Laser Measurement

Profile360 is an in-line, real-time, non-contact measurement system for continuously monitoring key profile dimensions in complex shapes such as rubber, ceramic, plastic, and wood-plastic composite extrusions, roll-formed metal profiles, and profiled wire. Profile360 employs CrossCheck™ Line Laser Sensors to digitize the profile, compare it to a CAD template, and continuously monitor key dimensions. Dimensional changes often indicate a change in material, equipment, or process, resulting in poor quality or high scrap or reclaim cost.

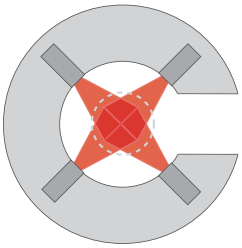
Profile360 continuously monitors the size and shape of complex profiles in order to assure quality and avoid the high cost of defects. The system acquires thousands of data points around the profile and matches them to a CAD template, where key measurement parameters such as width, thickness, gap, radius, and angle are extracted. Measurement parameters are compared to allowable control limits and displayed on the operator's terminal with a pass/caution/fail status indicator. Profile360 runs at rates up to 20 profiles per second. The system is available in standard sizes and can be custom-built for almost any size and shape.

In-Line monitoring is displacing off-line checking methods:

- Alarms immediately when the dimensions change so that operators can intervene to correct the process, resulting in improved quality, improved production yield, and reduced cost of scrap and rework
- Provides instant measurements, so the operator can immediately see the results of all line adjustments
- Provides 100% inspection of the entire run compared to periodic off-line checking, which can miss many disturbances
- Used by many to decrease start-up time, resulting in higher production yield and lower scrap cost

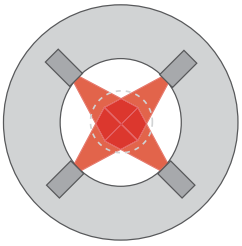
The Profile360™

Unlike oscillating measurement systems, Profile360 has no moving parts – no slides, motors, controllers, or encoders to require maintenance and calibration. The system is sealed and temperature controlled to assure a constant internal temperature. This results in a greatly reduced thermal drift for the system and assures a long laser diode life, even in tough environments.



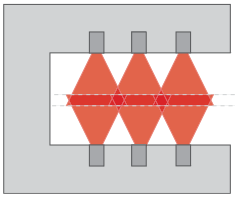
C-Frame Systems

- Available in 10, 30, 50, 75, 100, and 175mm diameter fields-of-view
- Available in 2, 3, 4, 5, or 6 sensor configurations
- Available with the Industrial Mobility Package, which includes: Mobile lift cart, Industrial PC, Industrial Touchscreen monitor, UPS, PLC, and light stack, assembled into an "all-in-one" package



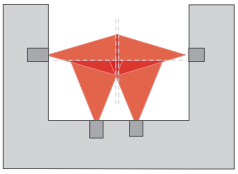
O-Frame Systems

- Available in 300, 600, and larger fields-of-view
- Available in 2, 3, 4, 5, 6, 7, or 8 sensor configurations
- Custom sizes and configurations also available



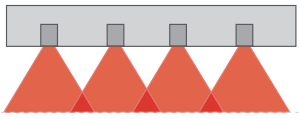
Two-Sided Systems

- Available using any sensor size, in overlapping and non-overlapping sensor orientations



Three-Sided Systems

- Available using any size sensor, in overlapping and non-overlapping sensor orientations



Single-Sided Systems

- Available using any sensor size, in overlapping and non-overlapping sensor orientations

Inspecting with the Profile360™

- Line Operators can immediately observe and react to manufacturing problems
- Production Managers can quickly review historical run data
- Quality Control Managers can better understand the process and factors that cause variation

Additional Benefits Include

- Faster startups, faster product development, faster die design
- Improve customer satisfaction
- Reduce inspection labor and material scrap

