

Selecting A Turnkey
Automation Provider Is
A Serious Commitment.

**COOPER** Tools

Cooper Automation Is Your Single-Source For Total Automated Systems.

We are Cooper Automation, part of Cooper Tools, a Division of Cooper Industries, which is a global multi-billion dollar corporation. Cooper Automation, located in Auburn Hills, Michigan, provides custom solutions for the automated fastening of threaded joints.

Our global customers span the entire vehicle assembly market, including passenger cars and trucks, powertrain assembly, off-road vehicles, and agricultural machines. We support machine

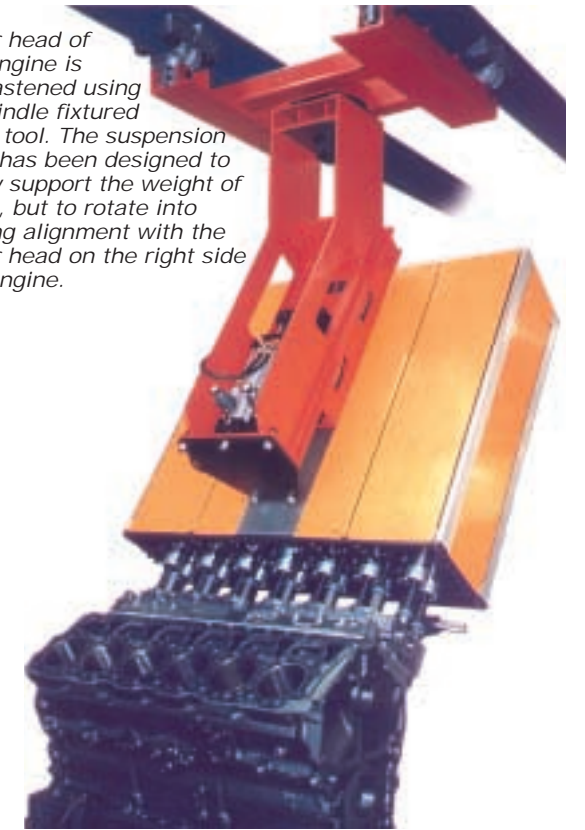
tool builders in the vehicle and industrial markets with custom fastening system designs based on proven fastening product building modules.

Over the past fifteen years, Cooper Automation has been providing customized solutions with training, service, and support. From single hand-held nutrunners to multiple spindle machines, Cooper Automation's custom designed systems are used around the world in an interesting variety of applications.

This multiple has been designed with lateral and radial movable spindles which can fasten 4 or 5 bolts on two different wheel products.



The left cylinder head of a V12 engine is being fastened using a 26 spindle fixtured electric tool. The suspension system has been designed to not only support the weight of the tool, but to rotate into fastening alignment with the cylinder head on the right side of the engine.

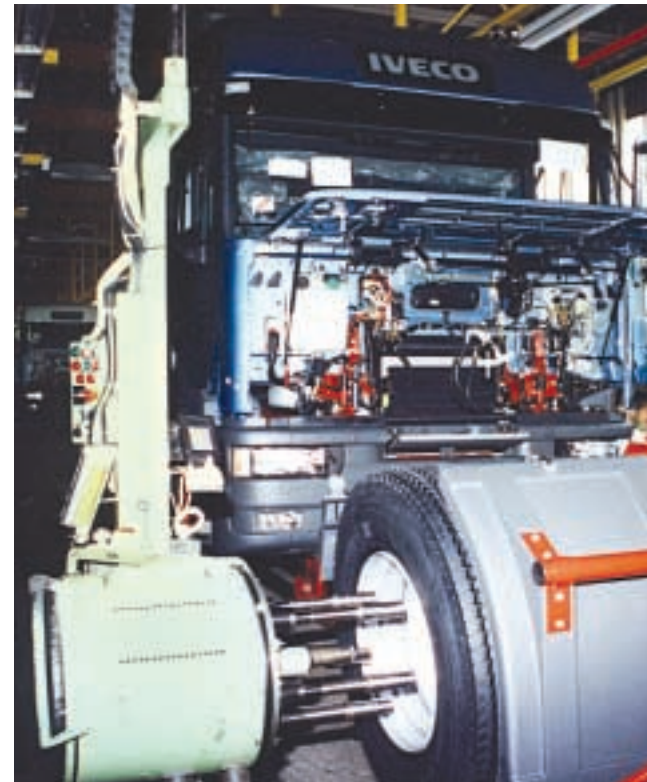


Repair bay operator is using a two spindle fixtured tool to fasten components of a wheel hub assembly.

