOPPED CYCLE

**Calibration**  
 ACKNOWLEDGE GRIND SETUP CHUCK IS UP CHUCK SEQUENCE INFLATED INFLATE SPINNING CW SPINDLE ROTATE

**Diagnostic**  
 RETRACTED LOADWHEEL INACTIVE STRIP SPINDLE DIRECTION

**More**  
 INACTIVE TIRE ENTRY INACTIVE TIRE EXIT CALCULATE DATA

## Maintenance Reminders

Since routine maintenance and proper machine greasing are essential in keeping a tire testing machine running at peak performance, the TTOC6 provides a centralized system for machine maintenance tracking. As maintenance checkpoints are reached, reminder indicators are visible until the maintenance process has been addressed.

Photos / schematics are displayed to aid in each part's maintenance routine. All maintenance activity is logged by date, personnel, and machine part. Having this data available allows all plant personnel and management to stay informed about the machine's maintenance status.