PDF Version

the Poling Group

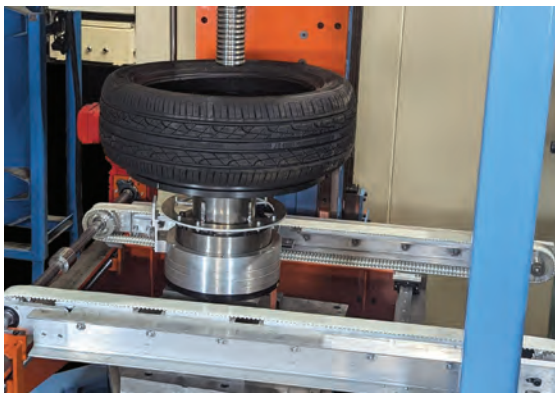
asm DIVISION | Firwood DIVISION | asf DIVISION | CTI DIVISION | HASBACH DIVISION

We Know Tire & Rubber.

- Millroom & Slab Processing
- Laboratory Tire Testing
- Controls & Data
- Final Finish Tire Testing







Products & Services Overview

We Know Tire & Rubber.

Poling Group machinery and computer technology can be found in 25% of the 455 tire factories worldwide, from the factory floor up into their data centers.

PolingGroup.com Sales@PolingGroup.com +1 330.753.1077

The Poling Group: Five Divisions-One Goal

David Poling, Jr
President / COO
of the Poling Group

One Goal: We are committed to remaining a globally trusted source for tire-testing equipment and software, factory data management, rubber processing equipment, and engineering solutions.

With over 200 years of combined experience, the five companies acquired by David Poling, Sr.—now Poling Group divisions—strategically complement each other to provide customers with unparalleled expertise in all facets of tire testing and rubber processing.

The Poling Group name has become known worldwide for quality and innovation, with its five divisions currently holding over 33 patents for various rubber-related equipment and software inventions.

Our focus moving forward is on integrating data analytics, AI, and robotics to develop the next generation of smart tire manufacturing solutions.

From laboratory tire testing—including rolling resistance, endurance, durability, and force and moment—to final finish uniformity and sidewall testing, and encompassing all the controls, data management, material handling, and quality assurance in between, we've got you covered, trained, and fully supported.

ASM Division
Founded : 1978

The Poling Group's ASM Division specializes in Final Finish Tire Processing, which includes Tire Uniformity and Geometry Testing, Grinding, Flash Removal, Balance Testing, and Machine Remanufacturing & Retrofit Upgrades.

Firwood Division
Founded : 1940

The Poling Group's Firwood Division manufactures Tire Sidewall Painters and Buffers, in addition to Post Cure Inflators.

ASF Division
Founded : 1946

The Poling Group's ASF Division focuses on Rubber Processing, specializing in cold slab stocking cutting solutions, mill blenders, rubber calendering, and batch off equipment.

CTI Division
Founded : 1978

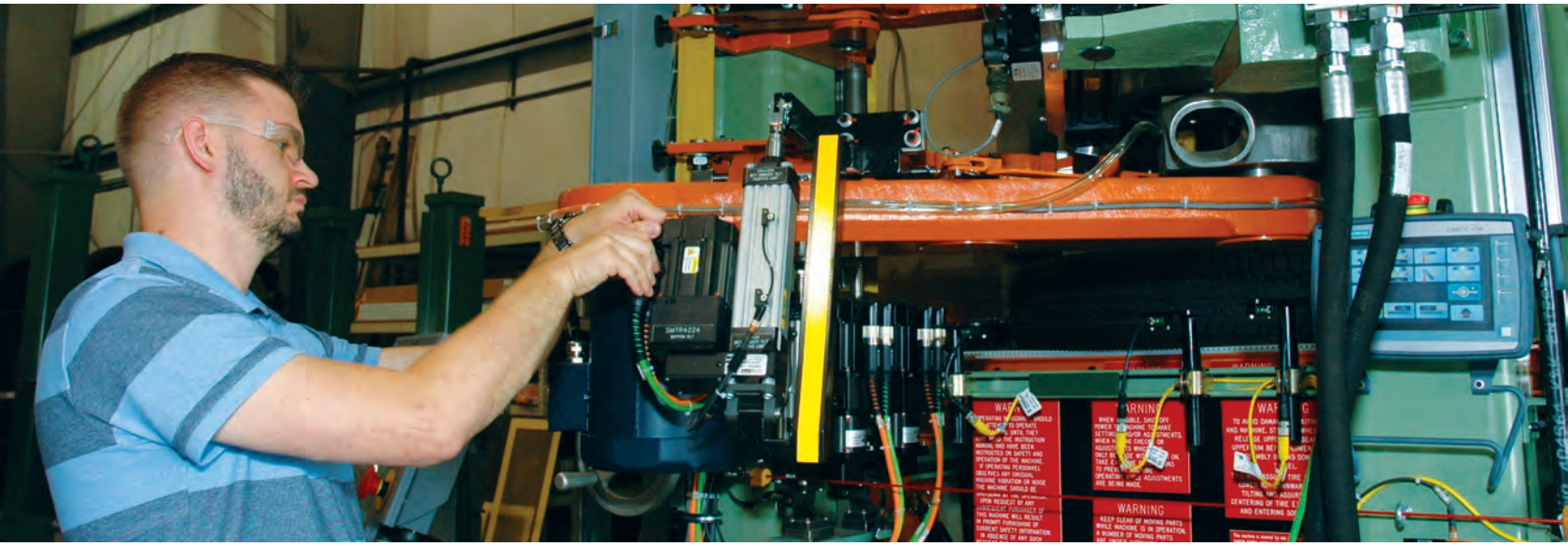
The Poling Group's CTI Division provides innovative software and electrical controls to the tire industry. Our TTOC TUO machine controller is second to none and includes our TDAQ and TSAS products. CTI Division also provides enterprise-level software solutions for Final Finish (FFH) and the entire tire factory (TFFIS), including advanced controls for material handling.

Hasbach Division
Founded : 1898

The Poling Group's Hasbach Division specializes in Laboratory Tire Testing, which includes testing for Endurance, Rolling Resistance, Tire Noise, Force & Moment, and High Speed Uniformity.

THE POLING GROUP KNOWS

Quality. Service. Customization.



We provide remote online support on a 24/7/365 basis

When a machine or computer system is down and adversely affecting your factory's production, what do you do?

If you made a smart decision and purchased a Poling Group machine or computer system, you simply call us - any time of day, from any time zone - and speak with an engineer (not a chat-bot or entry level help desk technician).

Through a secure VPN connection, our engineer can remotely:

- View and analyze machine data, current settings, component health, drive status, and alarms.
- Run diagnostics to evaluate machine fault conditions.
- Perform database and other routine system maintenance.
- Instant message with factory engineering or maintenance personnel at the machine to collaborate, diagnose, and solve problems
- Download and install software updates, then monitor subsequent machine or computer system performance.

Tire factories run 24/7, and a large portion of lost production can be remediated through the off-hours support the Poling Group provides for lab and production tire testing machines, material handling systems, and other factory computer systems.

In addition to our unrivaled remote support, the Poling Group offers customized on-site support:

- Installation of individual machines, upgrade components, and computer systems
- Startup and qualification of equipment to meet factory acceptance
- Troubleshooting of machine production to determine and implement desired modifications
- Train plant personnel in preventive maintenance, routine troubleshooting, and major machine/component repairs
- Machine calibration and alignments
- Rim inspection and testing
- Machine relocation

Featured Products

DB111

Dynamic Balancing Machine

The Poling Group Dynamic Balance Testing Machine has the capacity to balance test all tires processed by the CX111 TU.

Since early 2022, Poling Group has undertaken a complete redesign of the DB111 to deliver a next-generation balance tester that combines exceptional accuracy with simplified maintenance. Engineered with an industrial-grade framework and equipped exclusively with the latest components, the DB111 is built for long-term performance in demanding production environments.

Its flexible design enables precise dynamic imbalance measurement across the full range of tires tested by the Poling Group CX111, as well as most competitive tire uniformity (TU) machines, ensuring seamless compatibility within existing operations.

When positioned downstream of a CX111, the DB111 creates a fully integrated, modular solution for tire testing, grading, marking, and sorting. Together, the CX111 and DB111 support comprehensive evaluation of uniformity, geometry, and balance within an automated production line—maximizing throughput, consistency, and operational efficiency. Integrating FFH software (pg. 25) enables centralized recipe management and automatic collection of results from all final finish machines.

The DB111 shares over 90% of its electrical components with our CX111 — including the TTOC6 controller, providing commonality of spare parts, maintenance and operator training!

Powered By TTOC6 So Much More Than Just a Controller

DB111 Specs

Outside Diameter	Min.	22 in	558 mm	Inflation Pressure	Max.	85 psi	586 kPa
	Max.	42 in	1067 mm				
Rim Width	Min.	3 in		Tire Weight	Max.	150 lb	68 kg
	Max.	17.5 in					
Tread Width	Max.	17.5 in	445 mm	Rolling Radius	Min.	10 in	254 mm
Cross Section Width	Max.	18.5 in	470 mm	Applied Load	Max.	4,000 lbs	1,780 daN
Bead Diameter	Min.	14 in	356 mm	Spindle Speed	Max.	120 RPM	
	Max.	30 in	762 mm				

Geometry Laser Verification Wheel

The Poling Group's new Tire Geometry Testing Verification Wheel provides the quickest way possible to verify your LRO/RRO geometry testing lasers. The verification wheel chucks directly on your testing machine's current rims (up to 19") and therefore requires no machine requalifying after verification.

Lateral Runout (LRO) : Both sidewall faces consist of four bulge/depression plates of varying heights. A ring on the outer 1" has a height variant of .15" for precision verification.

Radial Runout (RRO) : Three bands on the 'tread' side of the wheel each have a different height variant to verify RRO laser measurements.

