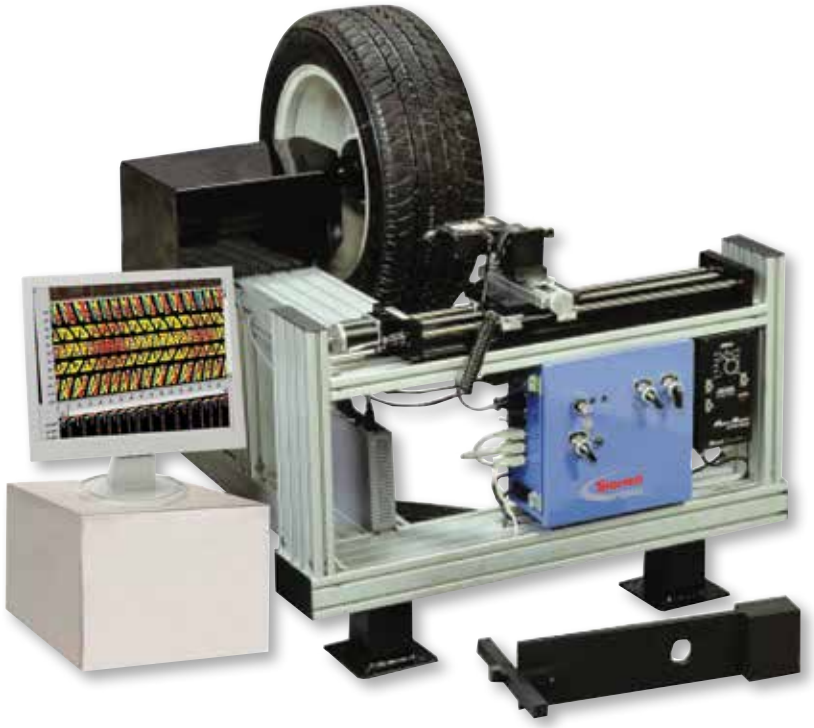
Precision, Quality, Innovation

Starrett BYTEWISE

Measurement Systems for the Tire Industry

CIRCUMFERENTIAL TREAD WEAR IMAGING SYSTEM (CTWIST)

- Off-Line Profilometer (OFLP)
- Off-Line Profilometer SL (PSL)
- Off-Line Profilometer 3D (3DP)
- On-Line Profilometer (OLP)
- Ply, Belt, and Extrusion Feature Tracker (FT)
- Profile360 for Apex and Bead Measurement (P360)
- Green Tire Uniformity Diagnostic System (GTU)
- Green Tire Uniformity Integrated System (GTUint)
- Bead-to-Bead Profile Measurement System (B2B)
- Bead-to-Bead Tire Scanner (Tire360)
- Circumferential Tread Wear System (CTWIST)



LASER MEASUREMENT SOLUTIONS

Circumfrential Tread Wear Imaging System (CTWIST)

