

Stanley Cobotics Intelligent Assist Device improves productivity by 100% and improves ergonomics



The Problem

The drive to lower costs and increase productivity in automotive production environments, fueled by fierce international competition, is universal throughout the industry. Yet these goals cannot be met at the cost of worker health. As a result, many companies are seeking cost-reduction solutions in which ergonomics play a prominent role.

Visteon, the second largest automotive supplier in the world, is committed to saving costs. Recently, Visteon faced the task of lowering costs and improving productivity while minimizing operator strain in a catalytic converter testing application.

In the application, assistance was needed to help an operator pick up an unwieldy, 4' x 3', 42-pound catalytic converter from a turntable and carry it to a gage fixture for leak testing. Once the part passed the test, it needed to be

moved to a rack for shipping. Then, the operator returned to the table to receive the next part. The required production rate was 100 parts per hour, resulting in 200 lifts per hour as the operator has to handle each part twice.

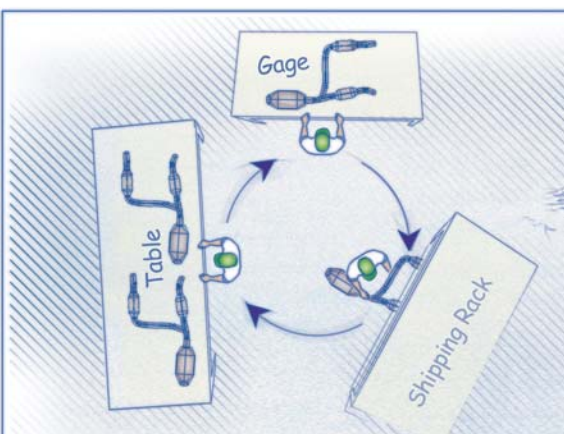
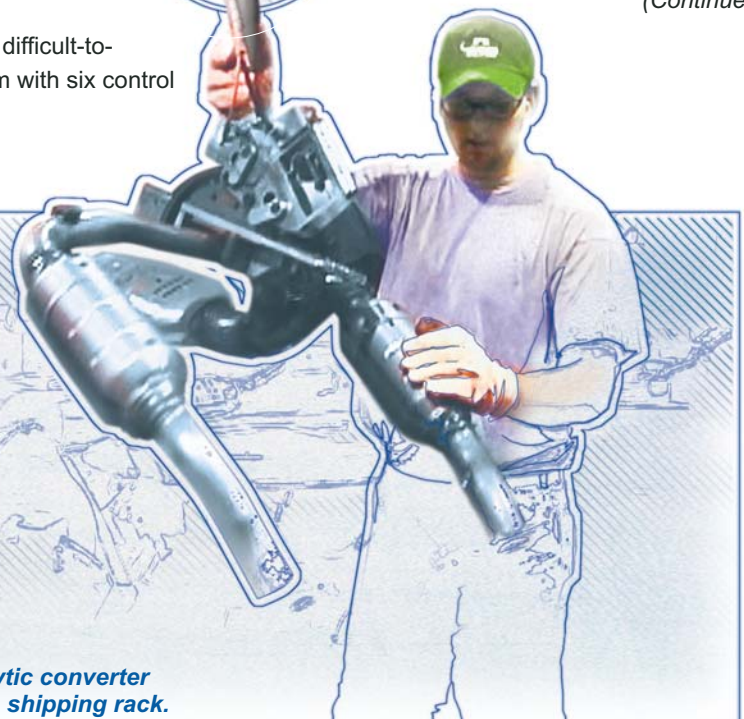
A traditional lift assist system—an air balancer—was originally installed in the test cell. However, numerous problems caused the operators to abandon this equipment and perform the task manually, which resulted in a bottleneck on the line that reduced productivity. The problems with traditional equipment included:

- Complicated, difficult-to-control system with six control buttons

- Large, unwieldy end effector
- Long learning curves which slowed production
- Longer process time

Performing the process manually required an extra operator to keep up with line speed, which increased costs significantly. Furthermore, even with a second operator, they were at risk of ergonomic injuries. The repeated lifting movements caused operators to experience back discomfort and fatigue. In effect, a human operator was responsible for manually lifting up to 67,200 lbs. per 8 hour shift!