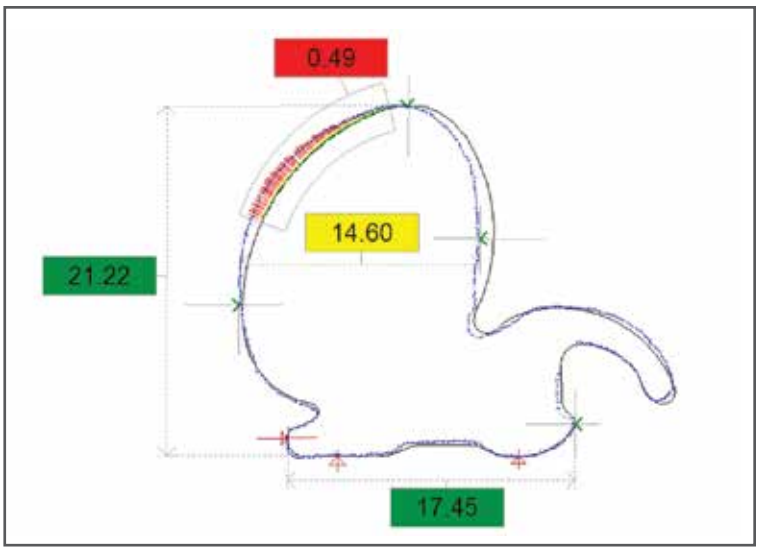
Auto Seals

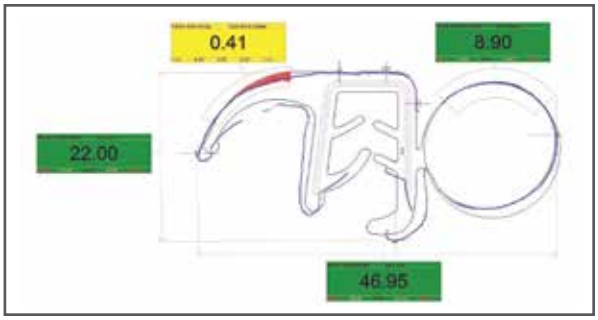
When auto sealing extrusion lines go out of specification, they produce about $1,400 per hour in scrap. The scrap is not recyclable because the rubber is vulcanized, and often is cured over metal reinforcement. The result is a loss in raw materials, labor, energy, landfill cost, and production time.

Profile360 alarms any time dimensions change so the operator can act to correct the process, save scrap, and improve production. The Profile360 investment payback period is achieved in only 32 hours of scrap savings. If you can avoid 1 hour's worth of scrap per week, your Profile360 investment is realized in 32 weeks.

Savings with Profile360™*		
Compound Cost		$1.32/meter
Line Speed		18.2 meters/min
Compound Cost/hr	18.2m/min x 60min/hr x $1.32/m	$1,441/hr
Profile360 Investment		$42,900
Payback Period	$42,900 ÷ $1,441/hr	32 hours

* If you can reduce scrap by 1 hour per week, you can achieve a payback in 32 weeks based on raw materials cost avoidance alone, not to mention the cost of customer returns.





Extruded Window Profiles

PVC profiles can distort during calibration and cooling, resulting in non-usable profiles.

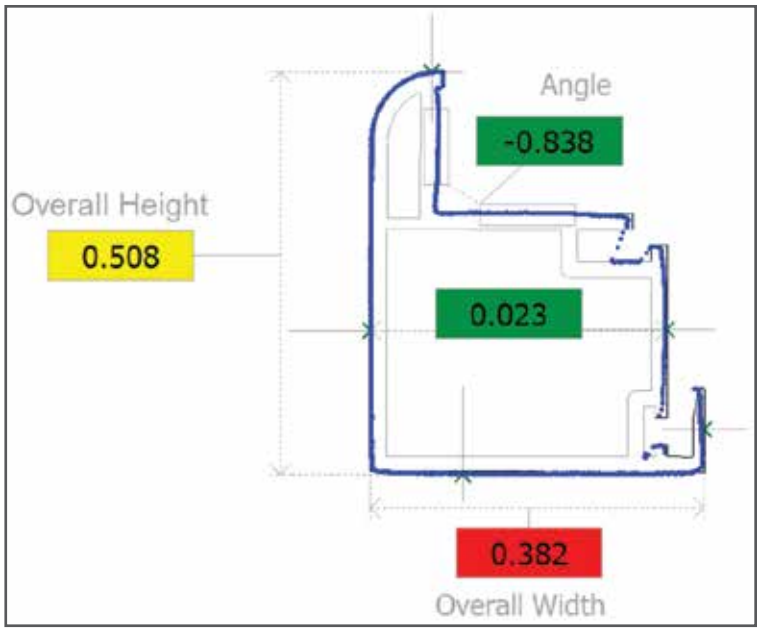
In-line checking with Profile360™ assures that the operator will be alerted any time there is a change in size, shape, or squareness. This helps reduce the time and cost of rework and improves yield.

