

# New Designs **PUMP UP** Cleanability

Pump sanitation features improve product safety, with the other eye on efficiency.

By Bob Sperber, Plant Operations Editor

**F**ood safety, sanitation and cleanability go hand-in-hand (in-hand) with operational efficiency for today's centrifugal, positive displacement (PD) and other pumps.

Processors generally expect that the pumps used for food contact applications will be designed to conform with sanitary standards (3-A, EHEDG and FDA Guidelines, etc.) and will accommodate clean- or sterilize-in-place (CIP/SIP) needs. Beyond their similarities, vendors have their own ways of serving these needs while providing efficient, effective performance.

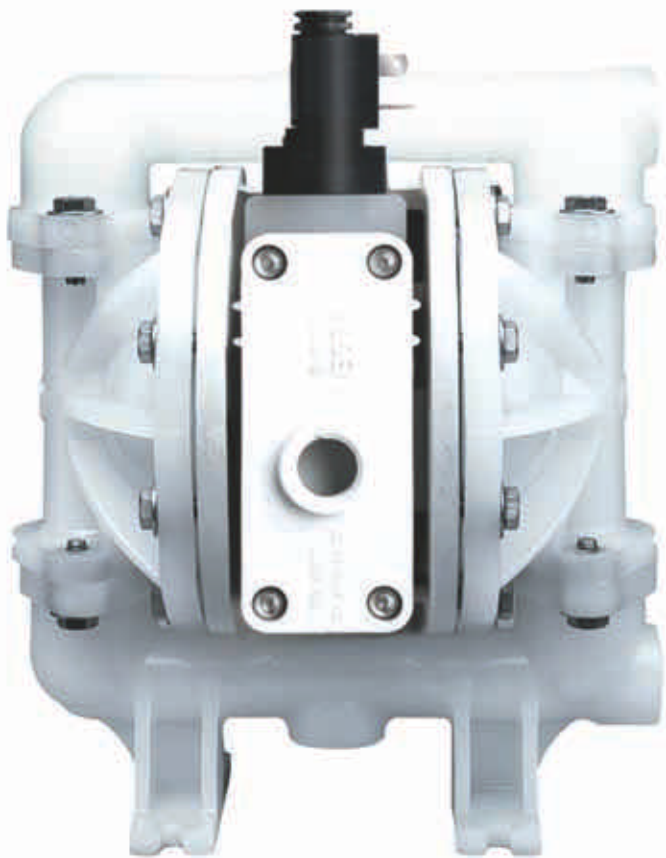
SPX Flow Technology ([www.spx.com](http://www.spx.com)), Delavan, Wis., offers all manner of liquid processing equipment, including a full range of pumps from APV ([www.apv.com](http://www.apv.com)), which it acquired in 2007, and from Waukesha Cherry-Burrell ([www.gowcb.com](http://www.gowcb.com)). These include the Universal Series Rotary PD pumps and modular W+ Centrifugal pump series, which reduces spare parts stocks by sharing seals for standard as well as a self-priming pumps.

On the latest features that enhance efficiency, Jim LeClair, global product manager for PD pumps, cites the Wi+ inducer pump, which uses an inducer that helps keep the pump's impeller flooded, reducing the net positive suction head required. It can pump product with entrained gas without gas binding or cavitation.

While he claims "normal" liquid ring pumps have an efficiency range in the low 40 percent at best, the SPX solution reaches 60 percent or higher, which "allows for large energy savings during the majority of the CIP cycle." He adds that the Wi+ is much quieter during CIP than liquid ring pumps.

The latest sanitation features can be seen on SPX's Universal Series pumps, which feature a flat body profile and can completely drain in CIP applications when mounted with vertical ports, which can also be drilled in "strategic areas on the hub and rotor to optimize the CIP potential," says LeClair.

Over at Fristam Pumps USA ([www.fristam.com/usa](http://www.fristam.com/usa)), Middleton, Wis., the company's FKL A positive displacement pump series meets sanitary requirements with a sleek exterior and a split-style gearbox for easy access to bearings and shafts. The company touts this as the first close-clearance



Wilden's A100 Advanced Plastic double-diaphragm pump.

PD pump to be designed for "true CIP," meaning processors no longer have to disassemble the pumps by removing covers, cleaning rotors out-of-place, and reassembling them.

The FKL A can be fully cleaned in place to reduce downtime, inadvertent contamination and mechanical damage. The pumps are "over-engineered" to a 500 psi rating to reduce internal wear, "which makes the pump last longer and not require much repair," says Daniel Funk, marketing supervisor. Likewise, large-diameter shafts, rotor balancing and a heavy-duty gearbox enhance reliability.

More broadly, the company offers a range of pumps including PD pumps for gentle product handling; easy-maintenance pumps with a front-loading seal; heavy-duty centrifugal pumps; high-pressure pumps and self-priming pumps for CIP return/aerated products.

"Many food processors are moving toward CIP or SIP, but many still prefer to disassemble, clean and reassemble," says Aaron Renick, food market manager for Seepex ([www.seepex.net](http://www.seepex.net)), with U.S. offices in Enon, Ohio. The BWC, a cost-effective, sanitary version of the company's "wobble pump," he says, "allows you to do this very quickly in a small package. We made the stator thicker, which extends the life cycle, and have significantly simplified maintenance."

Additionally, it's a "fraction of the cost of a BSCO pump," another Seepex product with high versatility: multiple

component blending, high pressure spraying and high-accuracy metering of additives, flavorings, colorant and flavorings.

Still, for CIP efficiency, the BSCO line presents the height of sanitation with its “evenwall” stators, which ensure uniform thickness of the rubber stator to prevent gaps between rotor and stator due to differences in temperature between cleaning solution and the product being cleaned-out. The BSCO also features open aseptic joints for easy, no-residue cleaning, and the pump can be used in a vertical hopper pump configuration using a cylindrical open hopper that is “an excellent solution for customers who are concerned with product degradation.” Renick says they’ve been applied to whole chicken breasts, chicken thighs and other products requiring high solids integrity.


The company also offers CS pumps for shear-sensitive applications, and a BTM line that can reduce the size of large food particles to smaller pieces or even slurries in one complete package driven by one motor for up-front cost and long-term energy savings.

Pump Solutions Group (PSG, [www.pumpsg.com](http://www.pumpsg.com)), Grand Terrace, Calif., whose brands include Wilden, Mouvex and Almatec, also offers self-priming pumps such as the Wilden Pro Flo X HS line of sanitary stainless steel pumps that offer high shear-

sensitivity and the ability to handle highly viscous products with high solids.

“It is also self-priming, but will not deadhead a system or have issues with dry running,” says David Kirk, hygienic market manager for PSG. He adds that it also accommodates clean-in-place requirements, is “extremely easy to work on, highly portable and versatile.”

The Pro Flo X HS pumps are part of PSG’s Wilden line of air-operated double diaphragm reciprocating pumps. They can operate at pressures up to 250 psi, enough pressure to “not only pull product out of tanks, silos, drums and totes, but to pump the product to the next step in the manufacturing process,” says Kirk. This eliminates the need for prior-generation solutions of using a separate transfer pump for long transfers.

Additionally, the Pro-Flo X air-distribution system allows the user to control air consumption and flow rates with the turn of a dial to reduce energy usage and costs – much like a “variable-frequency drive for air,” Kirk says. The pump eliminates all mechanical seals and rotating parts, which can be sources of product trapping and harborage. In addition to being fully drainable, the line’s full-stroke integral piston diaphragm negates the need for an outer piston, removing additional areas where product can be trapped, further simplifying sanitation. 



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