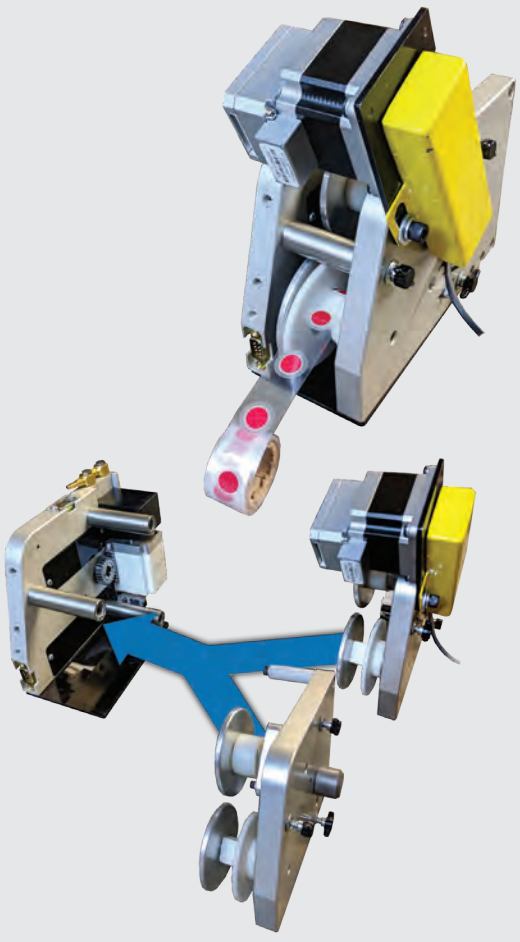
- Bulge/depression inserts can be custom made to customer requirements, with typical height variants of 0.020" to 0.100"
- Verification wheel is fully supported by TSAS Software
- ISO 17025 certified by external source at the request of customers. ISO Certificate provided GVW

Interchangeable Decal/Hot Stamp Marker

The Poling Group offers a flexible marking option for our Hot Stamp (Hot Foil) marking system. Using the same controls and mounting base, the Hot Stamp marking head can be easily exchanged for a clear tape (LTA) decal marker for OE tires.

This interchangeable solution saves time and reduces costs while providing added flexibility for both internal and external marking on Poling Group uniformity machines.

- Interchangeable Hot Stamp (Hot Foil) and Clear Tape Decal heads use the same mounting base
- Mount internally or externally to the testing machines



THE POLING GROUP KNOWS

Controls & Data

TTOC6

More than just a controller.

Standard on new test machines and available as an upgrade, **TTOC6 + TDAQ** greatly improves the speed and reliability of tire test data acquisition

Long trusted for Uniformity and Geometry testing, the TTOC6 controller now expands to include **Tire Imbalance and Laboratory Tire Testing**, delivering 25+ years of proven performance to the tire laboratory.

Simplified Maintenance

- Fewer electronic parts, fewer points of failure, and better reliability
- "Instant Message" support at every machine and extensive online help

Adapts to your Control Methodology

- Variety of customizable architectural implementations
- Choose your PLC
- Distributed or rack I/O

Easy to Use GUI

- Machine visualization screens convey tire position and machine status "at a glance"
- Real-time and oscilloscope plotting modes
- Real-time production and maintenance statistics display on demand
- Action Viewer tracks all configuration/calibration changes to TTOC6 by user/date/time

Improved Capability

- Air Learn software that monitors the machine's air regulation performance statistics to quickly stabilize tire inflation to the desired set point
- 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

Exclusive Software for TTOC6

With advances like Waveform Validation and Correction (WVC) and Machine Effect Characterization and Compensation (MECC), the TTOC6 Controller actually "learns" about machine and tire characteristics to deliver the fastest throughput and most accurate results available.

WVC
Waveform Validation & Correction
TTOC SOFTWARE BY CTI

Better Measurement Quality

This proprietary and industry-leading process of *waveform collection / validation / potential waveform correction* results in tires tested more accurately and with greater repeatability, within a much faster measurement cycle.

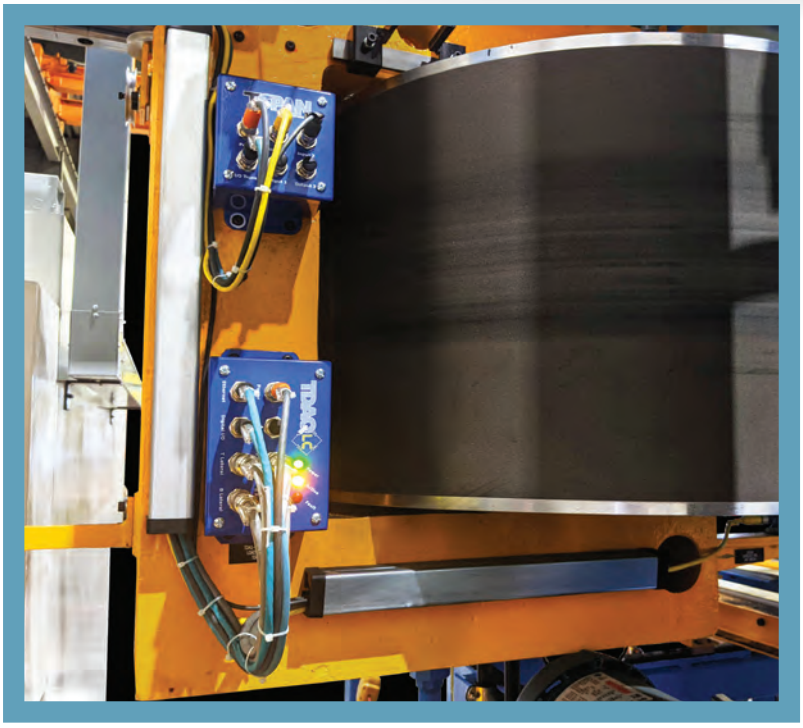
Learn more at :
PolingGroup.com/wvc_software

MECC
Machine Effect Characterization and Compensation
TTOC SOFTWARE BY CTI

Smarter Testing

This patented concept for *characterization of mechanical deficiencies and then compensation to mitigate the effect they have on the measurement* is a huge step forward in advanced tire uniformity measurement methods.

Learn more at :
PolingGroup.com/mecc_software



TDAQ
TIRE DATA ACQUISITION

Designed by the CTI Division to process the load cells, pressure transducers, and other key tire test machine sensor signals, the TDAQ and TDAQ-LC have emerged as a robust and economical way to:

- Simplify field wiring
- Locate data acquisition closer to the source
- Produce stronger and cleaner signals to bring about a substantial increase in resolution

Durability is a hallmark of the TDAQ design. Over 600 units currently provide full-time service on machines around the world.

While modern PLCs peak at about 1,000 I/O per second, TDAQ runs at a lightning-fast 16,000. But its real power comes from the ability to make split-second decisions without relying on outside commands from the machine controller.

THE POLING GROUP KNOWS

Laboratory Tire Testing

HASBACH DIVISION

The TTOC6 Controller for Laboratory Tire Testing has arrived.

For over 25 years, the industry's most trusted and widely used controller for final finish tire testing is now available for Laboratory Tire Testing Machines. Built on advanced software that powers hundreds of Uniformity and Geometry testers worldwide, the CTI Division has redesigned the TTOC6 to deliver precise, reliable measurements for laboratory tire testing applications.

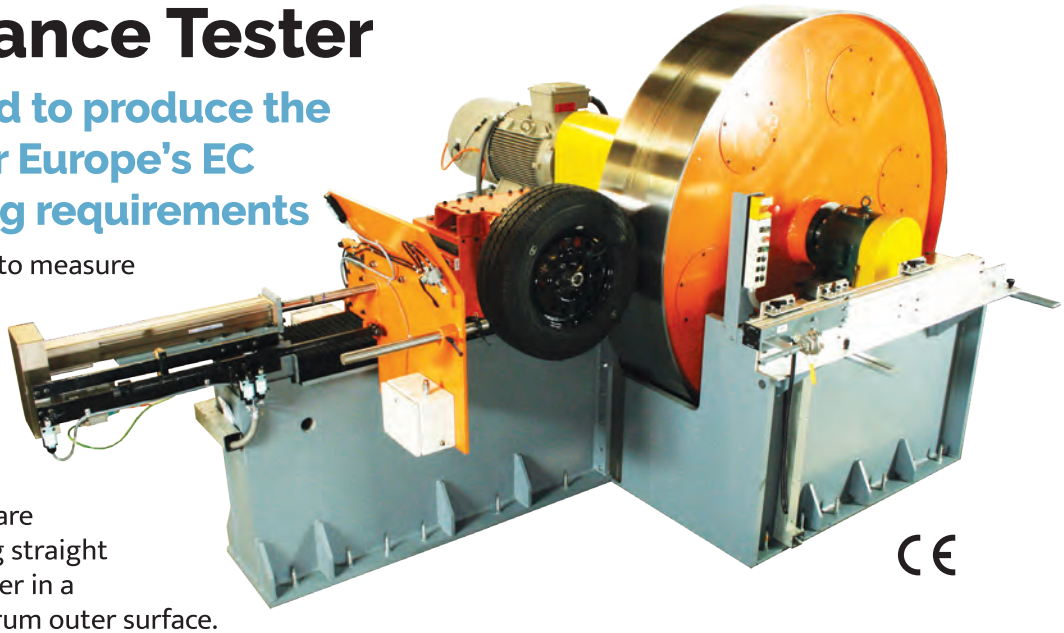
- New streamlined software, eliminating costly third-party applications
- Intuitive touchscreen graphical user interface
- Reliable Linux based software, easily accessible via web browser
- Machine Visualization window, with remote, real-time support
- Fewer electronic components, fewer points of failure, with better reliability
- Web-based recipe editor, message logs, servo setups and machine configuration
- Available on ALL new Hasbach Division laboratory tire testers, or as an upgrade to previous and third-party models

Ask Us About **Measuring Tire Growth**

All laboratory testers have optional 24/7/365 remote support, provided by the team of engineers who develop, support, install, and commission them.

Rolling Resistance Tester

Provides testing needed to produce the fuel efficiency rating for Europe's EC 1222/2009 tire labeling requirements



This machine uses the torque method to measure rolling resistance, under controlled laboratory conditions, for new motorcycle, passenger/light truck, or truck/bus pneumatic tires. It correlates measurement results to enable inter-laboratory comparisons.

Add the optional camber unit to compare rolling resistance from tires free-rolling straight ahead to a steady-state tire with camber in a position that is perpendicular to the drum outer surface.

