



ELECTRONIC MFG. SERVICES (EMS)

Smart Sonic Delivers Closed-Loop Stencil Cleaning Solution

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A manufacturer seeking to modernize its stencil cleaning process faced a familiar challenge: balancing operational efficiency, worker safety, and environmental compliance. With a throughput of fewer than 20 stencils per day, the customer required a fully automated system that would eliminate operator exposure to cleaning chemicals while also addressing growing concerns around wastewater disposal.

Smart Sonic responded with a tailored, closed-loop solution that met each of these demands without adding unnecessary complexity to the process.

Safer, Fully Enclosed Process

To replace the customer's existing open-tank system, Smart Sonic recommended its ErgoSonic Stencil Cleaner. Designed for low- to mid-volume operations, the system is fully automatic and completely enclosed, preventing operator contact with cleaning chemistries and eliminating the release of odors commonly associat-

ed with open systems.

The cleaning process is straightforward. Operators load a stencil directly into the chamber — no basket required — and select a preset cleaning profile. From there,



Smart Sonic's ErgoSonic stencil cleaner.

the system handles the entire cycle automatically, including both washing and rinsing within a single sealed chamber. Wash solution is drawn from an internal reservoir, circulated through the process, and then returned via an integrated fil-

tration system.

With a typical cycle time of approximately 10 minutes, the ErgoSonic provides consistent, repeatable cleaning performance while maintaining a safe working environment. Its ergonomic front-loading design also ensures ease of use, positioning the loading area at a comfortable height for operators.

Most importantly, the closed design ensures that operators are never exposed to cleaning chemistries, vapors, or contaminated waste streams — a critical factor for facilities prioritizing workplace safety.

Solving the Wastewater Challenge

While the cleaning process itself was addressed with the ErgoSonic system, wastewater management remained a key concern. Like many electronics manufacturers, the customer could not send stencil cleaning waste directly to the drain due to environmental regulations and the presence of solder particulates in the spent solution.

At the same time, the customer was wary of the ongoing costs associated with hazardous waste hauling.

To address this, Smart Sonic presented two viable closed-loop options: the EnviroGuard filtration system and an evaporator-based solution.

The EnviroGuard system offers continuous filtration of rinse water and batch filtration of wash water, capturing contaminants in cartridge filters so that no liquid is discharged to drain. While effective, the system requires periodic maintenance, including the replacement of resin and carbon media every three to six months.

Alternatively, evaporator technology provides a different approach by eliminating wastewater altogether. Through con-

trolled heating, wastewater is evaporated, leaving behind either a concentrated liquid or dry solid residue for disposal. This significantly reduces the volume of hazardous waste and lowers handling costs over time.

Closed-Loop Outcome

After evaluating both options, the customer selected the ErgoSonic Stencil Cleaner paired with the SE-1 Evaporator. This combination delivered a fully closed-loop process — from cleaning through waste management — without the need for drain discharge.

The evaporator's performance played a key role in the decision. With an evaporation rate of 4 to 6 gallons per hour and relatively low

energy consumption, the system can reduce an entire week's worth of wastewater to just a few gallons of concentrated liquid or a small amount of solid waste within hours. This capability offers a clear cost advantage over more complex and expensive alternatives such as reverse osmosis or ion exchange systems.

By implementing this solution, the customer achieved a streamlined, environmentally responsible process that minimizes operator risk, reduces waste disposal costs, and ensures compliance with regulatory requirements.

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