



3D TREAD EXTRUSION GUIDING MADE EASY

Requirements of the Application

In the process of making a tire, the tread extrusion needs to be properly positioned as it enters the tire build machine. The extrusion is carried to the tire build machine on a conveyor and needs to be perfectly positioned before it enters the machine. The extrusion material at this point in the process is soft and gummy, which means using mechanical devices for positioning is unacceptable.

Locating the edge position of the extrusions is relatively easily implemented, but the location of the edges do not necessarily represent the proper location of the critical profile elements of the extrusions. Ideally, a solution which includes important profile features of the extrusion to determine its position is necessary. This can be achieved using 3D vision systems, but implementation of most 3D systems has proven complex and expensive, often requiring development of application specific software.

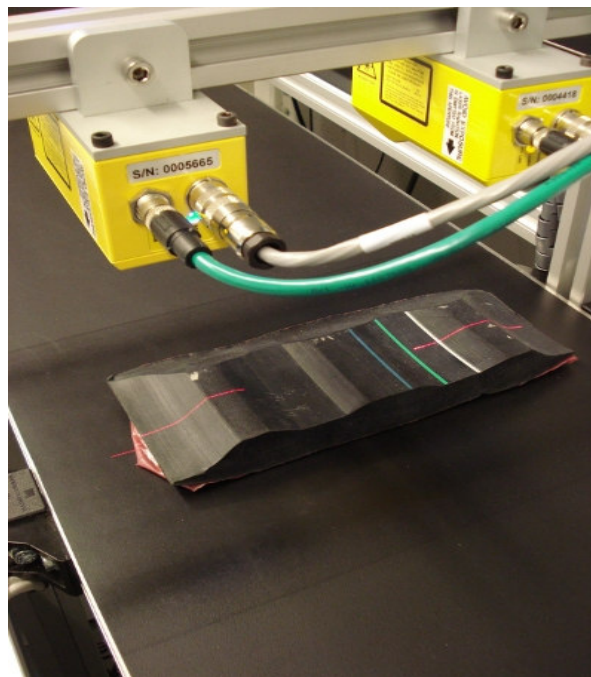
What is needed is a simple, affordable solution to detect locations of the critical features of the extrusions, without requiring expertise in 3D vision systems and related software development. Also desirable is a solution which can easily communicate extrusion location information to the existing conveyor position control system.

Gocator is the solution, providing 3D extrusion profiles, with built-in measurement tools, to find the locations of critical features, and a selection of outputs to communicate position information to your existing conveyor positioning control system.

It provides an economical, easy to implement out of the box solution, that does not require software development, or any knowledge of vision systems.

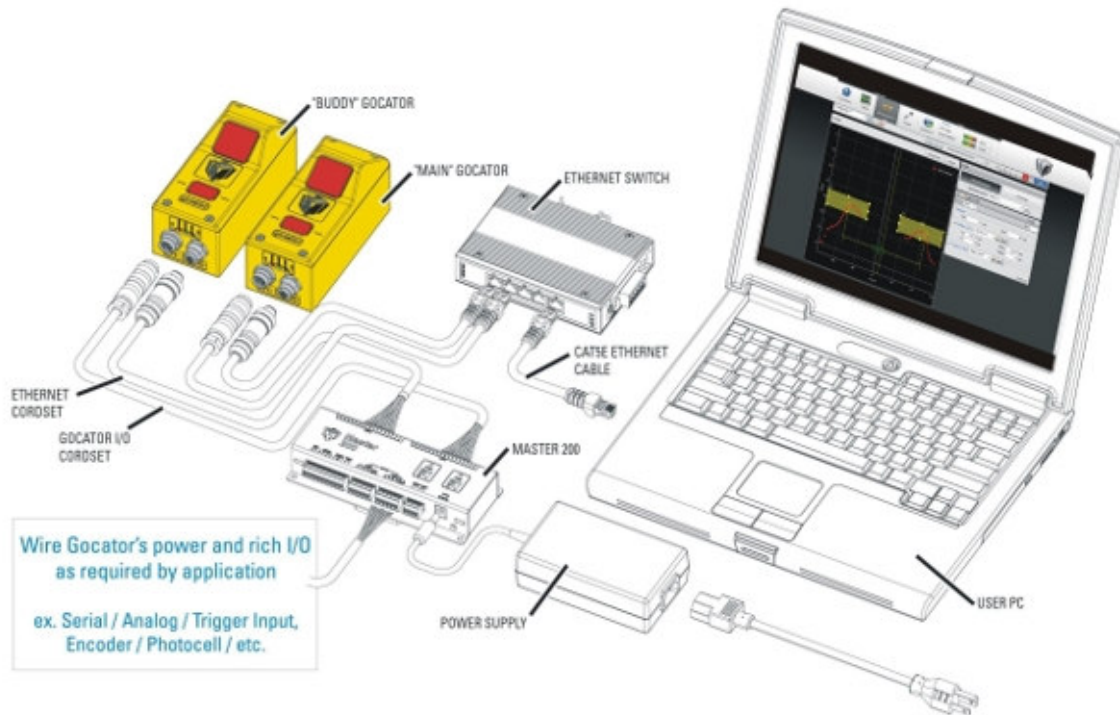
The Implementation

STEP 1: Mount two Gocator sensors above the conveyor, with an extrusion in position. Gocator's compact size makes mounting easy.