Standard Features

- Touch screen controller and ethernet communications
- Frictionless radial load assembly platform (patented)
- A/C drive control
- Servo electro spindle for radial load
- High accuracy torque method via torque shaft
- Two plane high dynamic balanced drum
- High natural machine frequency
- No machine foundation required
- Designed for container shipment
- SAE: J2425 ISO: 28580 Rolling Resistance Standard

Testing Options

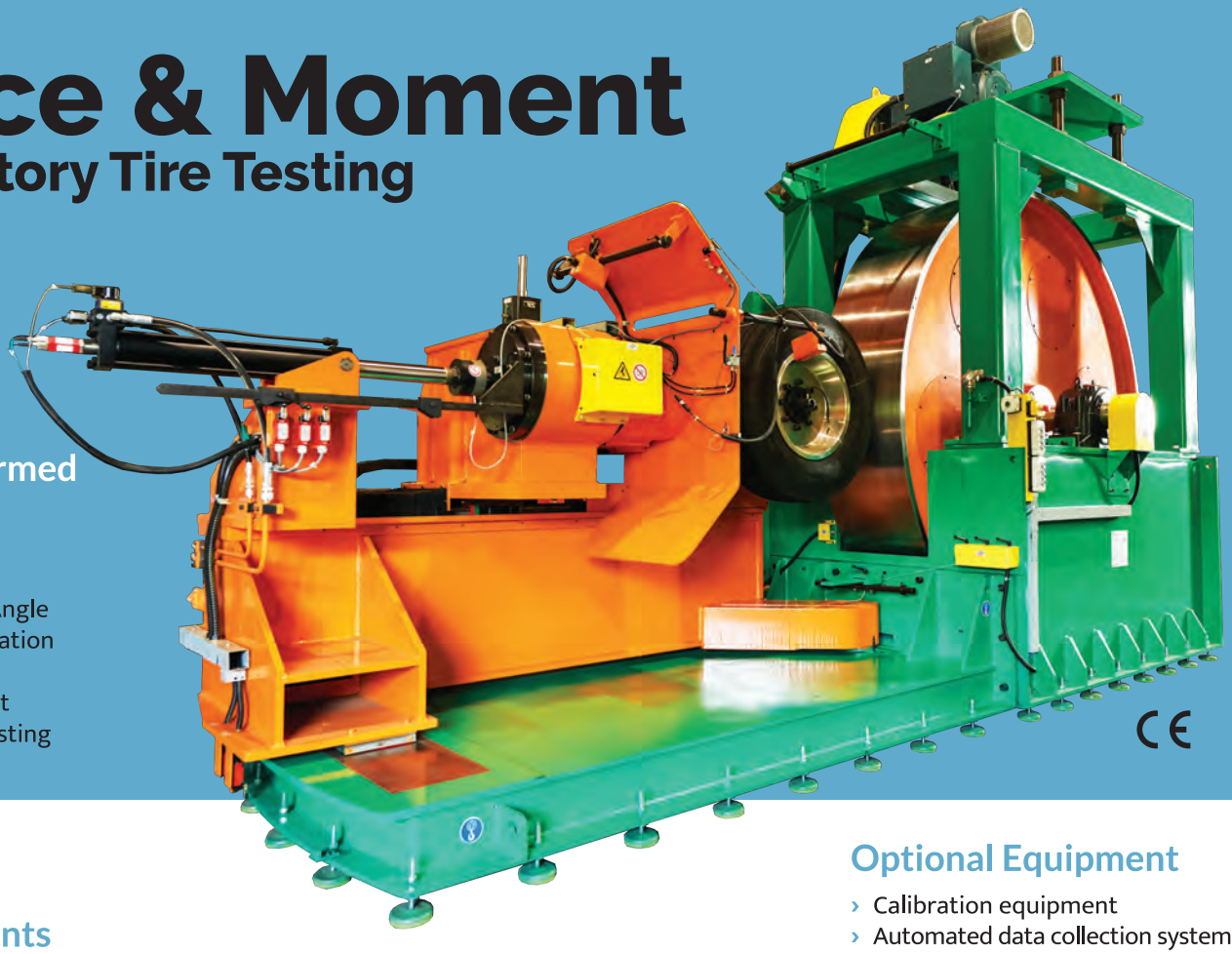
- Deflection measuring
- Tests Tire Inside Temperature
- Tests Tire Outside Temperature
- Tests Tire Radius Circumference
- Capped and regulated air
- Camber +/- 6 degrees
- Tire inflation and regulation unit
- Rolling resistance retrofit to existing machines

Motorcycle	USA	Metric		USA	Metric
Tire Outside Diameter Range	15.75 - 39.37 in	400 -1000 mm	Cross-Section Width	11.81 in	300 mm
Rim Width	3 - 11 in		Tread Width	Max 11.81 in	Max 300 mm
Inflation Pressure	Max 72 psi	Max 500 kPa	Test Load Maximum	2,248 lbf	1,000 daN
Loadwheel Diameter/Width	67.2 / 11.81 in	1707 / 300 mm	Test Speed Maximum	0-75 mph	0-120 kph
PC/LT	USA	Metric		USA	Metric
Tire Outside Diameter Range	15.7 - 43.3 in	400-1,100 mm	Cross-Section Width	19.6 in	500 mm
Rim Width	3 - 17 in		Tread Width	Max 17.7 in	Max 450 mm
Inflation Pressure	Max 95 psi	Max 655 kPa	Test Load Maximum	4,500 lbf	2,000 daN
Loadwheel Diameter/Width ■	67.1 / 19.7 in	1,707 / 500 mm	Spindle Speed	0-100 mph	0 - 160 km/h
Truck/Bus	USA	Metric		USA	Metric
Tire Outside Diameter Range	23.6 - 63 in	600 - 1,600 mm	Cross-Section Width	21.6 in	550 mm
Rim Width	6 - 16 in		Tread Width	Max 20 in	Max 500 mm
Inflation Pressure	Max 145 psi	Max 1,000 kPa	Test Load Maximum	11,000 lbf	5,000 daN
Loadwheel Diameter/Width ■	67.1 / 19.7 in	1,707 / 500 mm	Spindle Speed	0-75 mph	0 - 120 km/h

■ Optional loadwheel diameter of 78.7 in / 2,000 mm

Force & Moment
Laboratory Tire Testing

HASBACH DIVISION



Tests Performed
- High Speed
- Durability
- Bead
- Camber & Slip Angle
- Belt Edge Separation
- Tire Side Force
- Force & Moment
- Run-Flat Tire Testing

Measurements
- Tire elapsed distance
- Tire load and speed
- Tire radius / circumference
- Tire deflection
- Tire ambient temperature
- Optionally measures tire internal and tread temperatures, and RFT (run flat tires)

Standard Features
- Frictionless loadwheel carriage
- Hydraulic system
- PLC controller Siemens / Allen Bradley
- Tire Burst detection unit
- Tire inflation and speed regulation unit

Optional Equipment
- Calibration equipment
- Automated data collection system
- Camber assembly
- Drum brake
- Lateral side force
- Machine guards
- Precision test rims
- Rolling resistance unit
- Slip angle assembly
- 6 axes load cell

PC/LT

	USA	Metric		USA	Metric
Tire Outside Diameter Range	15.7 - 43.3 in	400-1100 mm	Cross-Section Width	Max 21.6 in	Max 550 mm
Rim Width	3 - 17 in		Tread Width	Max 19.6 in	Max 500 mm
Inflation Pressure	Max 95 psi	Max 655 kPa	Test Load Maximum	11000 lbf	5000 daN
Loadwheel Diameter/Width ■	67.1 / 19.7 in	1707 / 500 mm	Spindle Speed	0 - 310 mph	0 - 500 km/h

■ Optional loadwheel diameter of 78.7 in / 2000 mm

Truck/Bus

	USA	Metric		USA	Metric
Tire Outside Diameter Range	23.6 - 63 in	600 - 1600 mm	Cross-Section Width	Max 21.6 in	Max 550 mm
Rim Width	6 - 16 in		Tread Width	Max 19.6 in	Max 500 mm
Inflation Pressure	Max 145 psi	Max 1000 kPa	Test Load Maximum	22000 lbf	10000 daN
Loadwheel Diameter/Width ■	118.1 / 19.7 in	3000 / 500 mm	Spindle Speed	0 - 125 mph	0 - 200 km/h

■ Optional loadwheel diameter of 67.1 in / 1707 mm

Force & Moment
for Motorcycle Tire Testing

F&M Tester for motorcycle tire, measuring Tire Characteristics with Camber Angle up to +/-55 deg. and +/- 15 deg. Slip Angle fully dynamic simultaneously.

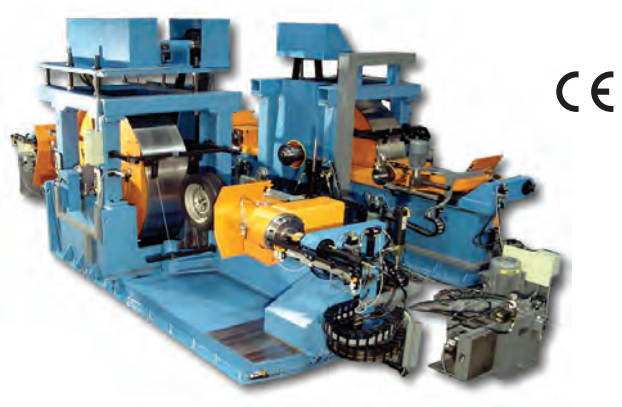
Measures Fz/Fy/Fx as well as Mz/My tire coordinates under extreme angles.

Motorcycle

	USA	Metric		USA	Metric
Tire Outside Diameter Range	15.75 - 39.37 in	400 -1000 mm	Cross-Section Width	Max 11.81 in	300 mm
Rim Width	3 - 11 in		Tread Width	Max 11.81 in	300 mm
Inflation Pressure	Max 72 psi	Max 500 kPa	Test Load Maximum	2,248 lbf	1,000 daN
Loadwheel Diameter/Width	67.2 / 11.81 in	1707 / 300 mm	Spindle Speed	0-75 mph	0-120 km/h

Laboratory Endurance Testing

These machines from the Hasbach Division can provide High Speed Endurance, Bead, and Camber & Slip Angle testing.



