



Sonioplastics is a PVC extrusion company based in Boucherville, Quebec, Canada that supplies PVC profiles to window and door fabricators. In 2009 Sonioplastics undertook a plan to increase labor efficiency, improve product quality, reduce the cost of non-compliant products, and improve customer satisfaction. Their plan called for a partial automation of the end-of-line operations in their PVC extrusion department and automation of the quality inspection tasks. Sonioplastics teamed up with Bytewise Measurement Systems for an on-line profile monitoring system - Profile360™, which was employed on ten extrusion lines to provide 100% on-line inspection of the profile geometry.

The Sonioplastics extrusion lines were previously operated in a conventional fashion, with a team of Extruder Operators setting up and maintaining all lines, and one Packer at the end of each line. In addition, a team of Quality Technicians took periodic samples to check the profile geometry and other quality parameters via off-line techniques. During a line startup, operators would use calipers to check dimensions as they tuned in the extruder controls, calibrators, and downstream equipment. According to Plant Manager Yves Allard, "Dimensional checking with hand calipers is a time consuming process, especially with complicated profiles. We wanted a better tool to permit the Operators to make higher quality setups faster. In addition, we required that the system continuously monitor the line after startup and signal instantaneously when any variations occurred. "

Profile360 is an on-line, non-contact profile measurement system produced by Bytewise Measurement Systems. Profile360 employs multiple CrossCheck laser profile sensors to gather over 4,000 measurement points characterizing the outside profile shape of an extrusion at rates up to 30 complete profiles per second. There are no moving parts. Profiles are compared to CAD templates, and displayed for the operator as a real-time optical comparator, just like the 10x machines used in many extrusion shops. Key parameters are measured using "virtual calipers" that emulate micrometer calipers. Measurements are compared to control limits and displayed as real-time results. All measurements are viewable as trend charts that show the measurements along with the control limits. Measurements are displayed with red, yellow, and green backgrounds to indicate whether they are out of specification, in the warning zone, or within specification. Operators are alerted by the red and yellow status indicators to adjust the process to keep dimensions properly centered, thereby assuring compliance with dimensional quality standards.



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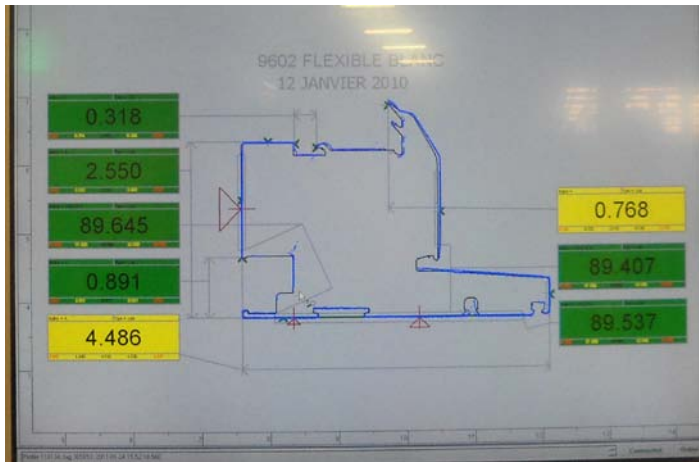
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According to Mr. Francois Viau, Director of Quality Control and R&D, continuous automated profile geometry checking is essential to the quality assurance effort because PVC profiles can distort during calibration and cooling, resulting in non-usable profiles. With Profile360 always at work, the system alarms whenever any change in size, shape, or squareness occurs so that the Extruder Operators can intervene and correct the setup. Profile360's on-line optical comparator makes it easy to see any deviations in the profile so that problems can be understood and addressed quickly. Profile360 has also reduced the time required for line startup.

Mr. Viau explains - "Profile360 permits us to immediately see the affect of any change in line setup parameters. This helps the Operator develop a deeper understanding of how each setup parameter affects the profile size and shape, making him more effective in setting up and maintaining each line, and responding to variations."



The Profile360 program at Sonioplastics has achieved remarkable results:

- Scrap rate has decreased 5%
- Customer return rate has decreased
- Production yield has improved 3%
- Production yield per person in the extrusion department has increased by 20%.
- Payback on the investment was achieved in 20 months, and ahead of plan
- Better quality control on angle has been achieved
- Flexible profiles are now easier to measure

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