Cleaning up the market, here and abroad

Consistent controls platform spreads high-technology machinery around the globe

Three years ago, Cleaning Technologies Group started using Siemens controls in a popular parts washer. Today, the success of that decision has resulted in a greater global presence for the company, more efficient and economical machinery, and a plan to apply the automation package to more of its product lines.

Success breeds success. The old adage takes on new significance for Cleaning Technologies Group LLC (CTG) these days as it considers the benefits it has achieved since it began incorporating a consistent Siemens controls platform into its parts washers.

As part of a continuous improvement program launched several years ago, the Cincinnati, OH-based supplier of industrial and precision cleaning technologies redesigned one of its machines, putting Siemens S7-1200 PLCs, SIMATIC HMI Basic panels, and SINAMICS drives at the heart of its equipment. The modification to its parts washers gave CTG the products and capabilities it needed to increase its global presence, gaining further penetration into the Chinese market and entering other parts of the world, including India, Canada, Mexico, and the UK.

Not one to argue with success, the CTG is now redesigning several other product lines with this same controls platform. The company makes a wide variety of equipment, from robotically operated systems to immersion and ultrasonic cleaners used in a vast number of ways. Its machines are found, among other places, in the automotive industry washing engine and transmission components, in the medical industry handling implant devices, and in the semiconductor industry cleaning hard disk drives and flat panel optics. Adding the common Siemens controls package across such a wide range of applications is allowing the company to equip its machines with more features at similar or less cost and offer unprecedented flexibility, as well as position the firm for even further growth in the marketplace.

A little bit of history

How did this migration to a common controls package come to happen? Historically, the company, which includes three divisions—Ransohoff, Blackstone NEY Ultrasonics, and CTG Asia—used multiple brands of controllers. In fact, just prior to the initial move to the Siemens platform, CTG used controls from a well-known Siemens competitor. All that changed, however, when Siemens introduced its S7-1200 controller.

Attending a product demonstration of the new PLC, Michael Delrosario, CTG electrical engineer and controls guru, was impressed with the features and benefits of the device. He was certain it could add flexibility to his company's product line and save customers space, cost, and engineering time. "Siemens is a large, international company and its products are a good fit for our equipment," says Delrosario. "We were able to make the conversion to the Siemens controls at very little additional cost."

The Siemens products were the equivalent of what CTG had been using and the S7-1200 controller and a HMI Basic panel were soon part of CTG's LeanJet product. "We wanted a bigger screen and Siemens had one at a good price point," recalls Chris Whittaker, CTG VP of Sales and Marketing at CTG. "It gave us a lot of features we did not have on the previous equipment we had been using. It was the right product for us to offer in a base design. We pre-programmed a lot of options into that initial design that made a big difference, and still makes a big difference, in the engineering content of our machines."

With plans for expansion underway, CTG was especially impressed with Siemens' global presence, a factor that remains a critical part of the relationship between the two today. "To establish ourselves in China, we *had* to have a company that offered that kind of support," says Whittaker, "and multi-lingual

capability [which the Siemens equipment provides] is essential with a system that must work in the U.S. and China. Americans working in China must be able to toggle between English and Chinese on their HMI screens."

Common platform, common bonds
The success of that first venture made the company more competitive and able to offer a higher value product. It also encouraged CTG to continue to outfit its systems with the Siemens platform, a rollout that continues in several more CTG product lines, all of which will be on display at the 2014 International Machine Tool Show in Chicago in September. They include:

- *RB Series machines and two designs from the RT Series (RT8 and RT18) from Ransohoff.* Originally designed in the 1990s, these parts washers have evolved through several generations. The RB Series was among the first to use the Siemens package and be built and marketed in China. Popular in the U.S. as well as overseas, it is a highly flexible design and an economical investment suited to a number of markets.

- *Aquarius line from Blackstone NEY.* This multi-tank cleaning system features several stainless steel tanks ganged together, some with ultrasonics, some without. A robotic hoist transfers parts from tank to tank.

These latest products are true outgrowths of the original continuous improvement effort. Two of the three lines feature new designs. "The RT18 and the Aquarius have been radically changed," says Barney Bosse, CTG President and CEO. "The next-generation Aquarius Modular gives customers flexibility and the opportunity for growth. In the past, the system's multiple tanks were connected in a common console. If you bought a five-tank Aquarius, you always had a five-tank Aquarius. Now, if you buy a 5-tank Aquarius Modular system, you can expand the equipment with additional modules. The Siemens controls package can accommodate the growth."