Measurements

- Tire elapsed distance
- Tire load and speed
- Tire radius / circumference
- Tire deflection
- Tire ambient temperature
- Optional: tire internal and tread temperatures

Standard Features

- Frictionless loadwheel carriage
- Hydraulic system
- PLC controller Siemens / Allen Bradley
- Tire Burst detection unit
- Tire inflation and speed regulation unit

PC/LT ▪

	USA	Metric		USA	Metric
Tire Outside Diameter Range	15.7 - 43.3 in	400-1100 mm	Cross-Section Width	Max 21.6 in	Max 550 mm
Rim Width	3 - 17 in		Tread Width	Max 19.6 in	Max 500 mm
Inflation Pressure	Max 95 psi	Max 655 kPa	Test Load Maximum	11000 lbf	5000 daN
Loadwheel Diameter/Width	67.1 / 19.7 in	1707 / 500 mm	Spindle Speed	0 - 310 mph	0 - 500 km/h

▪ Also available for testing Truck / Bus Tires

THE POLING GROUP KNOWS

Tire Uniformity Testing

Poling Group patented X-Frame Technology forms the robust core of our latest line of versatile X-Series Tire Uniformity testers. We include best-in-class machine control and data acquisition with each machine to ensure unmatched accuracy, reliability, and throughput.

MCX75 Motorcycle TU

CX111 Car / Light Truck TU

X150 Truck / Bus TU

Smarter

Advanced proprietary testing algorithms, along with patented devices and testing methods, allow our machines to test tires accurately, even as they age and supply services change.

Faster

A testing machine with a TTOC6 and TDAQ data acquisition system can process tires SEVERAL seconds faster than any prior or currently competing machine.

Stronger

Our dedication to continually develop and update machine components ensures a long life for the machine and its various wear parts.

X-Series TU Testers

By installing, maintaining, and supporting hundreds of CX111 PCR/LT machines in manufacturing plants all over the world, the Poling Group saw the immediate demand for the same repeatable precision-testing on motorcycle and truck/bus (CVT) tires, as they've come to expect with our CX111 TUs. Responding to this demand, the Poling Group builds the MCX75 TU (motorcycle), and X150 TU (Truck/Bus) with the same technologically advanced subsystems, assemblies, and components as our benchmark CX111 TU to provide an industry-leading machine in durability and accuracy, for all tire sizes.

Through improvements to the hydraulics, motion systems, lasers, software, electronics, and even steel, we have created the next generation of these robust testing machines. Our controls, electronics, and software are updated with several patented devices and algorithms that make the X-Series TU Testers on the forefront of seamlessly integrating machine durability, reliability, low cycle time, predictive maintenance, top notch diagnostics, accurate data acquisition, and data analytics.

Standard Features

- TTOC6 Machine Controller
- TDAQ - Tire Data Acquisition
- Timing Belt Center Conveyor for barcode spotting
- Mischuck Detection and Correction System
- Servo spindle motor for precise tire spotting
- Precision spindles and bearings
- Frictionless loadwheel carriage
- Loadwheel Characterization to remove its radial force influence
- Communications software and interfaces to upper level computers, MES, external PLCs
- Waveform Validation & Correction (WVC)
- TAIR with Air Learn Software for quick inflate and precise regulation

Optional Equipment

- Full list of Optional Equipment is listed on Pg. 17.

Visit PolingGroup.com for complete spec list

MCX75 TU
Motorcycle

CX111 TU
Car / Light Truck

X150 TU
Truck / Bus

		MCX75 TU Motorcycle			CX111 TU Car / Light Truck			X150 TU Truck / Bus		
Outside Diameter	Min.	22 in	559 mm	Min.	20 in	508 mm	Min.	26 in	660 mm
	Max.	32 in	813 mm	Max.	42 in	1067 mm	Max.	60 in	1524 mm
Rim Width	Min.	3 in		Min.	3 in		Min.	6 in	
	Max.	11 in		Max.	17.5 in		Max.	24 in	
Applied Load	Max.	4,000 lbf	1780 daN	Max.	4,000 lbf	1780 daN	Max.	16,000 lbf	7,117 daN
Cross Section Width	Max.	13.5 in	343 mm	Max.	18.5 in	470 mm	Max.	27.5 in	698 mm
Bead Diameter	Min.	15 in	381 mm	Min.	14 in	356 mm	Min.	16 in	406 mm
	Max.	21 in	533 mm	Max.	30 in	762 mm	Max.	25.5 in	648 mm

X-Series Advantages

Mobile Control Panel

The Poling Group HMI features a versatile mobile control panel that gives operators the freedom to move throughout the testing area while maintaining full control of the machine. Available across all Poling Group tire uniformity and geometry testing systems, this secondary panel improves accessibility, operational efficiency, and overall ease of use.

Designed with operators and maintenance teams in mind, the mobile panel allows precise control of machine components directly at the point of operation—reducing downtime and improving workflow. This upgrade features a modern single touchscreen capable of controlling multiple components, with customization options to support additional functions such as tire sortation control.

Tire Automatic Inflation Regulator

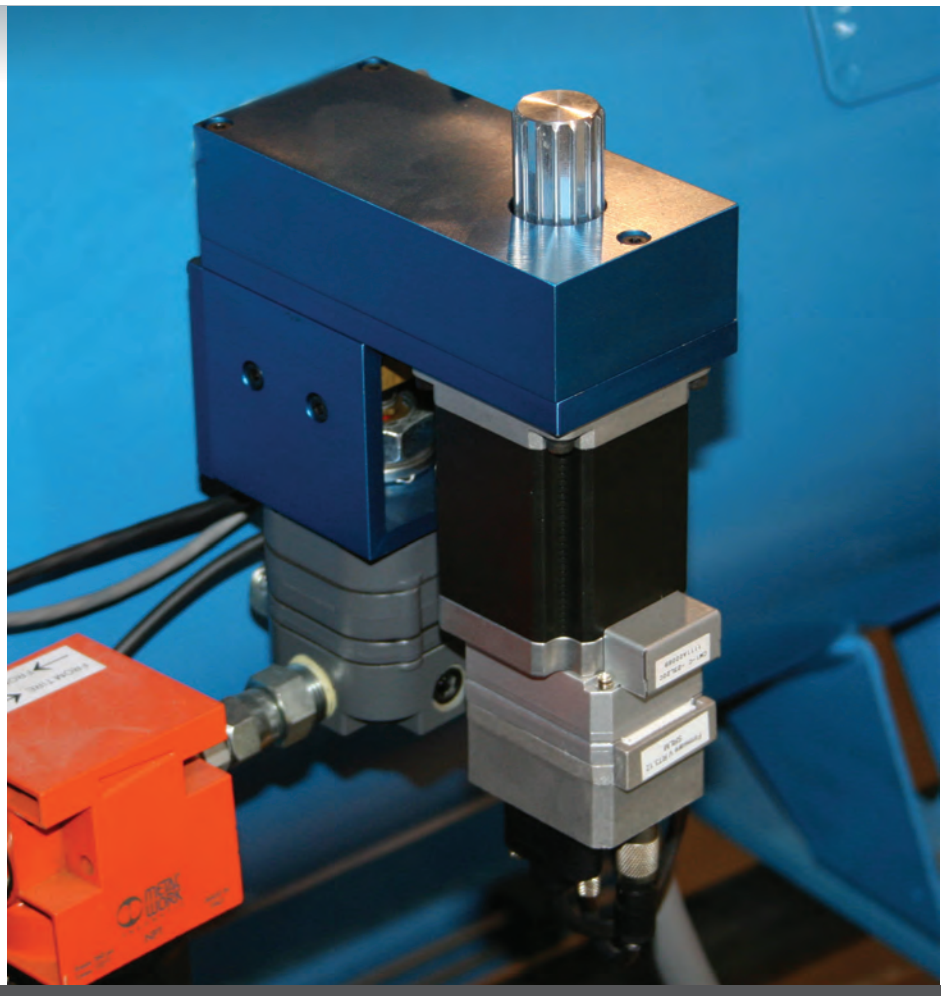
The Poling Group designed the Tire Automatic Inflation Regulator (TAIR) system to be the perfect complement to our proprietary WVC (Waveform Validation & Correction) method of tire testing.

Accurate

Unlike analog alternatives that are highly susceptible to electrical noise, TAIR's digital regulator does not change the pressure sporadically, or at inopportune times.

Fast

The TTOC machine controller uses its WVC software algorithms to "LEARN" about the tire testing machine, its air supply and the dynamics of the air system. After the bead-seat stage of inflation, the main valves are switched to enable the regulated tire test air supply. A resulting pressure "undershoot" response always follows this event, and the air regulation system must compensate for it.



Automatic Adjustable Width Chuck (AAWC)

Updates to the AAWC stem increase cycle life and reduce failure:

- A deeper undercut diameter along the nose cone traps debris with less chance of scoring and galling
- We doubled the number of grease grooves and enlarged the grease feed holes

The AAWC is available for all new Poling Group tire uniformity and geometry machines, or available as a retrofit option.

THE RESULT: A machine with the Automatic Adjust Width Chuck processes a wider range of tire widths, without manual adjustment. Delivery of the chuck width in the tire recipe reduces setup time, increasing machine throughput.

Patented Main Spindle Assembly

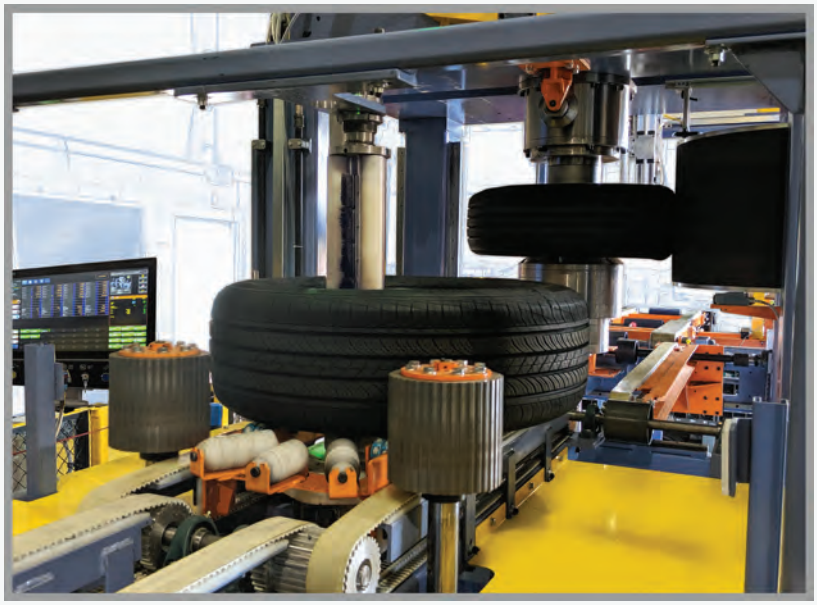
Our patented "cartridge" design main spindle assembly, now a standard feature for all X-Series TU Testers, makes it possible to completely replace a test machine spindle assembly in about 3 hours, greatly reducing changeover downtime.

