

## SIGMA-ALDRICH: FILLING A NICHE IN CHEMICAL PACKAGING



Sigma-Aldrich, headquartered in St. Louis, MO, is one of the world's leading providers of life science chemical and high-technology products. The company produces over 100,000 chemicals and provides a host of other products to one million individual customers in over 80,000 accounts worldwide.

Obviously, automated or semiautomated processes are critical to running Sigma-Aldrich's chemical packaging pipeline. Charlie Edwards, director of packaging for Sigma-Aldrich's St. Louis packaging

operation, noted that an increasingly large number of the package orders received are for analytical sizes ranging between 1 mg and 1 gram. Smaller quantities of 20–30 packages can usually be filled by hand, but the larger package sizes, which can range from 100–400 packages per fill, lend themselves to an automated solution.

“Ergonomically, automating the filling process is easier on our packagers, as the filling task is exceedingly repetitive and can actually be straining on the worker,” Edwards explained. “Plus, automation is usually more accurate and less error-prone.”

Sigma-Aldrich had automation capable of handling large package orders (from 50 g to 2 kg) and a custom built autofill machine for filling 20 cc bottles at a rate of up to 3,154 packages per day. But neither system could effectively handle weights lower than 100 mg.

“We really wanted something in this range, which our other equipment couldn't handle well,” said Edwards. “Powdernium filled that niche.”

Steffen White, packaging supervisor, concurred. “Automation is really beneficial to this area,” he said, pointing out that Symyx Powdernium systems offer an isolated, enclosed environment that helps protect workers from potentially hazardous materials while also providing humidity control, a critical factor given the St. Louis climate.

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**CHARLIE EDWARDS**  
Director of Packaging  
Sigma-Aldrich

Sigma-Aldrich has two Symyx Powdernium systems operating in St. Louis and Switzerland. Prior to implementing the systems, Sigma-Aldrich tested a wide range of compounds to determine which worked best on the Symyx system.

“I’ve personally been pleased and surprised with the variety of powders that Powdernium can handle,” Edwards said. “Compared to other equipment we have evaluated, Powdernium’s capabilities are a lot more

extensive, and it’s easy to work with, too.” The tests revealed that crystalline, powdery products work best, while gummy products are more problematic. Lighter, flyaway products also challenge the system, but as White noted, “These products are a problem for hand-weighing as well. You need some pretty extensive innovation to handle substances that easily pick up an electrostatic charge.”

White pointed out that Symyx Powdernium may not have as fast a throughput as other technology, but it makes up for the lack of speed with precision and accuracy. “We’ve been able to scale back and tighten up our weighing ranges thanks to the accuracy we can achieve with Powdernium,” explained Edwards. “Before, we used to fill to a range of 10 mg. Now, because Powdernium can fill to our specifications with less overage, we use less product to get the same fill. For a company like Sigma-Aldrich whose business is chemical packaging, less overage on each package filled can save thousands or tens of thousands of dollars each year.”

Additionally, Edwards noted that the biggest workflow changes come from changes in process rather than filling rate. “Sure, our hand weighers might be able to weigh faster, but while they are weighing, they can’t do anything else,” he said. Symyx Powdernium, on the other hand, can run on its own, enabling the technicians to attend to other tasks. “No one has to monitor it—you can’t beat that,” White says.

White also credits Symyx Powdernium software for providing built-in accountability and documentation for each fill. “Our customers want to know exactly what they are getting from us,” White said. “We just have Powdernium weight checks downloaded directly to a CPU geared to the powder dispense instrument and provide those reports to the customer for each package we do.”

White and Edwards explained that the packaging group frequently sets up fills to run overnight so that the packages are ready to be capped and labeled when the morning shift arrives. And while the system runs, technicians can prepare a previous order for shipping, sort through requisitions, or go to lunch.

“Whatever they are doing, the point is that they can be doing something else other than being stuck weighing package after package,” said Edwards. 