

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

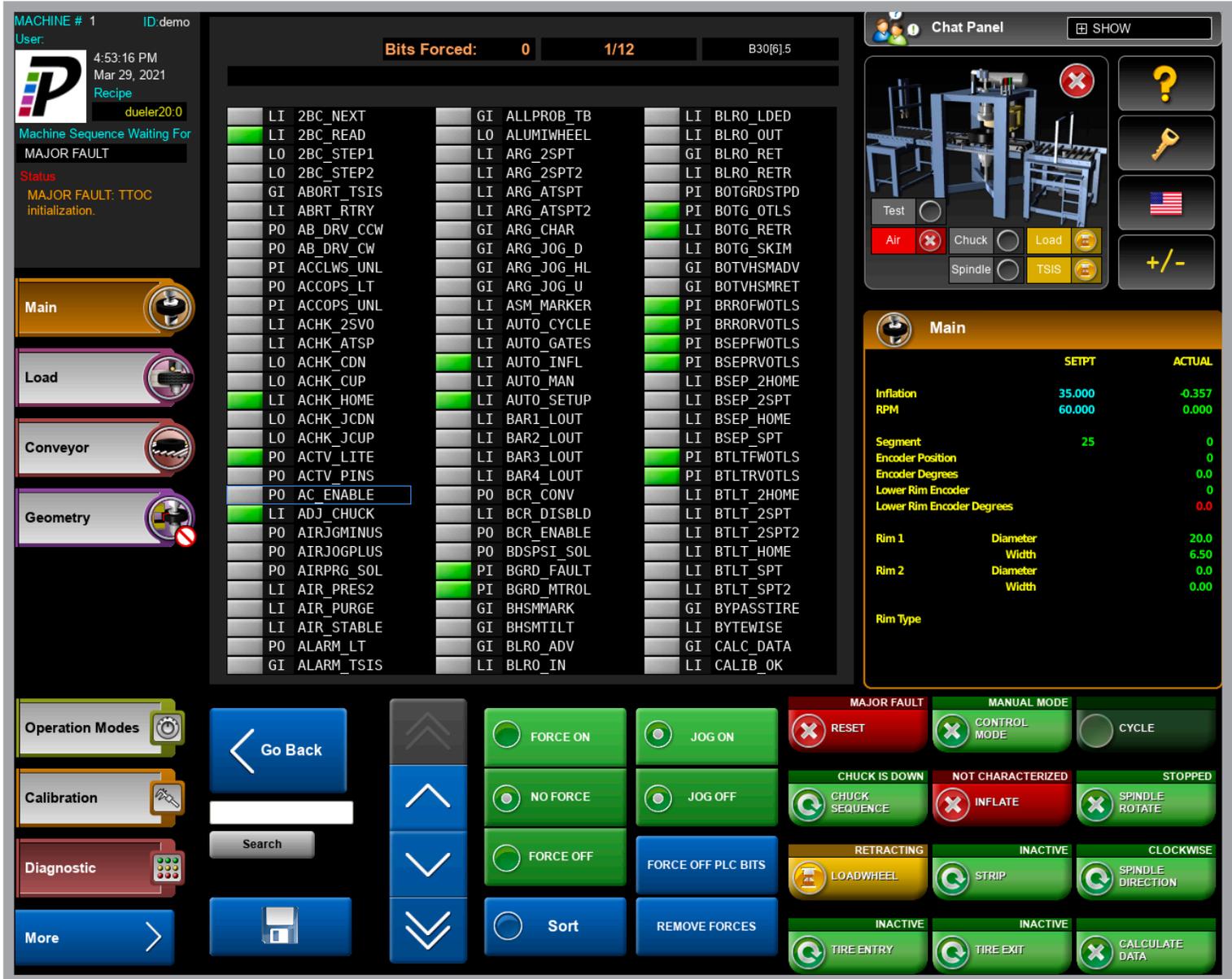
Simplified Maintenance

- › 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_TSIS	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	ACCOPS_LT	GI	ARG_JOG_U	GI	BOTVHSMRET
PI	ACCOPS_UNL	LI	ASM_MARKER	PI	BRROFWOTLS
LI	ACHK_2SVO	LI	AUTO_CYCLE	PI	BRORVOTLS
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_MTROL	LI	BTLT_SPT2
LI	AIR_PURGE	GI	BHSMARK	GI	BYPASSTIRE
LI	AIR_STABLE	GI	BHSMILT	LI	BYTEWISE
PO	ALARM_LT	GI	BLRO_ADV	GI	CALC_DATA
GI	ALARM_TSIS	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		