With properly trained associates, you can rebuild the assembly in the plant workshop. Another popular option is to take advantage of our spindle exchange program - replace your worn-out spindle with our factory rebuilt cartridge assembly, then return the old spindle to us. We'll only charge you for the necessary replacement parts and rebuild labor.

THE RESULT: Stronger spindle assembly is easier to maintain with or without our after-market service.

THE POLING GROUP KNOWS

Options & Upgrades



Automatic Drive Roll Bead Luber

Updating your process to handle mixed mode production?

Our Drive Roll Bead Luber automatically handles a full range of tires arriving at the machine with no downtime for manual adjustment. Long-lasting steel drive rolls quickly and effectively center and lubricate each tire's bead to improve repeatability without sacrificing cycle time.

Integrate a barcode reader to accurately position tires relative to the machine's spindle location (i.e., barcode spotting), which simplifies testing waveform/data analysis and enables offline marking.

PATENTS - 6431963, 6620030, 6773334, 6786800

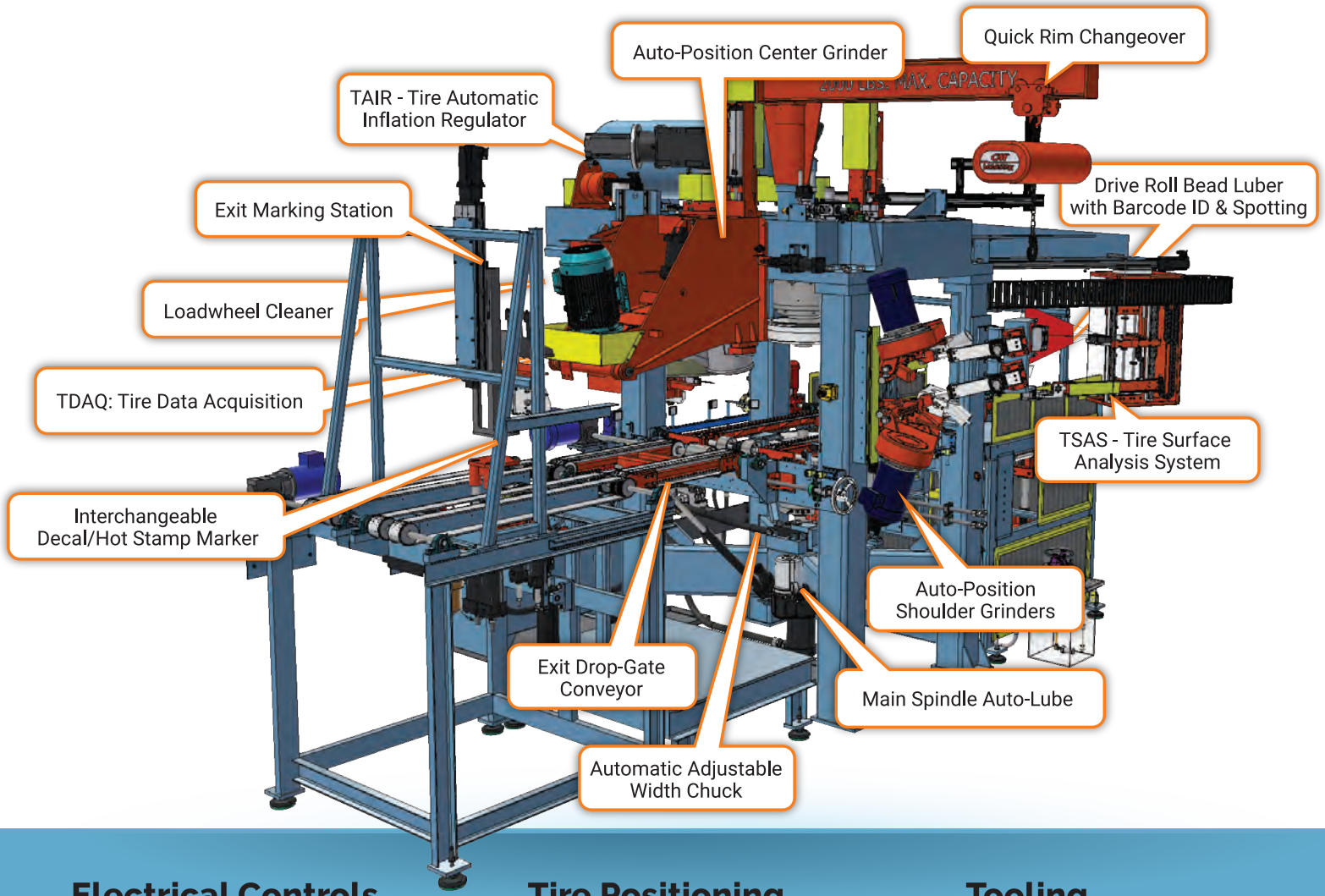
"Auto Position" Shoulder Grinders

Proprietary and patented algorithms enable precise positioning to ±0.001" (0.025mm).

They also calculate an optimal grind depth that not only reduces grinding time but greatly improves tire appearance.

- Movable hand-held manual control station provided to assist initial setup.
- Extended range of adjustment covers a full range of tire sizes.
- Grinder parameters programmed as part of the recipe setup.
- Available for all models of tire uniformity machines; easy to retrofit to existing machines.
- Utilizes THK linear bearings for precise low friction vertical movement.
- Four servo motor driven electric cylinders provide position adjustments.

X-Series Tire Uniformity Testers offer over 35 options and upgrades to truly customize your testing needs.



Electrical Controls

TTOC6 Controller
TDAQ - Tire Data Acquisition
TAIR - Tire Automatic Inflation Regulator
Mobile Panel
Encoder
Waveform Validation & Correction (WVC)
Machine Effect Characterization and Compensation (MECC)
Air Learn

Geometry Testing

Multi-Path Inspection of Sidewall (MPI)
Tire Sidewall Analysis System (TSAS)
Runout Transport
Post-Mounted RRO
RRO Probe Replacement
Laser Verification Wheel

Tire Positioning

Drive Roll Bead Luber (Automated Mixed Mode Luber)
Auto-Adjustable Width Chuck
Timing Belt Center Conveyor
Upper Spindle Assembly
Spindle Motor and Gearbox
Retractable Stripping Wheel
Retro-Fit Stripping Wheel
Anti-mischucking System
Sorting Elevator
Multi-level Sorting Conveyor

Grinding

Auto-position Shoulder
Dual Inline Shoulder
Auto-position Center
Grind Dust Removal System

Tooling

Precision Test Rims
Quick Rim Changeover

Marking

Internal Marking Transport
Exit Marker Station
Hot Stamp Marker
LTA Marker

Other

Calibration
Exit Drop Conveyor
Loadwheel
Loadwheel Cleaner
Hydraulic Power Unit
Frictionless Carriage
Loadwheel Motor/Drives

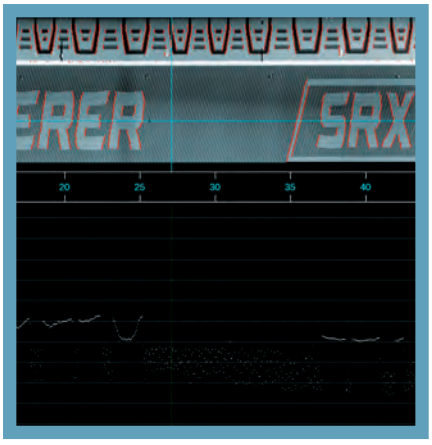
THE POLING GROUP KNOWS

Geometry Testing

TSAS
TIRE SURFACE ANALYSIS SYSTEM

Features include:

- Automatic detection of measurement regions for sidewalls and tread (with manual override)
- Automatic Elimination of Letters & Artwork, drastically reducing false-positive measurements
- Store thousands of tire images for later inspection
- Perform a complete geometry setup from a single screen and upload directly to your host.
- Don't have a host? Check out our Final Finish Host (FFH) solution (pg. 25)
- Automatically calibrate laser positions using our Geometry Verification Wheel (pg. 05)
- Legacy support for traditional spot (fixed point) lasers

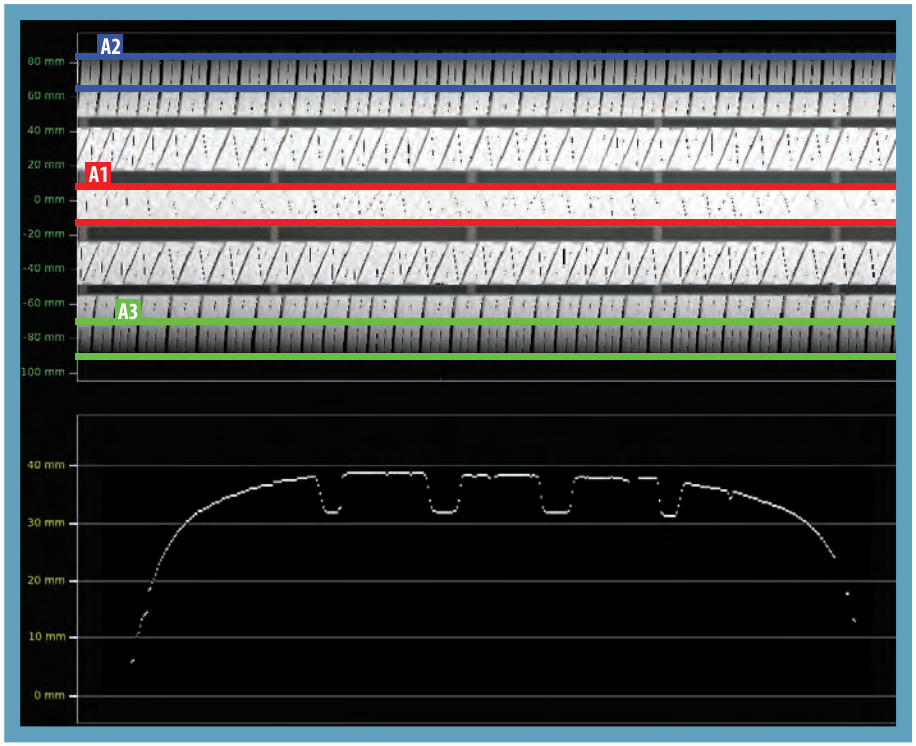


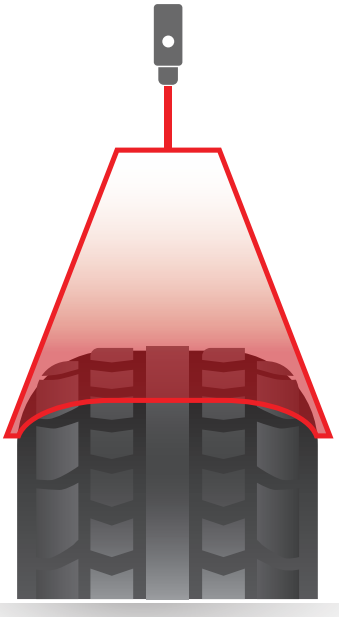
TSAS Features Automatic 'Letter Elimination'

Geometry testing has never been smarter!

