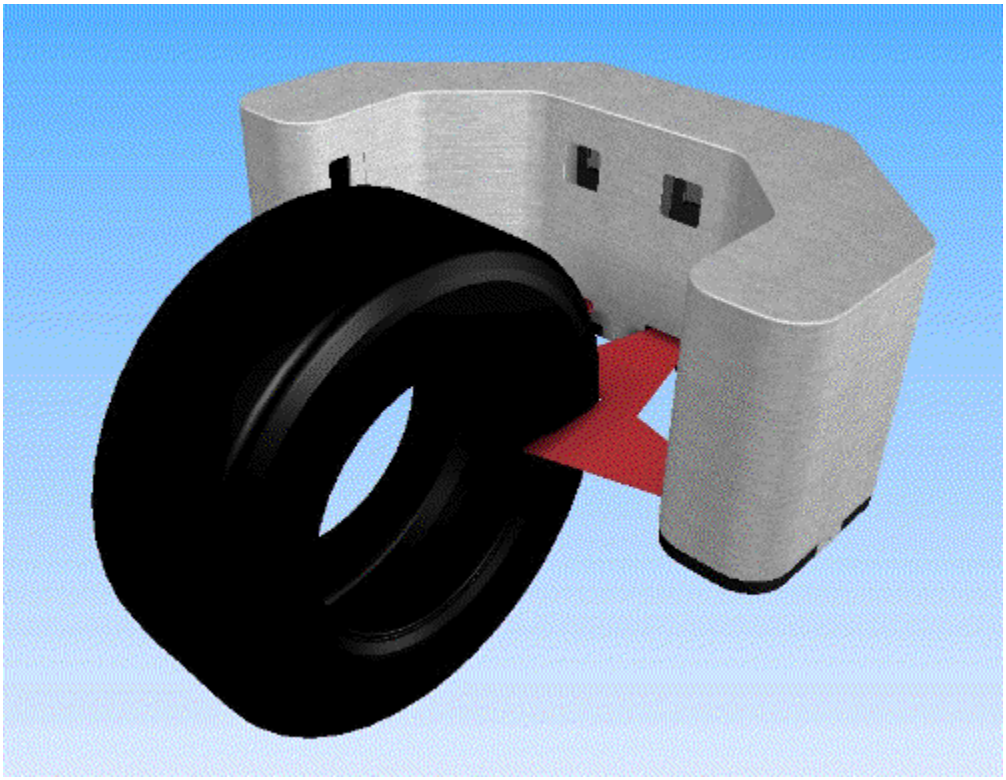
Bead-to-Bead Tire Profile Measurement System Technical Overview

The Bytewise Bead-to-Bead Profile Measurement System acquires dimensional profile data for cured tires. The dimensional profile data is output in a form suitable for viewing and analysis by external software applications.

The B2B System utilizes Sheet-of-Light Laser Triangulation sensor technology to project a continuous laser light line across the tire from bead to bead. Light is reflected into the sensor element where the profile is characterized and transformed into point-measurement data.



Bytewise Bead-to-Bead
Profile Measurement System
Sensor Assembly

Each profile measurement consists of up to approximately 4,000 measurement points. Each measurement point is a paired X.Y number set referenced to a common coordinate system.

Profile measurements can be triggered manually, by an Ethernet command from an external system, by a PLC output, or may run continuously at a user selected frequency. Maximum frequency is 5 Hz.

Bead-to-Bead Tire Profile Measurement System Technical Overview

---

The standard mechanical system covers passenger tire sizes up to 24” bead diameter. Special sizes can be configured according to customer requirements.

Measurement accuracy is 0.002 inches (0,05mm).

Profile data is stored and can be output as a data record consisting of all paired measurement point values. Each data record includes a time stamp for each measurement.

Data output can be prompted via an API call made from an external system via an Ethernet network.

The System consists of the sensor assembly (pictured above), cables, electrical enclosure for the power supply and I/O points, a PC for the real-time sensor data acquisition, B2B Data Viewer software, a sensor registration verification fixture, and registration utility software.

The Data Viewer software provides various software tools and utilities to:

- View the point data set
- Pan and zoom the image
- Compare the point data set to a standard design template
- Performing a best-fit match of the point data set to the template (.dxf file)
- Display error between point data and template with scalable error vectors
- Apply basic width and height calipers to the data set and return key measurement dimensions

Buyer should provide:

- Mechanical system for holding tire
- Mounting system for sensor assembly
- VGA display
- External software for analyzing measurement data output