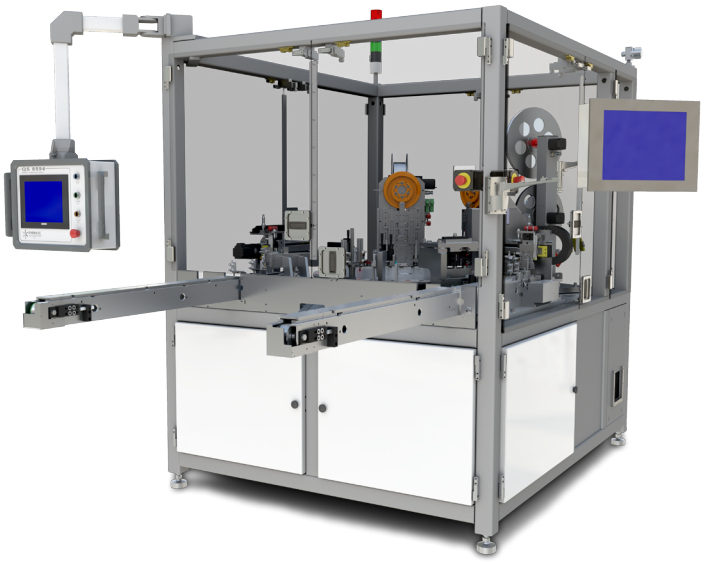
KINEMATIC AUTOMATION, INC.

Automating the manufacturing of medical device and diagnostics products with SolidWorks software



The combination of SolidWorks software and Kinematic Automation's lean manufacturing initiative has helped the company accelerate time-to-market, improve quality, and control costs.

Whenever diabetics check their blood sugar level, there is a good chance that the glucose test strip that generates the reading was made on a Kinematic Automation machine. As the leader in the development of automated diagnostic test strip processing systems—with at least 50 percent market share in the glucose test strip market alone—the company outputs more than 8 billion diagnostic test strips of all types per year on its machines.

Patients, doctors, and medical personnel use diagnostic test strips to test blood, urine, plasma, and saliva for a range of biological information, such as glucose and cholesterol levels, the presence of infectious agents like anthrax and HIV, or the hormones that confirm a pregnancy. Because all of these diagnostic test strips are disposable and utilized at high volume every day, the equipment that suppliers use to manufacture diagnostic test strips, by its very nature, needs to function with a high level of automation, reliability, and serviceability.

Founded in 1980, Kinematic Automation, Inc., initially used AutoCAD® 2D design tools to develop its production machines. However, the California manufacturer ultimately became an early adopter of 3D CAD technology as a matter of necessity, according to Mechanical Engineer Patrick Grimes. "We reached the point where 2D was greatly limiting us. The challenges related to achieving high-cycle rates, tighter precision, and comprehensive design for serviceability eventually drove us to a more sophisticated solution," Grimes recalls. "Back in 1998 when we moved to 3D, we learned that our 3D assemblies were some of the largest assemblies being created in 3D at that time."

After assessing early 3D systems, Kinematic Automation chose SolidWorks® 3D design software, and recently added 25 licenses of SolidWorks Enterprise PDM product data management software to its 22 SolidWorks Professional seats. The company chose SolidWorks software because of its ease of use, strength in assembly design, and design configuration and automation tools. With eight full-time Certified SolidWorks Professionals on staff, Kinematic can confidently assure the most sophisticated modeling capabilities to its customers.

Challenge:

Address high-cycle rates, precision requirements, and efficiency needs in the development of automated systems for manufacturing medical devices and diagnostic products.

Solution:

Implement SolidWorks design and SolidWorks Enterprise PDM product data management software in concert with a lean manufacturing program to reduce costs and accelerate time-to-market.

Results:

- Shortened time-to-market by 30 to 40 percent
- Cut development costs by 25 percent
- Reduced prototyping costs by 50 percent
- Decreased scrap and rework costs by 50 percent

SOLIDWORKS

"The medical industry is demanding faster time-to-market. As systems integrators, we face incredibly competitive pressures to respond," Grimes explains. "From a business perspective, SolidWorks software has allowed us to succeed in consistently meeting our customers' requirements."

A lean, agile development approach

To satisfy the accelerated delivery times its customers expect, Kinematic Automation combined its SolidWorks software implementation with a lean manufacturing initiative and its own proprietary engineering processes. Using SolidWorks software as the cornerstone of this lean development approach, the company has consistently cut its time-to-market by between 30 and 40 percent, while simultaneously reducing development costs by 25 percent through design reuse, retrofits, standardization, and faster assembly times.

"As part of a company that is devoted to helping save lives, we can sense the clock ticking, and realize that we have to make things happen quickly," Grimes stresses. "SolidWorks software allows us to decrease time-to-market, increase quality, and control costs. Using our approach, we can turn around a full system that we can confidently stand behind in just six to seven months."

Improved quality, less rework

SolidWorks software is also helping Kinematic Automation improve machine quality while reducing costs related to scrap and rework. "Visualizing just how our machines will operate in 3D before building them has enabled us to incorporate the manufacturability, reliability, and serviceability upon which we have built our reputation," Grimes points out. "Being able to see how our machines look and move allows for more accurate and dynamic feedback from our customers."

The combination of design configurations, assembly motion simulation, automated assembly stack-up capabilities, importability of models to CNC machines, and other benefits of SoldWorks software has resulted in a 50 percent reduction in scrap and rework costs at Kinematic. "With SolidWorks software, we are improving quality and eliminating unnecessary costs while we stay on the cutting edge," Grimes notes.

Additional savings through rapid prototyping

When your final product is a million-dollar piece of automation equipment, minimizing the building of prototypes is essential for controlling costs and schedules. Kinematic Automation makes great use of SolidWorks software models in conjunction with 3D printing technology to create rapid prototypes and product mockups cost-effectively.

"By making rapid prototypes on our 3D printer, we have been able to decrease our prototyping costs by 50 percent," Grimes says. "Whether we're making rapid prototypes, communicating with SolidWorks eDrawings® files, or rendering images in PhotoWorks™, the key is working with 3D design data. By using SolidWorks software to create our designs, we have the flexibility to use our design data in ways that lower costs, increase quality, and save time. It's now reached the point that 3D design with SolidWorks software is the only way we know how to do it."

"WITH SOLIDWORKS SOFTWARE, WE ARE IMPROVING QUALITY AND ELIMINATING UNNECESSARY COSTS WHILE WE STAY ON THE CUTTING EDGE."

Patrick Grimes
Mechanical Engineer

Using SolidWorks software, Kinematic Automation can leverage 3D design data in many ways, including rapid prototyping, design communications, and photorealistic rendering.

KINEMATIC AUTOMATION INC.

Kinematic Automation, Inc.
P.O. Box 69
Twain Harte, CA 95383 USA
Phone: +1 209 532 3200
www.kinematic.com

Dassault Systèmes
SolidWorks Corp.
300 Baker Avenue
Concord, MA 01742 USA
Phone: 1 800 693 9000
Outside the US: +1 978 371 5011
Email: info@solidworks.com
www.solidworks.com

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