TSAS incorporates our patented Multi-Path Inspection (MPI) algorithm, complex mathematics, and 3D profile laser scanning to locate and accurately measure an inflated tire's geometry - including bulges, depressions, runout, and wobble.

TSAS is available as a fully integrated TTOC6 controller application or as a standalone unit for replacement of your inadequate sidewall or RRO System on any Uniformity, Balance, or Geometry machine.





The TSAS tread laser can cover the entire tread and shoulder area in one pass.

TSAS detects test regions for sidewalls and tread automatically for each tire recipe. These regions can be manually adjusted using the on-screen recipe editor to establish the optimal test regions for grading tires.

TSAS measures up to 50 runout harmonics for sidewalls and tread. The tread (RRO) measurement can be divided into 3 regions (top, bottom, and center). When coupled with the Poling Group's grinding option for tire optimization on uniformity machines, the RRO waveforms are used by the grinders for precise grinding of the tread, covering both the center and shoulder regions. After grinding, TSAS results can be used to determine exactly how much material was removed in the process.

NEW: The Poling Group's Fixed-Mount RRO Laser Solution

Poling Group's fixed-mount RRO laser solution eliminates the need for a motion controlled multi-axis transport. It utilizes a highly accurate 3D profile laser sensor, whose large field-of-view and long measurement range accommodate most PSR, LTR, and TBR tire tread areas in production today. Mounted in a fixed position, typically on a Uniformity, Geometry, or Balancer machine post, the solution requires no servo/stepper motor axes or mechanical movement, reducing maintenance requirements and eliminating the cost and complexity associated with motion control.

Still have old RRO contact or capacitive probes on your machines, upgrade now to our fixed-mount solution!

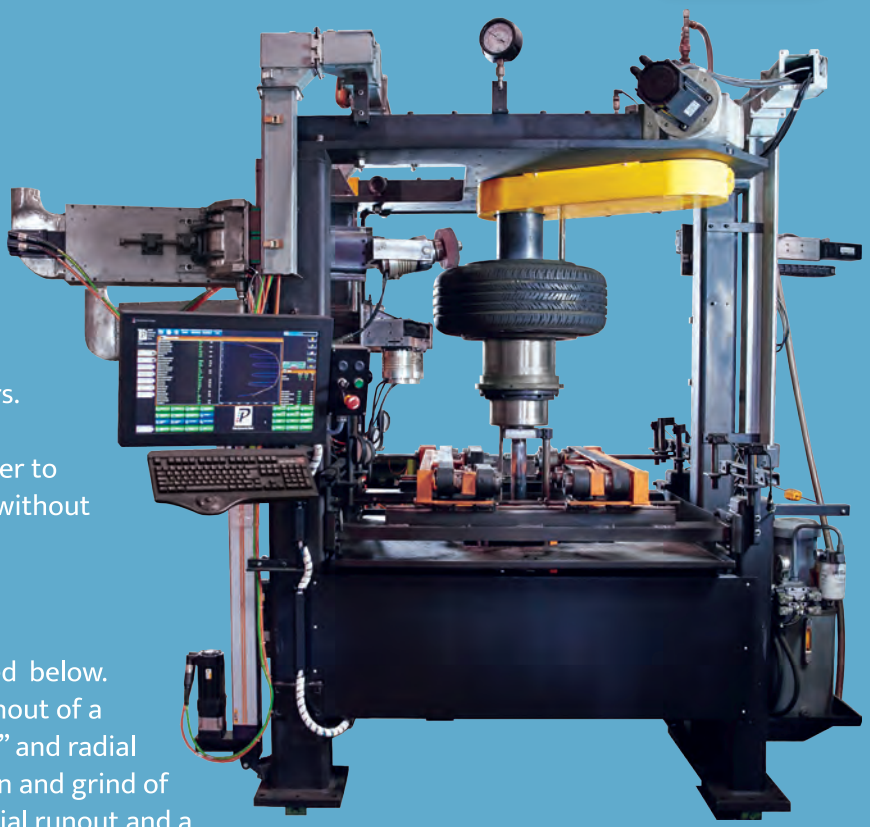
Contact The Poling Group to discuss how we can simplify and optimize your laser geometry operations.

THE POLING GROUP KNOWS

Tire Grinding & Buffing

PGM
Profile Generating Machine

asm DIVISION



Increase Yield and Improve Customer Satisfaction

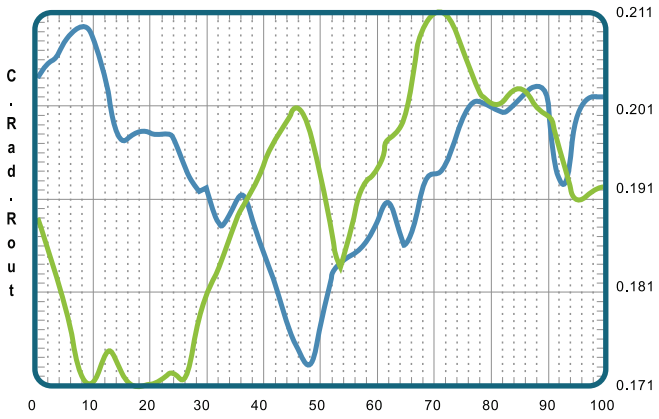
The PGM is a recipe-driven system that increases the ability of a tire manufacturer to supply consistently round tires, with identical diameter and profile, to the most demanding end-customers. Patented worldwide, the PGM uses dual precision grinder units, a laser, and Windows-based controller to reduce radial force, radial runout, and conicity — without compromising finished tire appearance!

The Proof is in the Results

Consider the results of this trial, charted below. Before profile generating, the radial runout of a locally purchased, 15" replacement tire was 0.0317" and radial peak-to-peak force was 22.4 lbs. After a profile scan and grind of 0.028", the new test waveform shows 0.0035" radial runout and a drop to 17.6 lbs. of radial peak-to-peak forces. Conicity was corrected from -5.2 lbs. to +0.3 lbs.

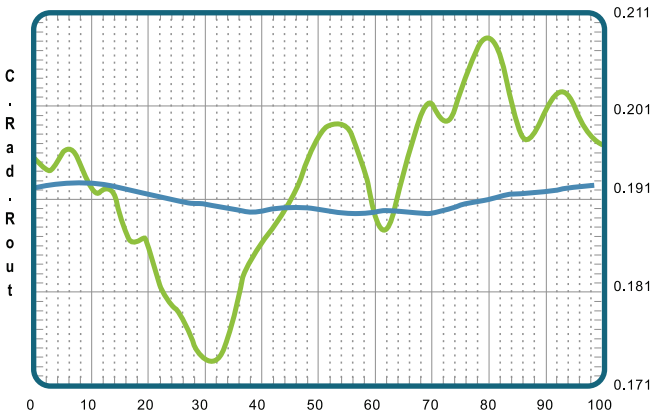
In this trial, the grinders ran at 10,000 rpm with a feed rate of 0.062" per second. The grinders shaved a total of 0.028" off the outside diameter of the tire in two passes within a cycle that totaled 103 seconds.

Before PGM C. Rad. Rout Radial Load



RPP	RH1	CON	CRRO
22.4	15.8	-5.2	36.7

After PGM C. Rad. Rout Radial Load



RPP	RH1	CON	CRRO
17.6	10.7	0.3	3.5

UFT-111
Universal Flash Trimmer
Patented Automated Flash Trimming

The patented Poling Group UFT-111 automates the task of flash grinding traditionally performed by an operator. The trimmer's two independent sanding discs automatically trim vertical and top mold flashing based on recipe information entered directly at the controller or supplied via scanned tire barcode for mixed mode operation.

The UFT-111 can quickly, easily, and consistently process any tire tested on our CX111 TU machine.

Outside Diameter			Rim Width			Cross Section Width		
Min.	22 in	559 mm	Min.	3 in	76 mm	Min.		
Max.	42 in	1067 mm	Max.	17.5 in	445 mm	Max.	18.5 in	470 mm

Model 1325 & 1342
Sidewall Buffers
Increase productivity and reduce downtime

The Firwood Division Sidewall Buffers satisfy both requirements. The Model 1325 & 1342 are precise and unique sidewall buffers due to their incredibly sturdy frame and locking chucks that have a 100 PSI specification.

And like all Poling Group products, it's built to last!

	Outside Diameter			Pass Through			Bead Diameter		
1325	Min.	20 in	508 mm	Min.			Min.	13 in	330 mm
	Max.	36 in	914 mm	Max.	14 in	356 mm	Max.	20 in	508 mm
1342	Min.	20 in	508 mm	Min.			Min.	15 in	381 mm
	Max.	42 in	1067 mm	Max.	18 in	457 mm	Max.	24 in	610 mm

THE POLING GROUP KNOWS

Millroom Equipment

Next Generation 1270 combines field-proven strength and reliability with new accuracy and labor-saving features.

With a heavy-duty cutter frame fabricated from plate and structural steel, our latest slab cutter/feeder features a precision-machined cutter and anvil driven by a fixed speed gear motor and gears. The knife/anvil assembly mounts onto piloted bearings (consisting of double-row spherical roller bearings) and installs into line bored housings.