Operation Modes
Calibration
Diagnostic
More

Go Back **Search** **Sort** **REMOVE FORCES**

FORCE ON **JOG ON** **RESET** **CONTROL MODE** **CYCLE**

NO FORCE **JOG OFF** **CHUCK IS DOWN** **NOT CHARACTERIZED** **STOPPED**

FORCE OFF **FORCE OFF PLC BITS** **CHUCK SEQUENCE** **INFLATE** **SPINDLE ROTATE**

Sort **REMOVE FORCES** **RETRACTING** **INACTIVE** **CLOCKWISE**

LOADWHEEL **STRIP** **SPINDLE DIRECTION**

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

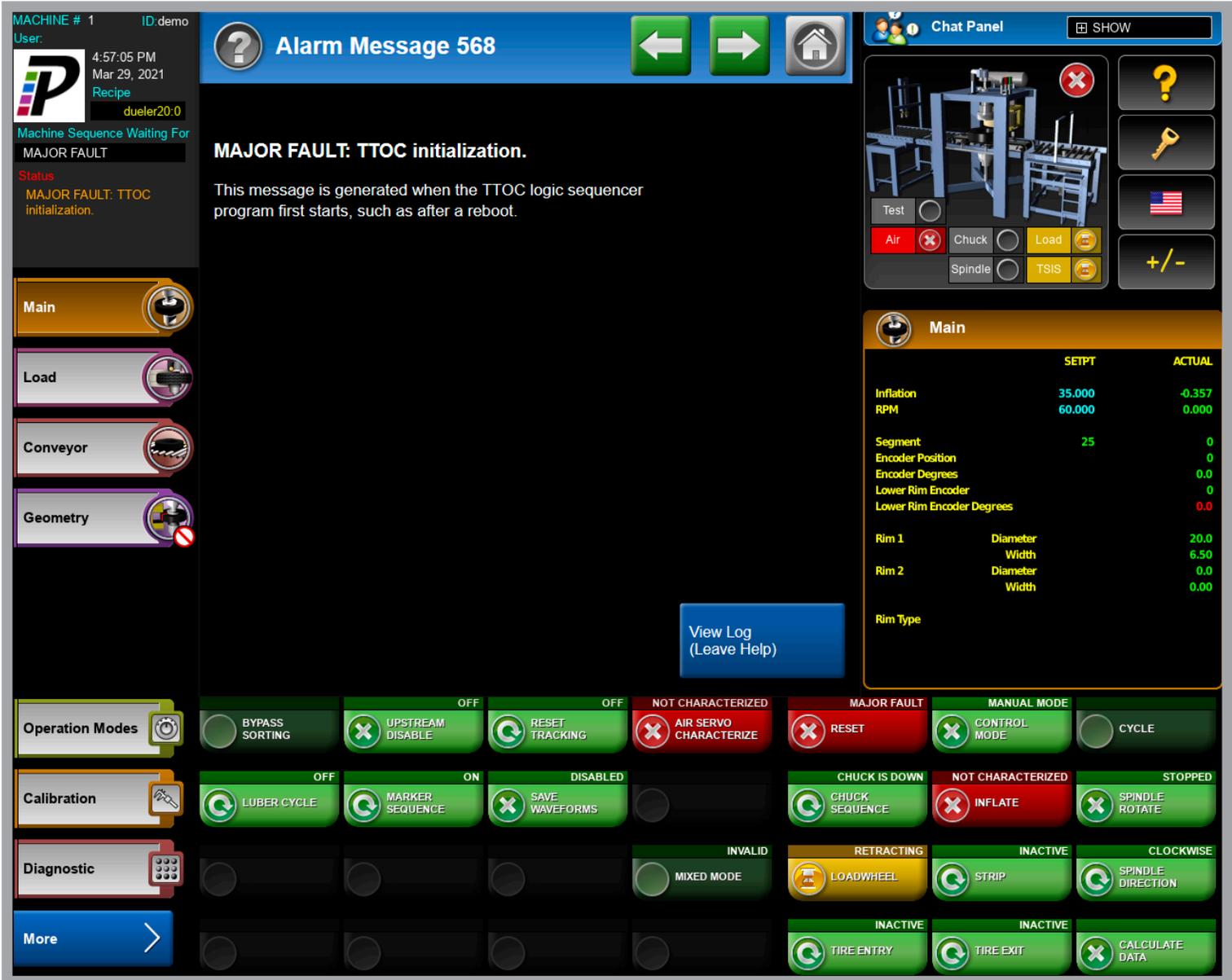
Diagnostics

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
Rim 1 Width		6.50
Rim 2 Diameter		0.0
Rim 2 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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Diagnostic

MIXED MODE	LOADWHEEL	STRIP	SPINDLE DIRECTION	TIRE ENTRY	TIRE EXIT	CALCULATE DATA
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View Log (Leave Help)