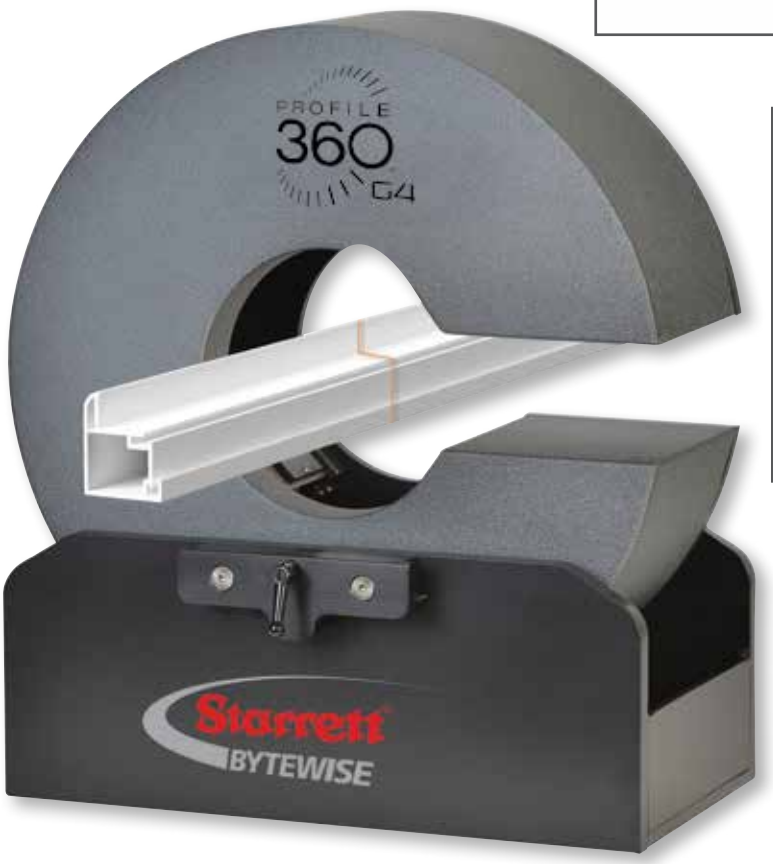
Since Profile360 provides real-time measurement, there is no need to cut samples, de-burr the cut edges, and walk to a central off-line inspection station in order to check dimensions. Profile360 greatly reduces the cost of dimension checking, and provides a much faster result.

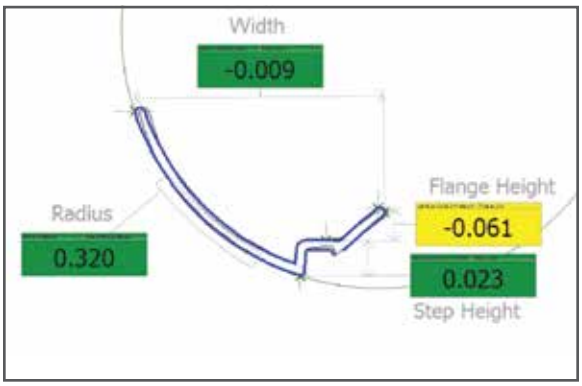
Features

- Monitor angles, squareness, gaps, grooves, and other key dimensions in real-time with on-screen optical comparator and trend graph displays
- Alarm when dimensions change
- View real-time profile geometry from any PC on your network
- Report complete dimensional statistics for each run