Cut pieces drop onto a weigh conveyor that sends a precise measurement to the control system. As the measurement nears target weight, the system automatically slows the conveyor to reduce piece size until the target is met — achieving more accuracy while reducing labor costs.

NG 1270
Slab Cutter/Feeder

Modular Flex design allows the fastest change-out of knife/anvil assembly in the industry

NG 1270 Standard Features

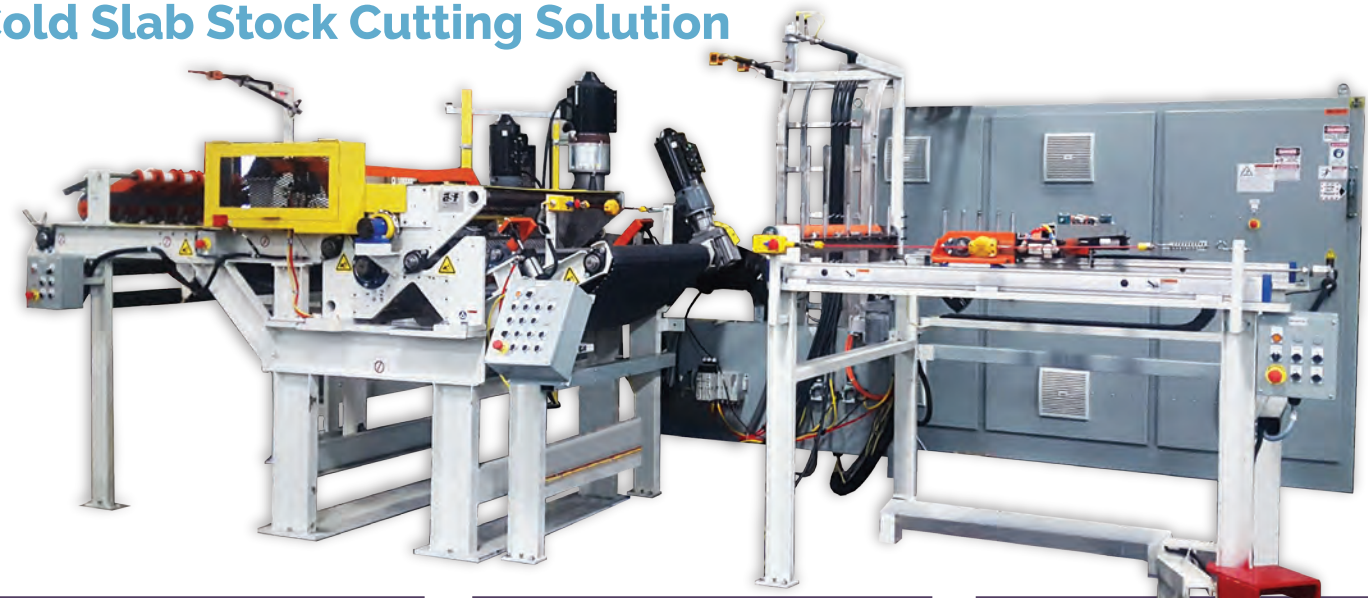
- Cuts up to 3 thicknesses with an occasional fold
- Knives and Anvil are made from Tool Steel
- Heavy duty gears used to drive the cutter
- ANSI guards including conveyor safety cable
- Heavy duty frame and stand

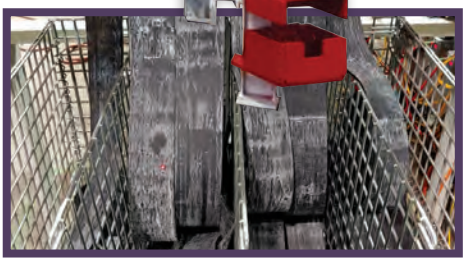
Optional Equipment

- ANSI approved complete drive and control packages
- Plastic conveyor belt with pneumatic take-up
- Centralized lubrication system
- Integrated weigh and charge conveyors
- Sized to fit your stock requirements

S2S Slitter

Cold Slab Stock Cutting Solution





To meet our customers' demands for precision strip production, we've introduced our New S2S Series Slitter. The S2S is a newly designed offline Cold Slitter with Automatic Strip Separation and Handling to a pallet/basket, offering the precision and flexibility the industry demands. This Slitter System is made up of an Intralox Belt Feed Conveyor feeding stock into the Slitter with a motor-driven quick change Slitter Assembly and two integrated pull roll assemblies.

The S2S series offers a quick change knife cartridge, allowing customers to quickly adjust for multiple strip sizes. With a minimum strip size of 25mm and the ability to increase the strip size in increments of 25mm, the S2S Series Slitter handles full or half sheets of incoming wig-wag, up to 75 ft (23 m) per minute, that is cut to customer specifications.

Contact the ASF Division (pg. 27) to learn more.

For over 70 years, the ASF Division has produced well-designed millroom machinery that is strong, reliable, and most importantly, customizable.

Conveyors
› Wig-Wag type conveyors
› Reciprocating conveyors
› Fixed conveyors

Splice Press
› Electrically heated or steam heated
› ANSI-approved controls

Accumulator
› Available in any size storage capacity
› Chrome plated rolls as required
› Easy thread option available

Let-offs
› Dual let-offs, with or without guiding
› Liner rewind, with or without guiding
› Male or female chucks

Pull Roll Stands
› Manufactured to your tension requirements
› Available with hold and cutting feature

Wind-ups
› Surface wind-up
› Dual wind-up
› Shuttle type wind-up

Blister Breakers
› Fixed blade systems
› Reciprocating blade systems
› Multi blade systems

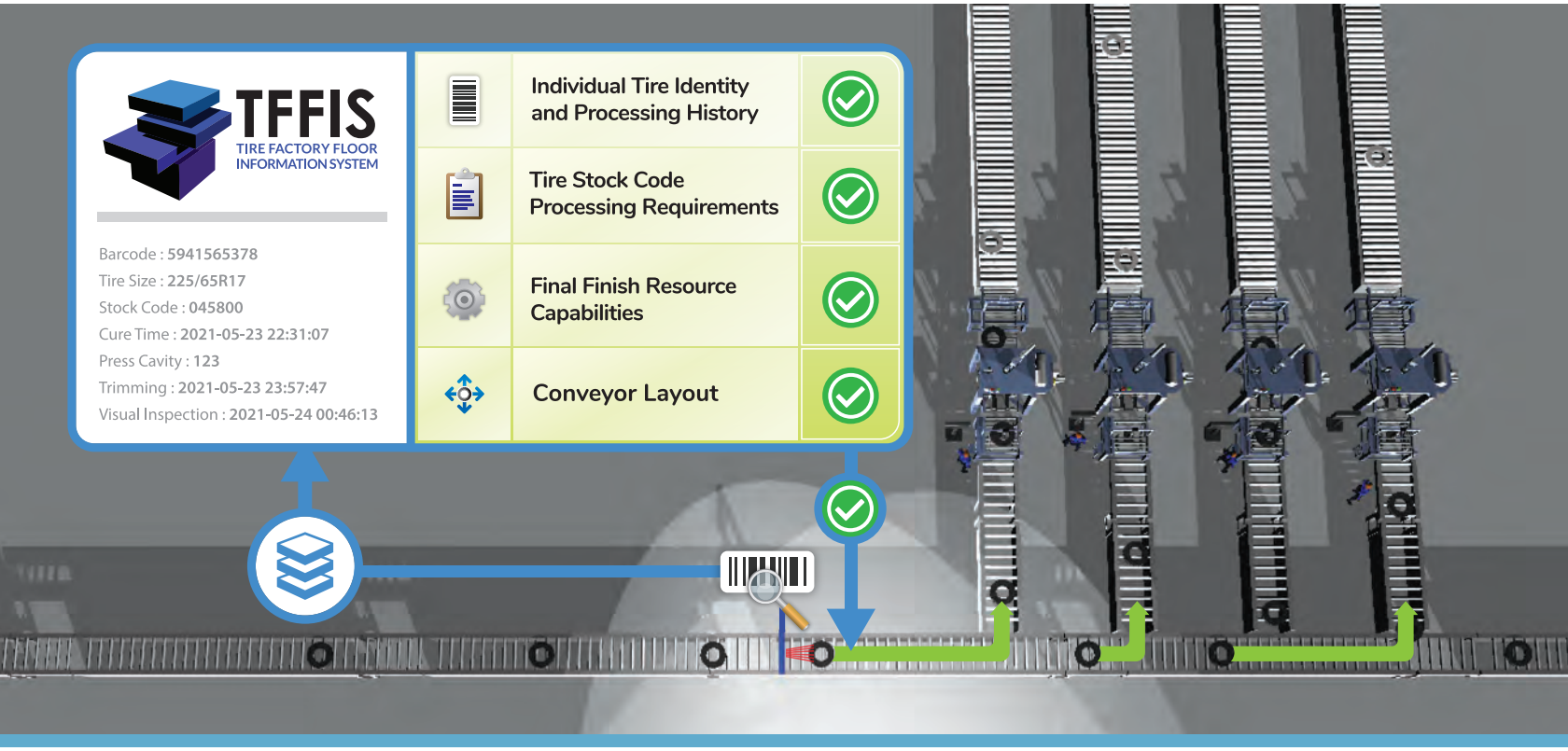
Process Rolls
› Cooling drums
› Pressure rolls
› Comb rolls

THE POLING GROUP KNOWS

Tire Factory Management Software

TFFIS
TIRE FACTORY FLOOR INFORMATION SYSTEM
SOFTWARE BY CTI

CTI DIVISION



TFFIS collaborates with the PLC and provides the "big picture" decisions required to get the tire to its next processing step.

It does this intelligently by combining information about the processing requirements for your stock codes, the individual tire's identity and processing history, the capability and current tooling of your tire processing equipment, and the landscape layout of your final finish factory floor to decide the optimal path for the tire at each conveyor divert point.

The Power of TFFIS is in its Flexibility.