(Continued)



In this Visteon application, an unwieldy 42-pound catalytic converter needed to be moved first to a gage fixture and then to a shipping rack.

Catalytic Converter Test Cell

Part: SUV Catalytic Converter

Weight: 42 lbs.

Production Rate: 100 jobs per hour
(each part is handled twice)

The Need

To address the problem, Visteon decided to explore other system options. The first step was to identify a set of needs.

The operational needs were:

- Improved ergonomics
- Single operator staffing
- Simple operation
- Reduced learning curve
- Faster cycle time

The Solution

As a founding member of the Intelligent Assist Device (IAD) ANSI safety committee, Visteon began to investigate IAD solutions for its own testing operation. After evaluating IAD systems in light of their needs, Visteon decided to conduct a plant trial using Stanley's *iLift* in conjunction with a new compact, easy-to-use end effector.

Stanley's *iLift* was selected because it helped meet Visteon's needs with the following benefits and features:

- Intuitive operation
- Low force to operate
- High speed
- Precise control
- Float mode, programmable operation & automation features

With a reliable servo motor and a responsive in-line handle, the system allows fast, smooth, power-assisted up-and-down movements. The float mode allows hands-on manipulation of the load, to fine-tune its position without actuating the control handle, saving valuable seconds. In addition, the programmable "virtual limits" prevent product damage. The new end effector features a manual clamp and is much smaller than the previous unit. Its lightweight design is easy to manipulate, which contributes to efficient load movement.

Benefits

The Stanley *iLift* met the critical needs of the test cell application. It enabled a single operator to lift each heavy catalytic converter as if it weighed just ounces. Its fast, smooth, and precise movements helped reduce cycle times. The system also has a very short learning curve.

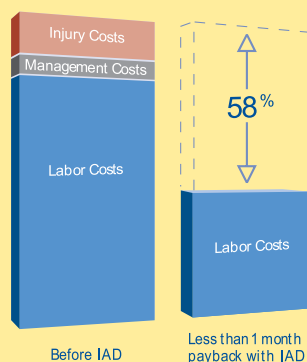
"The *iLift* is a lot easier on my back," said one operator. **"I'm not even tired at the end of the week!"**

Results

Stanley's *iLift* solved a difficult material handling challenge for Visteon. It allowed the company to lower costs dramatically for the test cell application, while increasing productivity and minimizing injury risks.

At an equipment cost of just 25% higher than that of traditional lift assist equipment, Visteon improved its labor productivity for this application by 100%. This allowed a single operator, using an *iLift*, to ergonomically maintain the production rate of 100 parts per hour. Moreover, the system was accepted and embraced by the operators, who have come to depend on it.

Cost Analysis



Stanley IAD Products

Stanley Assembly Technologies leads the design and manufacture of Intelligent Assist Devices (IADs), a new class of ergonomic assist devices that allow true collaboration of a human operator with computer-controlled machinery. The result is unprecedented speed and control in load movement. Applications include automotive (assembly, body shop, powertrain, stamping), manufacturing, warehousing, and assembly.



The *iLift* is the industry's most advanced lifting and balancing system, offering highly intuitive lift assistance with a patented float mode. The *iLift* interfaces with interlocks and actuators on end effectors, and allows individualized responsiveness profiles.



The *iTrolley* offers unequalled speed and ease in load positioning for rigid arm and cable/chain based systems on both monorails and bridge cranes. It interfaces with end effectors, features programmable gains and limits, and offers networking capability. The *iTrolley* works with existing rail from most major manufacturers.

The *iLift* and *iTrolley*, together with patented hubs, intent sensors and applications software, fit into Stanley's IAD product platform. This family of modular products can be easily configured, networked and integrated with existing plant infrastructure to provide flexible, multi-axis customer solutions.

For more information or to discuss your application, call Stanley today at 440-461-5500.



STANLEY ASSEMBLY TECHNOLOGIES: 5335 Avion Park Drive, Cleveland, Ohio 44143-2328
USA Tel: +1 (440) 461-5500 Fax: +1 (440) 461-2710

Stanley Applications and Productivity Center, 5800 Enterprise Court, Warren, Michigan 48092
USA Tel: +1 (586) 393-1100 Fax: +1 (586) 393-1200

www.stanleycobotics.com

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