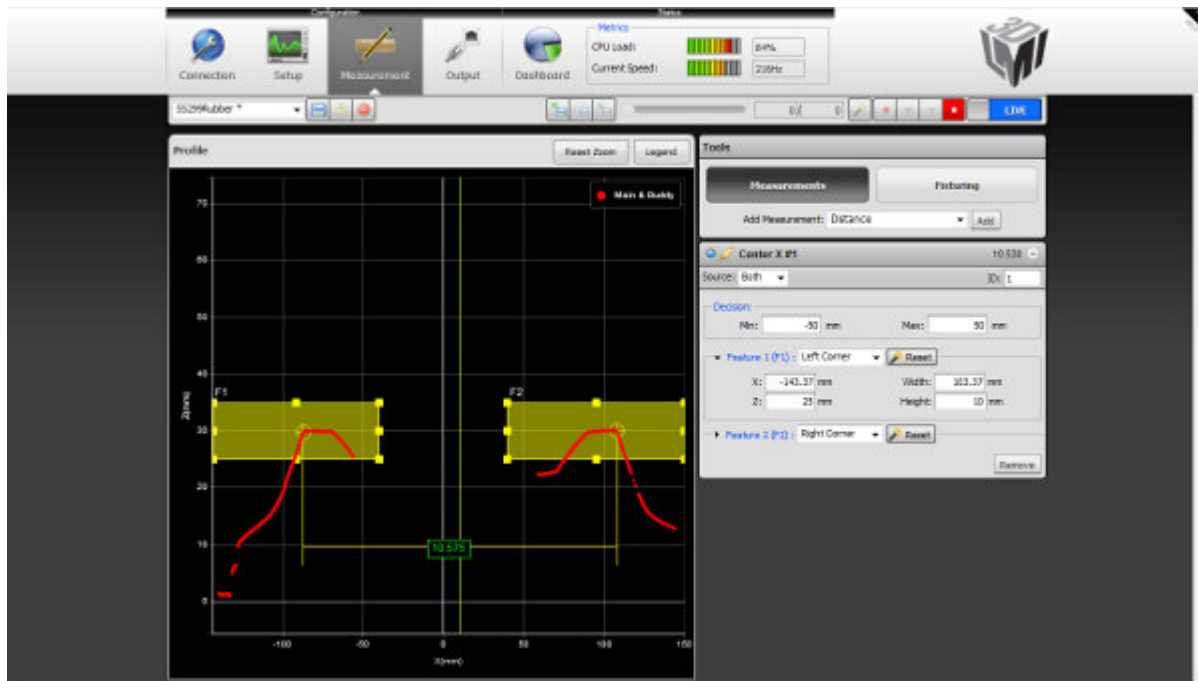
STEP 2: Connect the Gocators to a Master 200 for power and I/O then connect the Gocators through an Ethernet switch to your PC's Ethernet port. Open your favourite web browser (Gocator has a web server built-in to each sensor – you can connect with any computer, browser or OS) and enter the sensors IP address.



STEP 3: Start the Profile Viewer, and see the extrusion profile on the screen. Since rubber is very black and shiny, it is not an easy surface for 3D measurements. It's easy to fix this – just click the Exposure Auto Set button, and the optimum exposure will be automatically set for you.



STEP 4: Use your mouse to set windows over the zones of the features you want to track for guidance. Select the measurement type that matches the features selected from Gocator's full array of built-in tools, which include height, width, position, intersection points and centers. If you have different profiles that run on the tire build machine, you can save different configurations for each profile for later recall.



STEP 5: Select the output you want to communicate with your existing conveyor position controller. Gocator lets you choose from Ethernet, two digital, 4 – 20 mA analog and RS-485 outputs.

If you use a differential encoder on the conveyor, or a photocell trigger to detect extrusions coming into the machine, connect these to the Gocator using the convenient breakout connectors on the Master 200 input.

Gocator provides a true stand alone system. You may now remove your PC and the system operates on its own.

You now have an operational precision 3D tread extrusion guiding system that has taken minutes to set up. Simple setup and flexibility are the trademarks of Gocator.

Experience this application demonstrated at [Tire Technology Expo](#) in Cologne, Germany February 15th - 17th, 2011 in LMI's Stand 8475.