Which of These is the Most Efficient Way to Start Up Your Extrusion Line?	
Profile360™	**Off Line Methods**
View Real-Time Profile Dimensions In-Line	Cut Part
Adjust Extruder Immediately	Walk to Metrology Lab
Allow Adjustment to Stabilize and Pass Through Profile360	Cut Sliver
Repeat	Clean and Prep Sliver
Time Required: 5 min per adjustment	Put Sliver in Queue for Measurement
	Upload File/Find Mylar Place Sample On Scanner/10x
	Complete Measurement Routine
	Print Report
	File Report
	Walk Back to Extruder
	Adjust Extruder
	Wait for Adjustment to Stabilize
	Repeat Entire Process
	Time Required: 30 to 60 min per adjustment







Wood-Plastic Composite

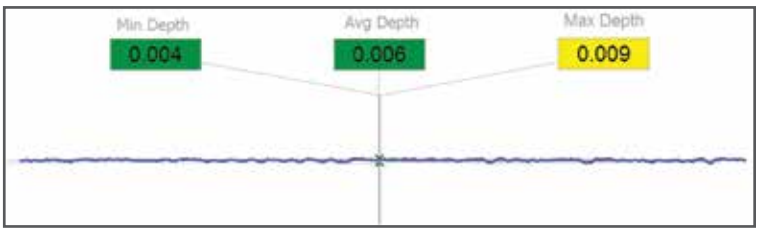
Wood-plastic composites have variations in raw material properties, humidity, and barrel temperature, and these variations can result in profiles that swell or sag, resulting in defective boards. Profile360™ is employed to continuously monitor profiles coming out of the die to assure the process is under control and the size and shape is correct. Profile360™ can measure boards to the lower end of the allowable tolerance range in order to reduce the raw material cost per board, resulting in payback within 100 days.

Features

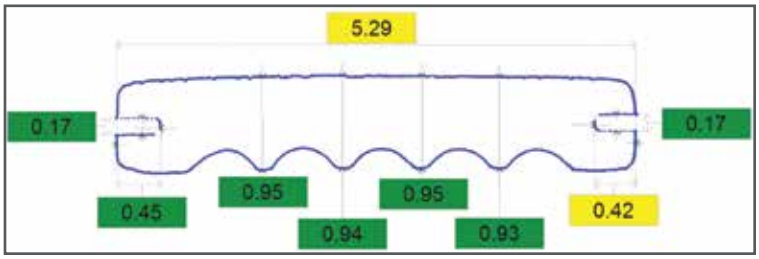
- Monitor tongue and groove dimensions, squareness, flatness, embossing depth, and other key dimensions in real-time with on-screen optical comparator and trend graph displays
- Run near lower spec limit to reduce raw material costs

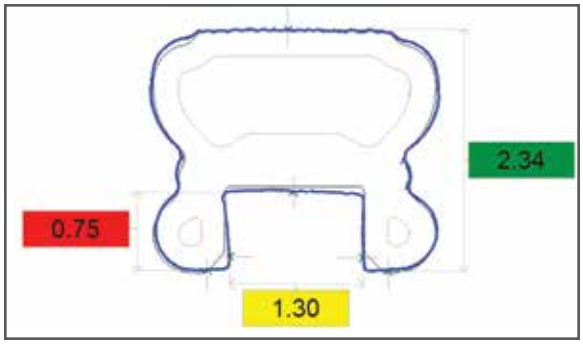
Cost Savings	
Nominal Board Size	5.5in^2
Target Area Reduction	.1in^2 (1.8%)
Material Cost	$.60/lb
Density	.04lb/in^3
Line Speed	144in/min
Target Savings	14.4in^3/min
Cost Savings	$477/day
Payback Period	100 days

Embossing Depth



Real-Time Dimensions





Roll Forming

Roll-formed profiles often go out of specification during a run because the incoming coils have lot-to-lot variations in width, thickness, crown, camber, and physical properties. Manual inspection is a time-consuming method to isolate out-of-specification material, resulting in bad parts produced on long runs.

Features

- Monitor key dimensions in-line for changes due to coil thickness, crown, camber, and physical properties
- Reduce or eliminate costly and time-consuming off-line checking
- Make faster set-ups by checking each pass on-line