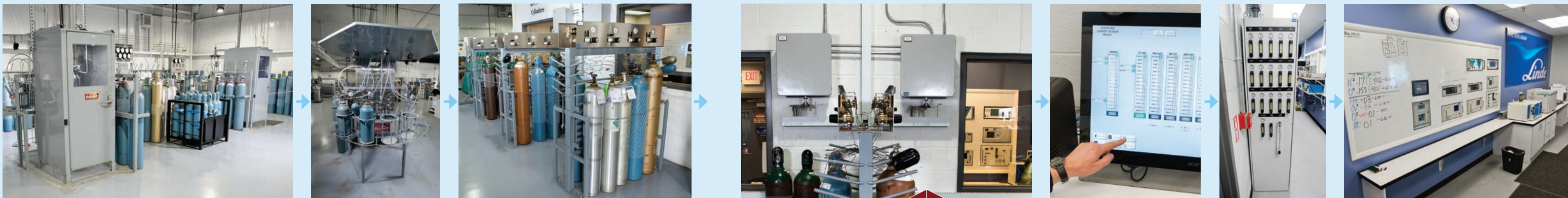


Specialty Gas Automation Next Generation Analytical Processing



Filling, Testing and Now: Automated Sampling at Linde's New Specialty Gas Facility



Weldcoa's PASS system design and software adds incredible efficiency.

The recently completed 4000-sq.-ft. addition to Linde's 35-yr.-old production facility in Hammond, IN establishes the firm's foothold in U.S. production of specialty gases. When the new spec-gas facility launched production in February 2014, plant manager Jack Taylor told local media: "This new facility melds perfectly with Linde's goal to be a total gas supplier, and reinforces our commitment to our independent distributor network."

"The plant has exceeded expectations," added project manager Jeff Leist. "It's turning out spec-gas mixtures for scientific and research applications for laboratories, universities, power plants, food and beverage, pharmaceutical and biotech companies. It serves as a production hub for our U.S. distributor business as well as for specialty medical gases for our LifeGas unit. Production volumes have increased every month since we launched, growth has been exponential and we're barely scratching the surface of what I think we can accomplish in Hammond."

Complete Faith in a Single-Source Supplier

Plans for the ambitious Hammond-plant expansion began in the summer of 2012. Following an exhaustive review of possible technology partners, Leist and his team settled on Weldcoa to design, specify and install four blend cells (two manual and two Sur-Fill IQ-S automated). The project also included a helium purifier, cylinder-bakeout system, cylinder inverters and cylinder-prep systems.

Further, in order to ensure that the new plant had every advantage in the marketplace, Linde specified Weldcoa's new Programmable Automatic Sampling System (PASS) for the plant's spec-gas laboratory.

| Plant capacity |
|---|
| Low-pressure (2000-2400 PSI) inert gases: 600 cylinders/month |
| High-pressure (6000 PSI) inert gases: 140 cylinders/month |
| Oxidizer gases: 600 cylinders/month |
| Medical gases: 200 cylinders/month |
| Flammable gases: 600 cylinders/month |

Weldcoa provided additional gas buffer volume (storage tubes), and integrated gas-distribution controls with the plant's existing industrial and medical gas filling systems.

Recalling the decision to partner with Weldcoa, Leist said: "Weldcoa clearly offered us the best technology package. Their process controls and automation are top-notch. They remain at the forefront of the industry."

Customization a Core Value

"Speaking specifically to Weldcoa's project-management expertise is the significant amount of customization necessary to satisfy project requirements," explained chemist Derek Piwonski, hired by Linde to oversee the Hammond spec-gas plant. In addition to voicing his appreciation of the efficiency of the plant's new blend cell (in particular the automated inert- and flammable-gas cells), Piwonski is a big fan of Weldcoa's PASS system. The system allows for the sampling of multiple cylinders from multiple filling areas, around the clock. It automatically calibrates, samples and analyzes the mixtures, and then records and prints out the results using fully customizable software.

"Customization held the key to unlocking the full potential of the PASS system," said Piwonski. "The huge amount of customization performed onsite by Weldcoa's team speaks volumes of their strengths. We required significant changes to the piping diagrams when we launched production, and Weldcoa accepted and met the challenge."

"Weldcoa's on-site tech team also had to customize the PASS startup screen, making it much more user friendly to meet our unique requirements," Piwonski said. "That enables us, as we grow and add operators, to train them quickly on how to use the PASS system. The entire project became incredibly complex and demanding, and Weldcoa's team never blinked. They took on a lot of extra work to ultimately save us a lot of time down the road. That level of flexibility and professionalism is what makes them a top-class organization."

PASS: A Showcase for the Gas Industry

The lab's PASS layout features five remote valves each piped to sample eight to 10 gases, as well as eight flex lines that go straight into the system, bypassing the remote valves. Each line routes through 12 PASS valves (one per test instrument), and each of those valves has 16 ports. "Compared to older sampling technology that relies on quick-connection boards," said Piwonski, "PASS delivers significant savings in time and physical effort. We're incredibly efficient, and as we continue to expand the application of PASS by fully automating our inspection process, we'll become even more efficient."

Full automation requires the programming of process profiles using Weldcoa's customizable PASS software. For now, Piwonski manually selects which valves to

utilize based on the job at hand, only because the plant's rapid growth has given him little to no time to develop the process profiles. However, with the expectation of soon expanding the plant's workforce, he is committed to programming, by year-end, profiles for 10 to 12 of the plant's most popular medical-gas product lines.

"PASS is truly a showcase. It's showing our customers, and for that matter, the entire gas industry, just what's possible."

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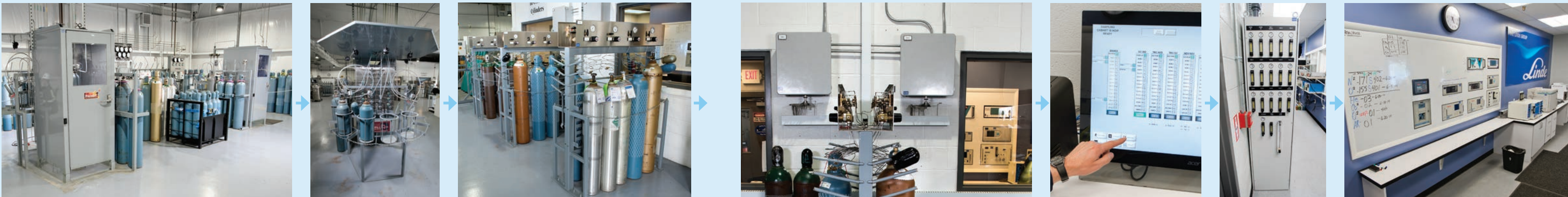
"Once these profiles are in place and we can run PASS in full automation mode, we'll be able to sample without operator intervention," said Piwonski. "We'll simply hook up sample cylinders and start the profile built into PASS. Then, PASS will do all of the work. With sampling complete, PASS will then print out a report displaying results from the process analyzers. All an analyst will have to do is review the results, rather than try to interpret them. Taking any opportunity for human error out of the equation—that's what our customers will really appreciate."

"PASS is truly a showcase for Weldcoa's commitment to develop technology that takes automation of spec-gas filling operations to a new level," Piwonski continued. "It's showing our customers, and the entire gas industry, just what's possible."

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