



Filtration Feats

Sunbeam's Neosho, MO, U.S. facility is dedicated exclusively to producing gas and charcoal grills for the consumer market. The facility also holds another distinction: it reportedly operates one of the largest powder coating operations of any end-user OEM in the U.S.



"Smart Cart" cooking grids are powder coated in black fleck powder porcelain at Sunbeam's Neosho, MO, U.S. plant. The company coats more than 1,800 grids per hr.

Originally, the plant applied liquid paint in-house and outsourced porcelain enamel finishing and chrome plating. In the mid-1990s, the company felt that the new powder coating developments could improve finish quality and product performance and provide environmental advantages to the plant. Today, powder coating has replaced the primary liquid system, and porcelain enamel has been brought in-house.

During its busy season, roughly October through June, the facility powder-coats 150,000 parts per day and porcelain enamel coats 20,000 parts per shift. On the powder side, six Nordson Corporation (Amherst, OH, U.S.) booths apply five colors of two different powders to a wide variety of components. (One of the booths works with roll-on, roll-off modules to accommodate color changes, so it is functionally a total of seven).

With the exception of warming racks, which are plated or porcelain enameled, every grill component is powder-coated or porcelain-coated, from 2-6 mils. Die cast aluminum components are coated with a high-temperature resistant powder, Mor-temp from Morton Powder Coatings (Reading, PA, U.S.). Cold-rolled steel parts get Morton's Corvel HY-polyester urethane. These powders were chosen for their coatings uniformity, Faraday cage penetration, compatibility with higher line speeds, and for their chemistry features, which prevent the breakdown into ultra-fine particles during reclaim, thus optimizing first-pass efficiencies. Parts geometry varies widely, from small, intricate brackets to large, flat panels.

High transfer efficiency and workable powder reclaim were two important reasons for Sunbeam's choice of the Nordson booths. Equally important, because of its direct impact on finish quality, powder cost, and maintenance budgeting, was the choice of filtration. For this aspect of its powder operations, Sunbeam chose a Dual Dimple polyester technology from Chemco Manufacturing Company in Northbrook, IL, U.S.

"We have yet to have one failure with it since we've gone to market and thought it would be the ideal solution for Sunbeam,"

says John Walz, manager for Powder Coating and Dust Collection at Chemco. "In these difficult times, they were looking to reduce costs, and this was a viable option for them to consider, while still maintaining the same service life they had been enjoying."

The Advanced Dual Dimpled cartridge achieves consistent efficiency of 99.9 percent at 1 micron and higher, a performance made possible, in part, by an engineering feature that enables the cartridge to maintain uniform pleat spacing, to prevent ballooning during pulsing, and to help lower total pressure

drop under all operating conditions. The new technology imparts a double (opposed) dimpling on individual filter pleats of spunbound polyester media. This substantially improves performance when the filter is loaded with powder. It also increases capacity of the filter following the pulsing cycle. The double dimpling technology is said to effectively keep the pleats open and working, regardless of the amount of accumulation or other conditions. It requires no seasoning, unlike many traditional cartridges.

The Dual Dimple pleating configuration



The performance of this powder coating booth at Sunbeam's Neosho facility was reportedly made more cost effective through the use of Chemco's dual-dimpled technology.


also reportedly minimizes the retention of powder between the pleats of the cartridge and powder loss during change-out. In a controlled test comparison involving paper cartridges and dimpled polyester cartridges over an operating period of 2 years, the paper cartridges required four changes and produced a powder loss totaling 1,200 lb. The polyester cartridges required one change and produced a powder loss of 144 lb.

Chemco's pleating configuration was additionally beneficial to Sunbeam because it lowered the pulse pressure required for cleaning from 90 to 60 PSI, thereby reducing energy consumption and extending the filter life. Each cartridge in the department's bank of 24 is pulsed, in rotation, at approximately 90-sec intervals. According to Tom Greding, the Sunbeam Business Team Manager responsible for both powder and porcelain enamel operations, the service life for the Dual Dimpled polyester cartridges averages 2 years.

The service life for filters supporting a porcelain coating line is a different story. Historically, the abrasive action of glass demands that the finisher either buy cartridges that use exotic materials or accept the combination of low cartridge costs accompanied by frequent maintenance attention.

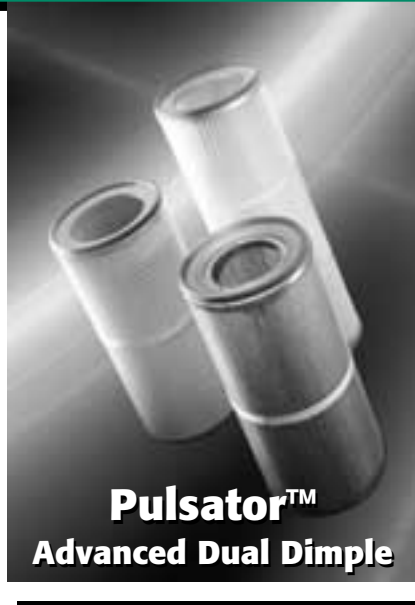
So, when Sunbeam decided to test both the dimpled polyester and its previous technology on its two-color porcelain lines, Sunbeam discovered that Chemco's Advanced Dual-Dimpled product was a cartridge that would, according to Don Keller, supervisor of Porcelain Enamel Operation at Sunbeam, perform for a full year between change-outs—at a better cost.

"The specific advantage here," he explains, "is that it allows the system to run more efficiently in terms of airflow—and that's what's critically important."

Sunbeam ordered three sets between June and October 2001 and has used them since that time. Mr. Keller says he does not expect to require another changeout of cartridges until the busy season starts again in February 2003. Sunbeam says it realized a cost savings of approximately 70 percent by changing to the dimple-pleat spun-bound polyester media. 

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