

Pleasant Precision Inc., Kenton, Ohio

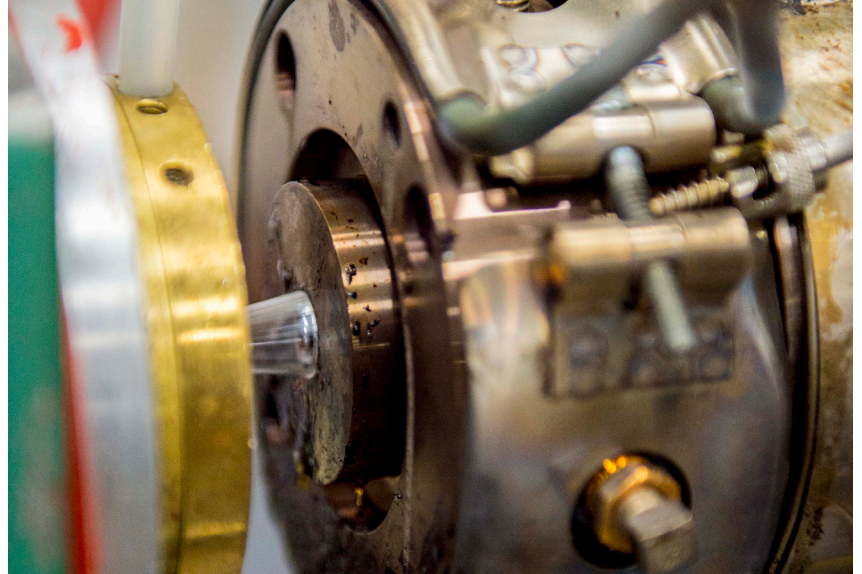
NDC's Beta LaserMike measurement and control system enables manufacturer to significantly reduce start-up time and scrap with medical tube extrusion process

Improvements:

- ▶ Reduced production times
- ▶ Reduced pull/purge scrap rate by 98%
- ▶ Eliminated customer defects
- ▶ Reduced start-up time 89%
- ▶ Reduced labor costs
- ▶ Achieved ROI in less than 12 months

Company Overview

Operating from a state-of-the-art facility in Kenton, Ohio, Pleasant Precision, Inc (PPI) provides a wide range of services including mold design and mold manufacturing, thermoplastic injection molding, plastic extrusion and many secondary operations for customers producing industrial, automotive, medical and consumer products. The company specializes in the extrusion of light tolerance medical tubing, producing products in three different sizes to cut length.



Challenges with Controlling the Tube Extrusion Process

In 2011, Pleasant Precision inherited an extrusion system from a customer they provided medical molding services. This introduced the first extrusion process to the company. The long-term goal was to optimize their process for the extrusion of thermoplastic tubing for the medical device industry. The newly acquired extrusion line was only equipped with a single-axis laser diameter gauge that measured the outer diameter (OD) of the product for quality control purposes. For the extrusion of plastic medical tubing, the critical measurement of the part was the Inner Diameter (ID).

After 1.5 hours and 20 pounds of material waste, the Pleasant Precision technical team was able to stabilize the extrusion process with minimal adjustment to keep the product within specification. But over time, the process became unstable and the extruded tube part would fall out of specification. Line breaks would occur due to making adjustments to get the parts back in specification which added to the cost of quality. In addition, the technical team had to operate the single-axis diameter gauge to the upper- and lower-specification limits of the product because of the wide range the processes involved.

After 19 months of operation, the extruder produced over \$36,032 dollars in scrap material that could not be fed back into the process – resulting in material loss. Other problems included:

- ▶ Total of 2,464,000 Rejected parts from an unhappy customer
- ▶ Running an internal Defect Rate of 22.4%
- ▶ External PPM (Parts per million) of 74,293

Implementing the Tube Measurement and Control Solution

After a thorough evaluation of several measurement system providers, Pleasant Precision selected the Beta LaserMike measurement and control system from NDC for its plastic medical tubing extrusion application. The system solution consists of the following equipment:

- ▶ DataPro 5000 process control and data management system
- ▶ AccuScan 5000 Series multi-axis laser diameter and ovality gauge
- ▶ UltraScan ultrasonic wall thickness and eccentricity gauge

“The Beta LaserMike system provides an automated, hands-free approach for measuring and controlling the dimensional aspects of medical tubing on our extrusion line,” says Darryl Wren, Senior Process Engineer at Pleasant Precision, Inc. “This gauging system enables us to easily collect important product data and provide the necessary feedback for process control.”

The Beta LaserMike UltraScan and AccuScan gauges along with the DataPro controller work as a system to measure and control the critical dimensional aspects of the extrusion process such as tube diameter and tube wall thickness. The unique UltraScan DSP signal processor with “Snap” technology provides automatic setup and calibration for quick and simple operation. The integrated system uses two closed-loop controls in the process: one for the vacuum to accurately control tube OD and the second for puller speed to accurately control tube wall thickness to maintain the set-points established for the production run. This enables Pleasant Precision to setup tighter tolerances to ensure it produces the highest quality products for customers.



Company Realizes Bottom-Line, Quality Benefits

Since its implementation, the automated measurement and control system has delivered a number of bottom-line benefits to Pleasant Precision. “Product quality is of paramount importance to us,” adds Darryl Wren. “The Beta LaserMike system enables us to quickly identify product issues, make immediate process adjustments and resume production to produce in-spec product. As a result, we have reduced scrap by 98% and start-up time by 98%. We also reduced our internal defect rate to 1.3% and achieved an external PPM of 0. We are a very satisfied customer. We greatly value the Beta LaserMike system, training and customer support.”



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Document #: T-CS-SYST-PleasantPrecision-EN-2018JAN31
Date of Issue: January 2018
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