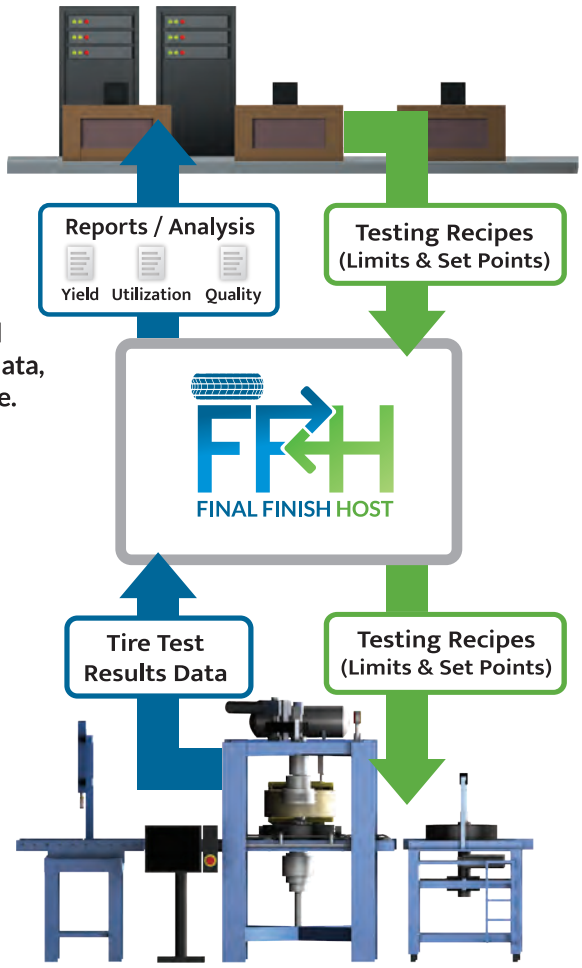
- Provides tire barcode identification services to tire measurement machines, primarily the name of the measurement recipe required to measure the tire.
- Customized to meet your specific needs, whether that is inventory management, product routing, component traceability, or a combination of all.
- TFFIS comes with 24/7 remote support, typically from the very people that designed and implemented the software.

Delivers Accurate Production Accounting.

- TFFIS is user-friendly – the UI is coherent and understandable to all plant and management staff.
- TFFIS reports can be accessed anywhere in the plant and provides activity tracking based on tire barcode.
- Reports deliver accurate reporting of production against designed objectives.

FINAL FINISH HOST
SOFTWARE BY CTI

FFH converts tire test results into actionable data. Whether you need a standalone or building block solution, FFH can meet your QA goals.



FFH has been successfully implemented at several global tire companies, and helps them provide a single access point to control customer specs, analyze data, view machine performance, and schedule machine preventative maintenance.

Automated Data Collection
FFH collects, summarizes, and stores test results for tire uniformity, geometry, and balance machines.

Centralized Recipe Maintenance
Use a web browser to design recipes that include test sequence, grading limit, and machine setup parameters (such as servo positions), then download the recipes directly to final finish machines.

Production and Uniformity Reporting
A variety of graphic and tabular reports display uniformity, repeatability, and machine utilization in PDF format.

Like other CTI products, FFH provides extra value because we customize it to fit your particular machines, operations, and business requirements. We developed FFH specifically for tire manufacturing final finish to provide the data and reporting you need to satisfy both external and internal customers.

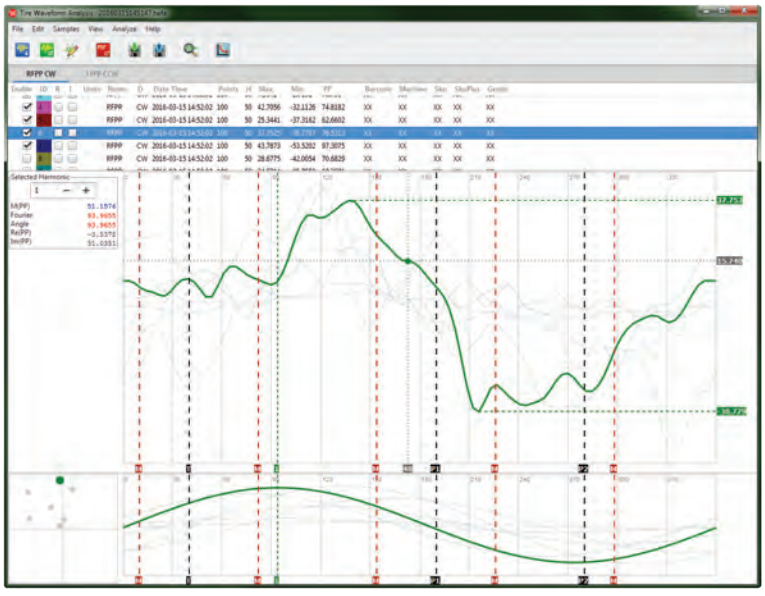
TWave
Tire Waveform Analysis
SOFTWARE BY CTI

Easily collect, visualize, and analyze final finish tire test waveforms and harmonics

TWave software integrates with your existing plant database via ODBC. This new software plots harmonic information as a waveform view and transforms waveform data to individual harmonic magnitudes and angles. This process gives you unparalleled visualization and analysis of typical final finish data. Users can then overlay tire component splice and mold segment information on top of the waveform plot, and adjust individual harmonic magnitudes or angle values as needed and see the outcome instantly.

Replace your non-centralized custom spreadsheets with TWave and quickly view trend analysis, while you provide continuity from plant to plant.

Plots for visualization of tire data include: Complex, Individual Harmonic, Waveform, Harmonic Magnitudes, and Trend.



TWave lets you view component splice angles relative to harmonic angles. Overlay any or all splice values on a waveform or harmonic.

THE POLING GROUP KNOWS

Innovation

TVIS

TIRE VISUAL INSPECTION SYSTEM

CTI DIVISION

TVIS software uses already-collected geometry images from an inflated tire to create an interactive 3D tire model

Enhanced Visual Imaging for Tire Classification and Inspection.

TVIS software uses already-collected geometry images from an inflated tire to create and display an interactive 3D tire model. This tire model can be displayed at a TVIS kiosk on the factory floor or on a workstation in an office. It can highlight any failed geometry measurements and any visual defects found by the TVIS software. Since most tire classifiers or inspectors in final finish are inspecting a non-inflated tire, using our interactive 3D model of an inflated tire allows them to quickly verify the problems, making them more efficient.

Currently the TVIS software uses rules-based algorithms to find any defects like cuts, gashes, pin vents, etc. In the future, the TVIS software will be upgraded to include AI deep learning models. These future Anomaly and Object Detection deep learning models will be trained to find curing defects and other surface damage. Additionally, they can be trained to locate objects, like the DOT Date Code and the treadwear indicator bars located deep in the tread grooves. Once located, the TVIS software can read and validate the DOT Date Code, stopping tires with incorrect dates from leaving the factory. It can also measure the height of the treadwear indicator bars, grading them against customer limits if desired.

TVIS software runs "on-premises" and does not require a cloud connection outside of the plant network. Kiosks can be integrated in the factory at each of the existing final finish classifier or inspection stations. Additionally, the kiosk software can display the interactive 3D model of an inflated tire on a workstation in an office environment for tasks where the physical tire is not needed.

THE RESULT: For a small investment, a factory can add our Tire Visual Inspection System to generate interactive 3D models of their inflated tires produced from their existing large investment in tire geometry systems. TVIS makes the human inspector more efficient and highlights potential defects that they may not have noticed.

Rules-Based Detection

In the example above, predefined rules were established to flag any area 0.4mm below the sidewall surface as a defect.

Deep Learning Models

Anomaly and Object Detection deep learning models can be trained to find visual defects that the rules-based algorithms alone cannot. Additionally, they can be used to locate other objects on the tire's surface, like the DOT. With the new government penalties in place for incorrect DOT Tire Date Codes, using TVIS to locate, read and validate those codes can stop tires with incorrect date codes from leaving the factory.

the Poling Group

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Focus : Final Finish Tire Testing, Machine options and upgrades, spare parts, tire grinding

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Hasbach Division

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The Poling Group

In 2021, the five companies comprising the Poling Group merged into a single corporation

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The Poling Group Knows Tire Testing.

PolingGroup.com

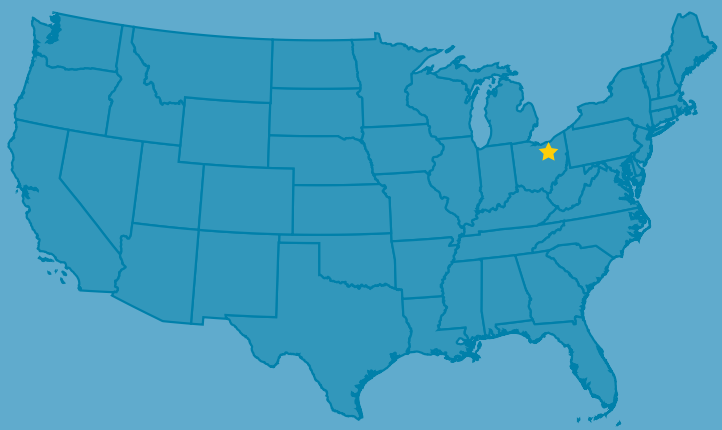
Spare Parts

The Poling Group offers spare and replacement parts for all of our Testing, Millroom, and Rubber Processing machines, and even some replacement parts for machines that we didn't manufacture.

Our Spare Parts team is committed to making sure you get the right part at the right time.

Submit a request:

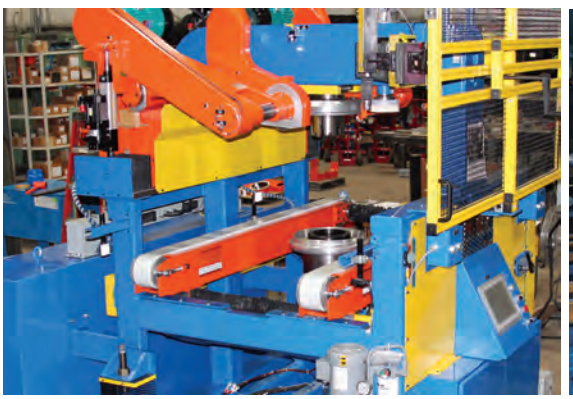
- Sales@PolingGroup.com
- +1 330 753 1077
- **Spare Parts Request Form** at PolingGroup.com



The Poling Group services tire and rubber manufacturers worldwide from our headquarters in Akron, Ohio USA





Find our full product & service offerings at PolingGroup.com