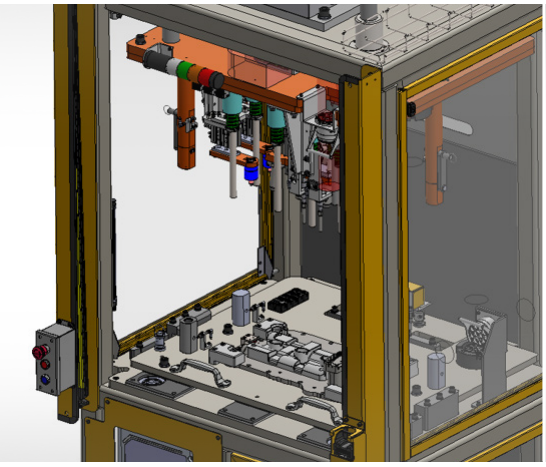
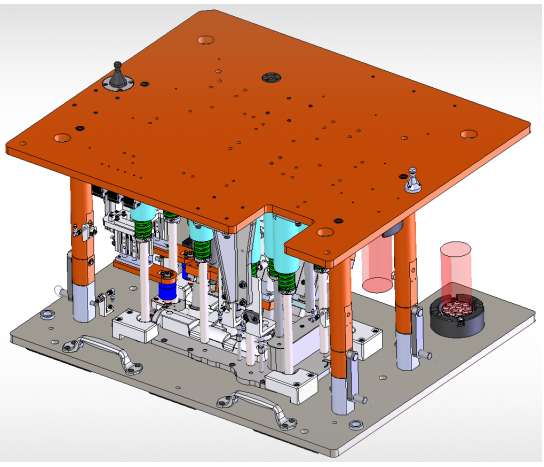
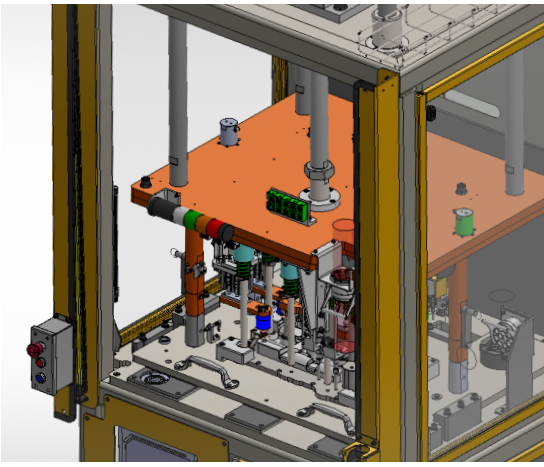
GLOBAL VEHICLE SYSTEMS

CASE STUDY







TOOLING TECHNOLOGY

A TOOLING TECH GROUP COMPANY

GLOBAL VEHICLE SYSTEMS CASE STUDY

CUSTOMER: Global Vehicle Systems (GVS) specializes in the design and build of custom automated systems for Tier One automotive parts suppliers in Canada, the U.S. and Mexico. A family-owned business founded in 1999, the company is a turnkey supplier that handles every step of the process from start to finish. The customer simply provides GVS with the problem or part. They then visualize a concept to fulfill the requirements, develop a quote, and handle everything from electrical design, mechanical design, fabrication, and machining all the way to install on the customer's plant floor.

Unique to the company's value proposition is that every piece of equipment they design is a custom one-off, whether it be a single work cell or fully integrated production line. This means that GVS has a proven record in problem-solving and innovation.

Challenge:

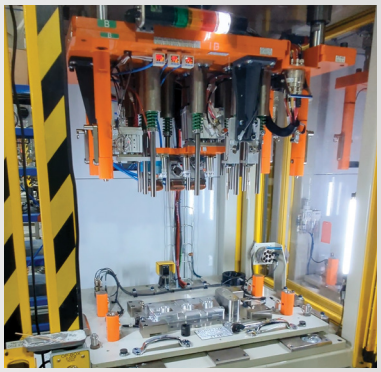
It's one thing to design for current vehicle model parts, but there are times that GVS is asked to design systems that can adapt for not only multiple model components, but also potential future design changes. Such was the case with a recent GVS customer request.

Their automotive customer came to them asking for one testing system that could handle leak/flow testing and visual inspection for cam covers across multiple models. The cam cover design variations were enough to require significantly different tooling for each individual model, prompting the customer to ask for both upper and lower tooling that could move in and out of the test machine quickly and easily.

