Herb’s Solutions:

Cold Working Cold Metal—

A Hot Topic

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The Problem:

A cryogenics container manufacturer needed to clean and finish the exterior surfaces of stainless steel tanks. At first glance, the containers resemble beer kegs, but with more fittings, plus a beefier base and lifting attachments. They range in size from 16 to 32 inches tall and up to 16 inches in diameter.

The jigs and tooling required to precisely position the attached components often marred the tanks. And welding left behind oxidation stains and scorch marks. Cryogenics is a pretty high-tech business, so the last thing this customer wanted was to market its products covered with grime and tooling marks.

The customer’s employees used pneumatic tools to polish and buff the tanks to an acceptable finish, but each tank took 8 to 10 minutes. Tests showed that manual blasting produced good-looking tanks, but was about as slow as the pneumatic tools.

The Solution:

I love it when a customer arrives already sold on the process. It means half our work is done. Now the only thing left to do is get good clean, finished parts in as little time as possible.

Note to any company making products from stainless steel: Glass bead cleans and finishes stainless steel beautifully. The smaller the bead, the smoother and brighter the finish, the bigger the bead, the quicker it removes the tooling and scorch marks. The trick for this application was selecting glass bead sizes that maximized the cleaning rate while still producing a high-quality finish. We settled on 140/230 mesh, and recommended a media refresher to monitor and add virgin media to the working mix, as needed.

A powered work car with a powered turntable carries the cryogenic tank into a modified ZERO BNP 600 cabinet. Two oscillators, one horizontal and one vertical, are fitted with four automatic suction blast guns apiece. Each has a separate stroke control, so that their cycles can operate independently.

The blast guns deliver a 60-psi blast of glass bead. As the arm moves down along the tank, the turntable rotates to ensure complete coverage on the top and side of the part. (Cleaning the bottom was not an issue, but we have built machines for similar applications where a fixture held the part off the table enough to allow the blast nozzle to hit the underside.)

A teachable PLC remembers the parameters for each part, and will allow the customer to adapt the system to clean and finish other products.

During testing and run-off, the machine we built for this customer consistently processed the largest cryogenic tanks in less than 45 seconds — effectively boosting their production rate from 6 or 7 parts per hour to about 80 parts per hour.

Got a question about shot peening, abrasive blasting, or sample processing? Clemco can help. Call 636 239-8135 or submit your request online at www.clemcoindustries.com.

Herb Tobben is Sample Processing Manager for Clemco Industries Corp. He is a regular speaker at the Electronics Inc. Shot Peening Workshops. •

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