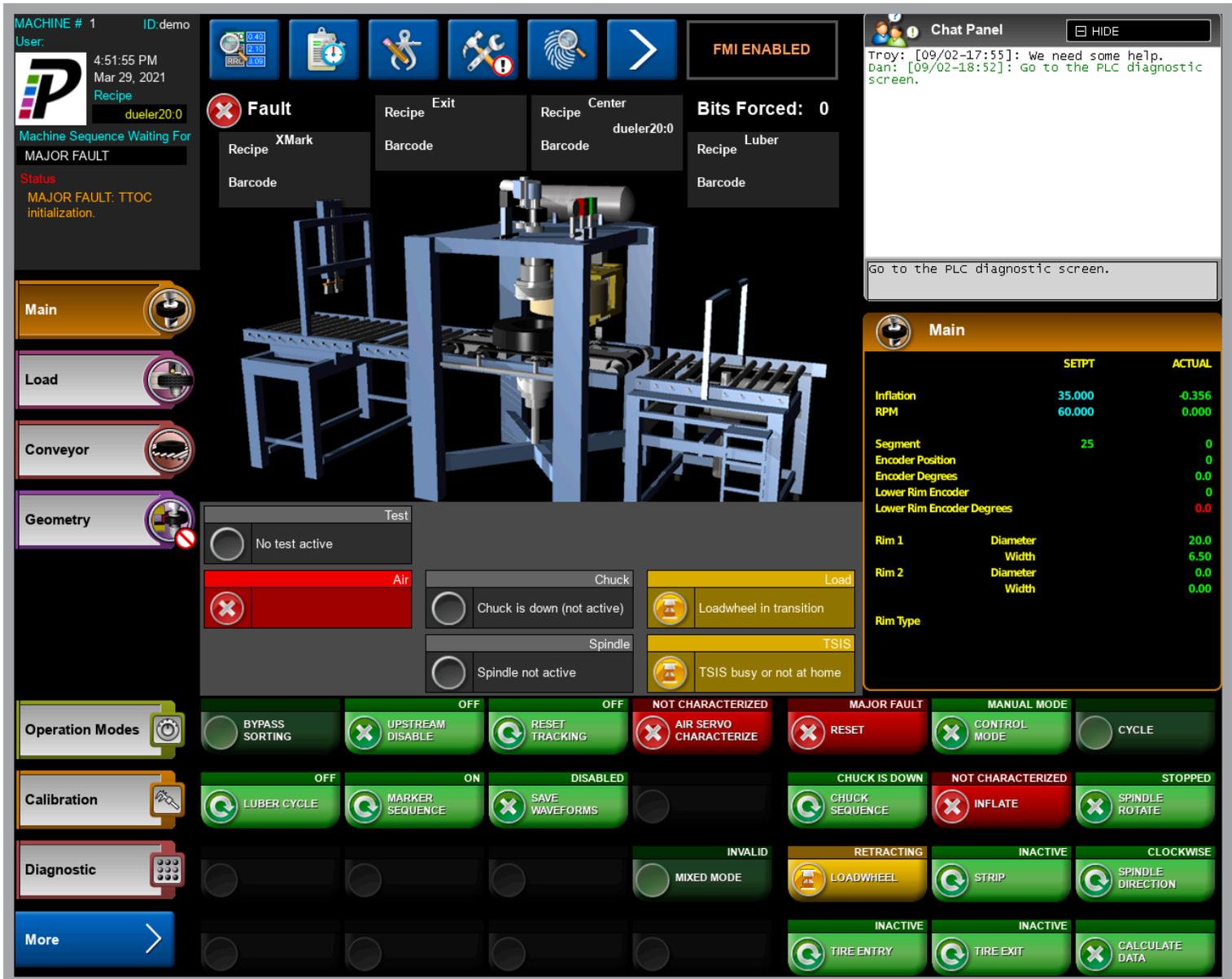
Customized Online Help

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 # 1' and 'ID: demo'. The main area features a 3D visualization of the machine. To the right, there is a 'Chat Panel' with a message from Troy: '[09/02-17:55]: We need some help. Dan: [09/02-18:52]: Go to the PLC diagnostic screen.' Below the chat panel is a 'Main' status 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		

At the bottom, there are several rows of control buttons for 'Operation Modes', 'Calibration', and 'Diagnostic'. The 'Operation Modes' row includes buttons for 'BYPASS SORTING', 'UPSTREAM DISABLE', 'RESET TRACKING', 'AIR SERVO CHARACTERIZE', 'RESET', 'CONTROL MODE', and 'CYCLE'. The 'Calibration' row includes 'LUBER CYCLE', 'MARKER SEQUENCE', 'SAVE WAVEFORMS', 'CHUCK IS DOWN', 'CHUCK SEQUENCE', 'INFLATE', and 'SPINDLE ROTATE'. The 'Diagnostic' row includes '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**



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.

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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

Main
 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 60.000	30.014 60.060
Segment Encoder Position	35	43 3462
Rim 1	Diameter Width	19.0 3.00
Rim 2	Diameter Width	21.0 6.00
Rim Type		stan

Operation Modes
 LUBER CYCLE (OFF) UPSTREAM DISABLE (OFF) RESET TRACKING (OFF) BYPASS TIRE (OFF)
 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
 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.