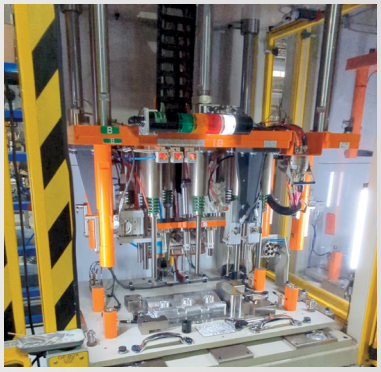
Global Vehicle Systems came up with a single machine design that is manual load/unload, but automated from that point on. The lower tooling platen slides into place on rolling balls and then the upper tooling comes down to mate with the lower tooling. The issue was how to do this quickly, accurately and safely as the upper platen weighs over 900 lbs.

Solution:

The standard solution would be to use heavy-duty bolts, pins and bushings for securing the tooling, as well as sensors for verification of bolt locations. This approach can work but requires a lot of reliance on manual labor for both positioning and hand-securing the tooling during part change over. This can affect not only time, but more importantly repeatability and accuracy of the operation.

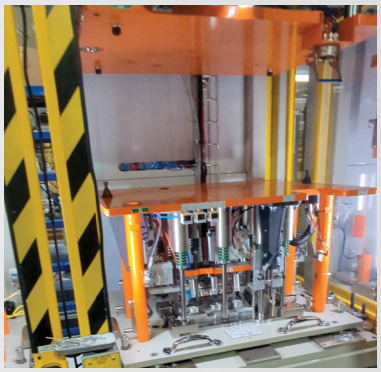


Luckily GVS had experience in using the pneumatic Segen Quick-Change System. The Segen cylinder locks are designed to receive and mate with a conical male knob. Positively locked in a static state, a simple push of the button actuates air pressure to enable the cylinder lock to release or receive the knob.



The cam cover testing system, only 40" wide, features two Segen model 438 series sensor cylinder locks on each platen for two and four way locating purposes. The cylinder lock locates and positions the knobs within 0.0002" and has a holding force of 2,700 lbs., providing far more security than that required for the 900-lb. upper platen.

To start the process, the lower tooling is rolled into place, sliding in on rolling balls, and then the upper tooling comes down into mating position. The air pressure is actuated with the push of a button to secure the upper and lower platens, which now move as one complete tooling assembly. The system also has a quick-connect pneumatic and electric feature to access the necessary power for testing. With these steps, the part is now ready for leak testing, flow validation and visual inspection. Once accomplished, the tooling cassettes can be rolled out together to accommodate model changeovers.



Global Vehicle Systems' personnel note that the Segen system handles three areas – locate, lock and vision – in one solution, helping to simplify the process and speed up time. More importantly, however, is that it eliminates human error, which is key as positioning is critical in this operation.

This flexible system has already proven its capability. Within three weeks of installation, GVS' customer had run 22,000 parts through it. The cycle time is about 45 seconds/part, of which the leak testing itself requires 66% of the time. Currently, the customer is changing out the models about five times/day.

Most significant to note is the fact that this automated test station offers the ability to expand and adapt to future models. By designing a system with changeable tooling cassettes using the Segen Quick Change knobs and cylinders, Global Vehicle Systems has provided an innovative solution that will prove its worth for years to come.

TOOLINGTECH GROUP

For more information on Tooling Tech Group's thermoform tooling capability, call 231-400-4884.

COMPANY OVERVIEW

Tooling Technology, originally founded in 1982, specializes in providing thermoform tooling as well as rotational and blow molds for producing plastic components and structures. Equipped with its own aluminum foundry, Tooling Technology handles all phases of the tool build in-house, from design and pattern to fabrication and finishing. Additionally, the company is home to the Segen Quick System for simplifying industrial setups, changeovers, workholding, clamping, fixturing and alignment. In 2018, the company became one of the Tooling Tech Group of companies.

Tooling Tech Group builds custom automated systems for assembly, joining and inspection as well as tooling for a variety of applications including thermoform molding, high compression composite molding, blow molding, rotational molding, die casting, and stamping. Industries served include automotive, appliance, lawn and garden, agricultural, aerospace, marine, and off-road vehicle industries, among others. Through organic growth and acquisitions, the company has become the largest tooling provider in the United States with 650+ employees, 13 modern facilities and over 1 million square feet of manufacturing space across four states.

The depth and breadth of our capabilities is achieved through the combined experience of our company units, with each of these companies being in business for 30+ years, providing both extensive industry experience and financial stability that you can rely upon. Our unique differentiator is the ability to provide all tooling services from design to engineering to simulation to machining to fabrication to try-out all within one company. This single source ability can help to streamline your business operations and simplify your life. We take full responsibility for quality, delivery, and cost management of each project starting at concept through “on time, every time” delivery.

TOOLINGTECH GROUP

Tooling Tech Group
Corporate Offices
200 South Alloy Drive
Fenton, Michigan 48430

Tel: +1 (231) 400-4884

TTG Tooling Technology
Main Office
100 Enterprise Drive
Fort Loramie, Ohio 45845

Tel: +1 (937) 295-3672

ToolingTechGroup.com