A step forward—and more
Assessing the impact of deploying the controls platform in its equipment over the past three years, CTG is pleased with the innovation the changes have fostered. Beyond product quality and worldwide support, the Siemens choice saves the company engineering time by allowing all component programming to be done with a single software package, TIA Portal. "Having one software package for programming the PLCs and the HMIs is great from an integration standpoint," says Delrosario, "and with only one package to learn, we can program our screens more efficiently, do tasks faster, and give a better value to our customers."

The controls platform has also helped CTG take its designs to the next level, with improvements apparent in a number of areas, among them:

- **Modularity and scalability.** Four years ago, the company talked about modularity and scalability. Now, the Siemens equipment is standard in CTG's Modular Aquarius and RT18. "We can ship every Modular AQ with a fixed number of stations and the potential to expand," says Whittaker. "With the RT18, the base machine accommodates auto load via hoist or robot with no additional hardware or changes."

- ***Energy conservation.*** Combining Siemens software with some hardware modifications, CTG has improved its processes and the performance of certain components. "Using Siemens drives on our pumps and motors improved efficiency," notes Delrosario. "Between cycles, we can ramp down

the pumps and motors. Solid state contactors on our heaters control peak amperages to smooth out the draws for the machines from the device level and from an overall machine standpoint."

- ***Data logging and acquisition.*** The data acquisition in Siemens S7-1200 PLC goes beyond providing normal machine status. In fact, its embedded web server can poll system I/O and the status of the device. It lets the customer obtain real-time data on machine operation, machine status, and energy savings, and meet traceability requirements. In addition, CTG is considering upgrading its displays to Siemens SIMATIC HMI Comfort Panels, an improvement that would open up a world of data acquisition, remote diagnostics, and connectivity. "The data-logging capability the controls platform has brought to the Modular Aquarius is especially important to the medical-device market to which Blackstone NEY sells," adds Bosse. "The U.S. FDA requires a high level of data logging in that industry."

- ***Flexible manufacturing.*** Industry's growing interest in flexible manufacturing is also reflected in the use of the Siemens controls. "Our customer RFQs invariably specify a flexible machine," says Bosse. "They want versatile equipment so that whether they lose a program or gain a new one, they can modify their machines with minimal effort and continue to run. The controls platform helps provide this flexibility."

- ***Remote access.*** Beyond improvements already in place, CTG is looking to add remote access capabilities to its machines, again courtesy of the Siemens controls. "Maximum uptime is critical," stresses Whittaker. "Our customers have not yet accepted allowing us to log into their machines and troubleshoot remotely, but we have seen other places in the market where monitoring equipment in real time has been successful. The ability to diagnose a problem remotely would allow us to determine what is needed, ship a part, and have it there when the technician arrived," he says. "That kind of efficiency would have a machine up and running fast."

People, teamwork lead the way

Remote access is obviously on the horizon of the company's future. "We need to determine the best way to meet remote access needs," says Whittaker. "Encouraging a customer to be proactive, to let us go out onto their shop floor and fix a machine before it goes down would save time and money. We also plan to continue to focus on energy conservation and how to build machines more economically."

The type of machine CTG builds involves a sizable investment. "We offer leading-edge equipment with features our competition hasn't even dreamed of yet," says Whittaker. "Typical uptime of a parts washer on a manufacturing line is more than 95%, but if it goes down, it can impact the entire operation. It doesn't matter that it cost $150,000 while the machine tool downstream costs $700,000. If the washer is down, the machine tool might as well be down."

The importance of the equipment underscores what a consistent controls platform, in particular the Siemens package, has meant to CTG and its customers. Whittaker cites three strategic accomplishments of the migration. It has:

- Enabled commonality across designs and the inherent efficiencies that come with it;

- Accelerated and strengthened the company's global presence. "Manufacturers today want global suppliers, and we are doing things to keep us the leading provider of this type of equipment," says Whittaker. "Our market in China has doubled in the last three years and continues to increase. Business in Mexico has close to tripled."

- Provided diversification for stability. Design efficiency and flexibility, thanks to the Siemens package, lets the company be more responsive to more customer needs. “We want to be in all kinds of markets with all kinds of products,” says Whittaker. “We want to be as prepared as we can to be the chosen provider.”

Finally, CTG stresses the importance of people in everything it does. “The real success of our operation goes beyond the products,” says Whittaker. “It is the people. The support we’ve had from Siemens and its distributors has been so important from the beginning. Without that team effort focusing on the challenges we faced, we would have never been this successful.”

Understandably, the platform migration continues, the Siemens-CTG partnership endures.

For more on Cleaning Technologies Group, LLC, visit the company website at www.ctgclean.com.

For more on Siemens Industry products and services, including the S7-1200 Series PLCs, SIMATIC HMI Basic and Comfort Panels, SINAMICS drives, and TIA Portal programming software, visit the Siemens website at usa.siemens.com.