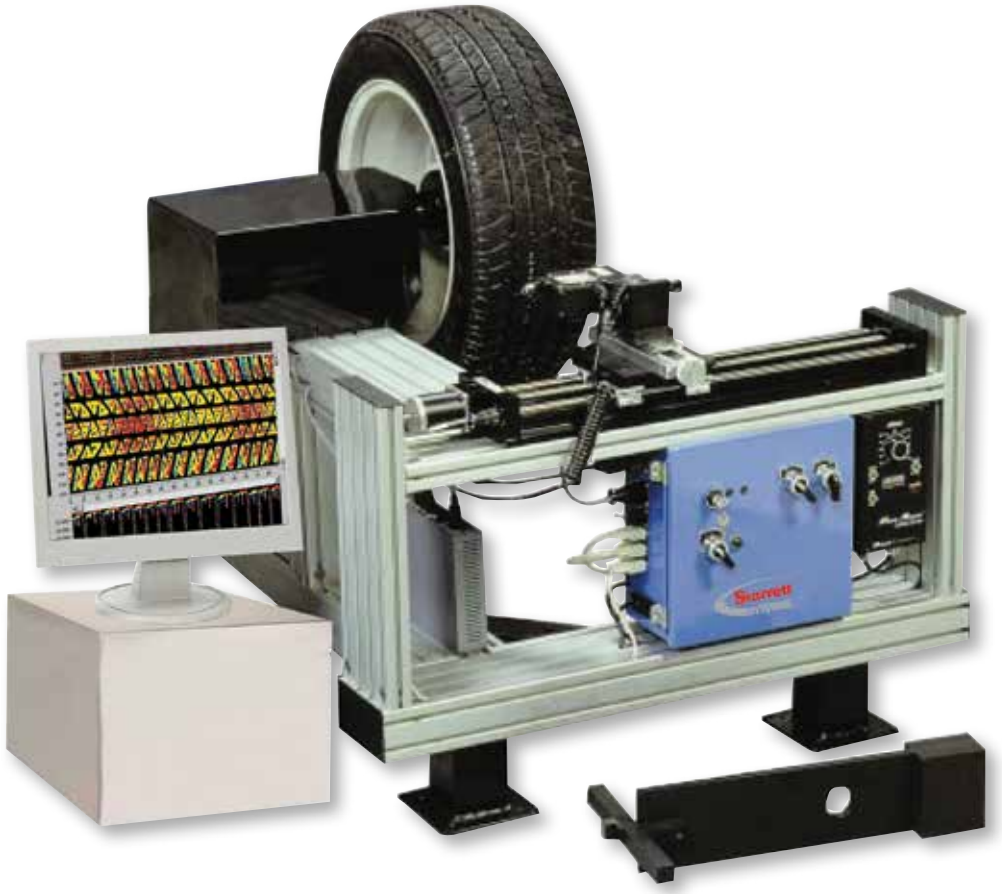
Tire designers are challenged to develop new tread patterns and compounds that deliver longer tread life and more uniform tread wear. Starrett-Bytewise partnered with Ford Motor Company and several leading OEM tire makers to develop CTWIST as a way to measure and characterize tread wear so the designers could better understand wear behavior. With the CTWIST process, new tires are scanned after break-in, then periodically scanned during the wear cycles. CTWIST predicts the tread life for each rib, and produces several tread wear reports to help the designer understand where improvements are needed.

CTWIST utilizes a non-contacting high-speed laser sensor to collect about 1,000,000 measuring points in less than 5 minutes.

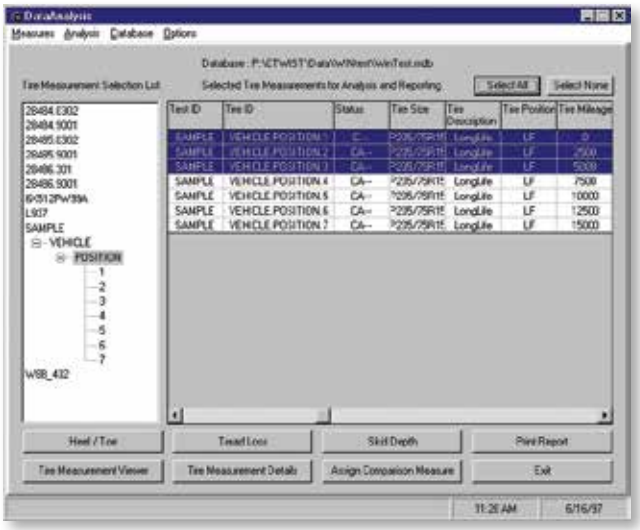
System Specifications	
Typical Measurement Time	5 minutes
Measurement Technology	Scanned laser triangulation
Measurement Range	32mm
Laser Standoff	180mm
Measurement Spot Diameter	0.1mm
Laser Classification	Class IIIb Gallium Arsenide
Laser Resolution	< 0.008mm
Data Signal	Digital with invalid data signal
Data Points per Scan Line	4096
Sensor Frequency	16kHz
Encoder	16,000 PPR
Typical Data File Size	1Mb
Tire Radius Range	200 to 610mm
Maximum Tire Width	506mm
Maximum Tire & Wheel Assembly Weight	200kg
Maximum Tire Rotation Speed	120RPM
Machine Dimensions (W x D x H)	1000 x 1150 x 900mm

