

Herb's Corner:

Sample Processing Update: Going to Great Lengths for Wiener Warmers

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Herb Tobben creates solutions to customer problems at ZERO's Sample Processing facility.

The Question

A manufacturer asked ZERO to help clean and etch the external surfaces of carbon steel tubes to enhance the bond strength of heavy chrome plating. The customer wanted a Ra range of 100 to 200 microns, to ensure maximum adhesion of the plating. After plating, the tubes are installed in the hot dog cookers found in ball-parks and convenience stores worldwide.

The three sizes of tube are the same ID and OD, but range in length from 14 to 32 inches. Each tube has a gear welded to one end that mates to the drive motor.

The customer's existing process - manual blasting - produced an acceptable surface for plating, but took several minutes per part and put the employees at risk of repetitive motion injury. The customer needed to get at least 100 parts per hour to justify the switch to automated blasting.

The Solution

Frankly, ZERO has built many machines to process rollers—from copiers to printing presses to conveyer systems. This application was far from the *worst* we had seen, though it did present a few special problems *wienerly* overlooked.

First, the cylindrical shape of these parts calls for an indexing turntable with rotating satellites. Turntable machines, such as ZERO's BNP A-200 and BNP A-205, are widely used to automatically blast andpeen everything from turbine blades to clutch components to glass vases.

The bad news - because the longest part is almost three feet, the customer needs a special taller-than-normal cabinet, which will, obviously, cost a little more than a standard one.

The good news - the consistent diameter of the part means we can use one size fixture with a very simple setup. The fixture has to hold the shortest part and the longest part without allowing them to wobble during the blast cycle. We settled on a long tapered nylon rod, mounted atop the satellite. During sample processing, this elegantly simple fixture proved easiest to load and unload, and allowed only minimal wobbling during blasting.

To get the 100 to 200 Ra desired, we selected 60-mesh aluminum oxide. In addition to an efficient ZERO media reclaimer, the machine includes an automatic refresher that introduces virgin ALOX to maintain an optimum operating mix.

Eight automatic blast guns, mounted in two columns on a vertically oscillating arm, deliver a consistent shower of ALOX to the tubes as they index through the blast cycle. The guns are

positioned to equalize the blast pressure on both sides of the tube, helping to minimize wobbling.

For the longest tube, all eight guns operate, but for the shorter parts, the operator switches off the top pairs of guns to conserve media and compressed air.

To reduce the risk of repetitive motion injury, ZERO fitted the cabinet with light-curtain controls. Instead of pressing dual palm buttons to actuate the cabinet, the operator merely places two parts on the fixtures. When the operator's hands break the light curtain, the machine stops indexing. When the operator's hands move out of the curtain, the system indexes the newly loaded parts into the blast chamber and presents the cleaned parts for removal.

Thanks to sample processing, we knew we could meet the target production rate of 100 parts per hour. During the pre-delivery testing, the machine easily processed 120 parts per hour. Fortunately, no one accused us of hot-dogging it.

Got a question about peening, cleaning or sample processing? We relish the opportunity to help. ○

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