Features and Specifications

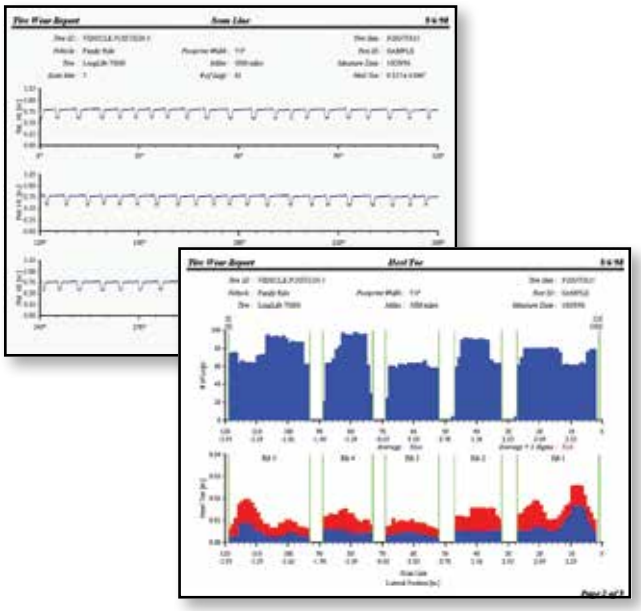
- Tread Depth Profile Report - shows the tread depth profile for each wear cycle.
- Heel/Toe Wear Report - shows the heel-toe wear profile across the tread.
- Irregular Wear Report - shows a 3D color map of tread loss.
- Tread Loss Report - shows the tread loss profile across the tread.
- Tread Life Mileage Projection - shows the predicted tread life of each rib.



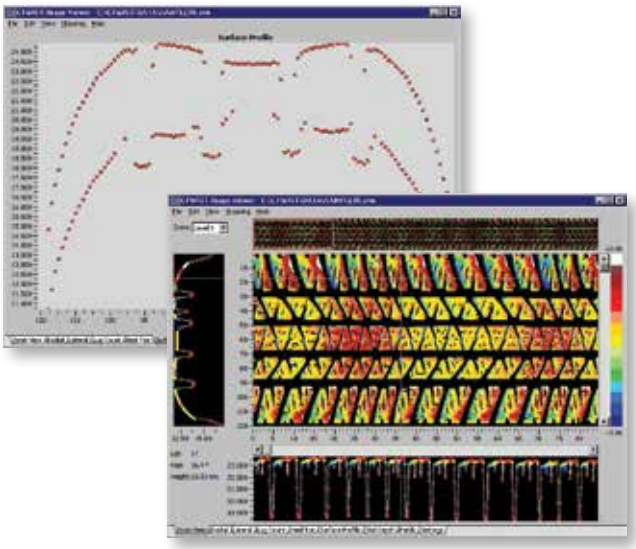
Data Manager

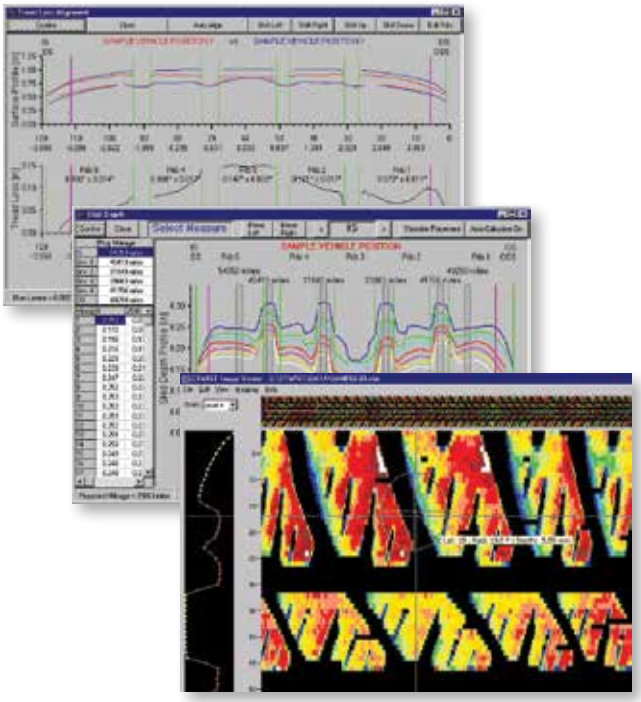


Screen or Paper Reports



Imaging Information





Measurement Systems for the Tire Industry

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