Customized Automation Solutions

The custom designed equipment which Cooper Automation creates can be configured in horizontal or vertical orientations depending on application and customer requirements. Designs may incorporate operator input or may be fully automated.

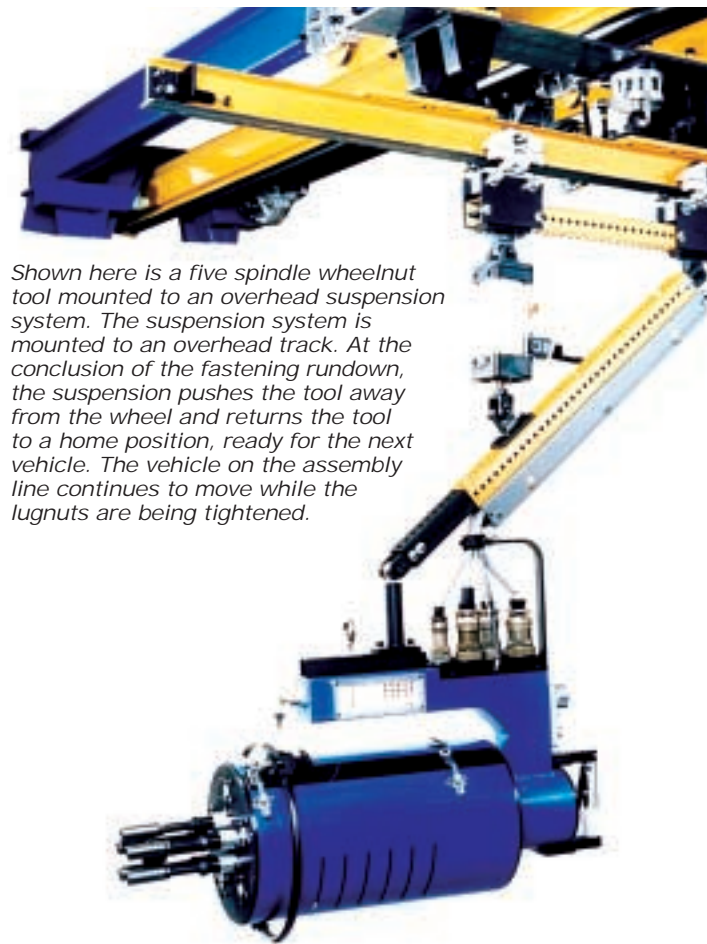
Cooper Automation's products use high-efficiency electric motors manufactured by Cooper Tools specifically for this application. Available motor torques range from 2 Newton-meters to 6,000 Newton-meters. Motor spindles can be mounted and arranged to match any pattern using standard in-line electric motors, special offset motors, and 90° angle motors.



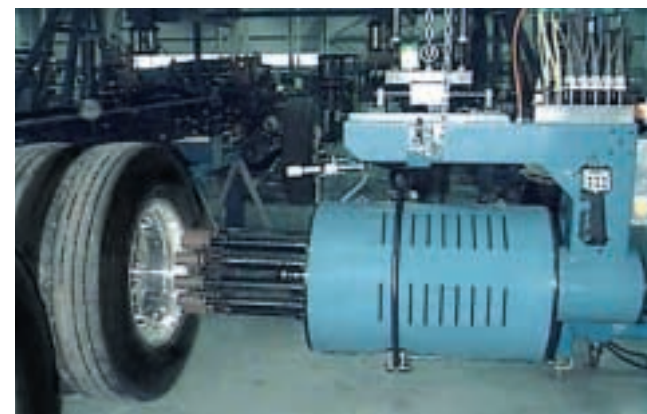
Shown below is a semi-automated water-pump subassembly fastening station. This station design includes a safety light curtain and a 4 spindle fixtured electric tool.



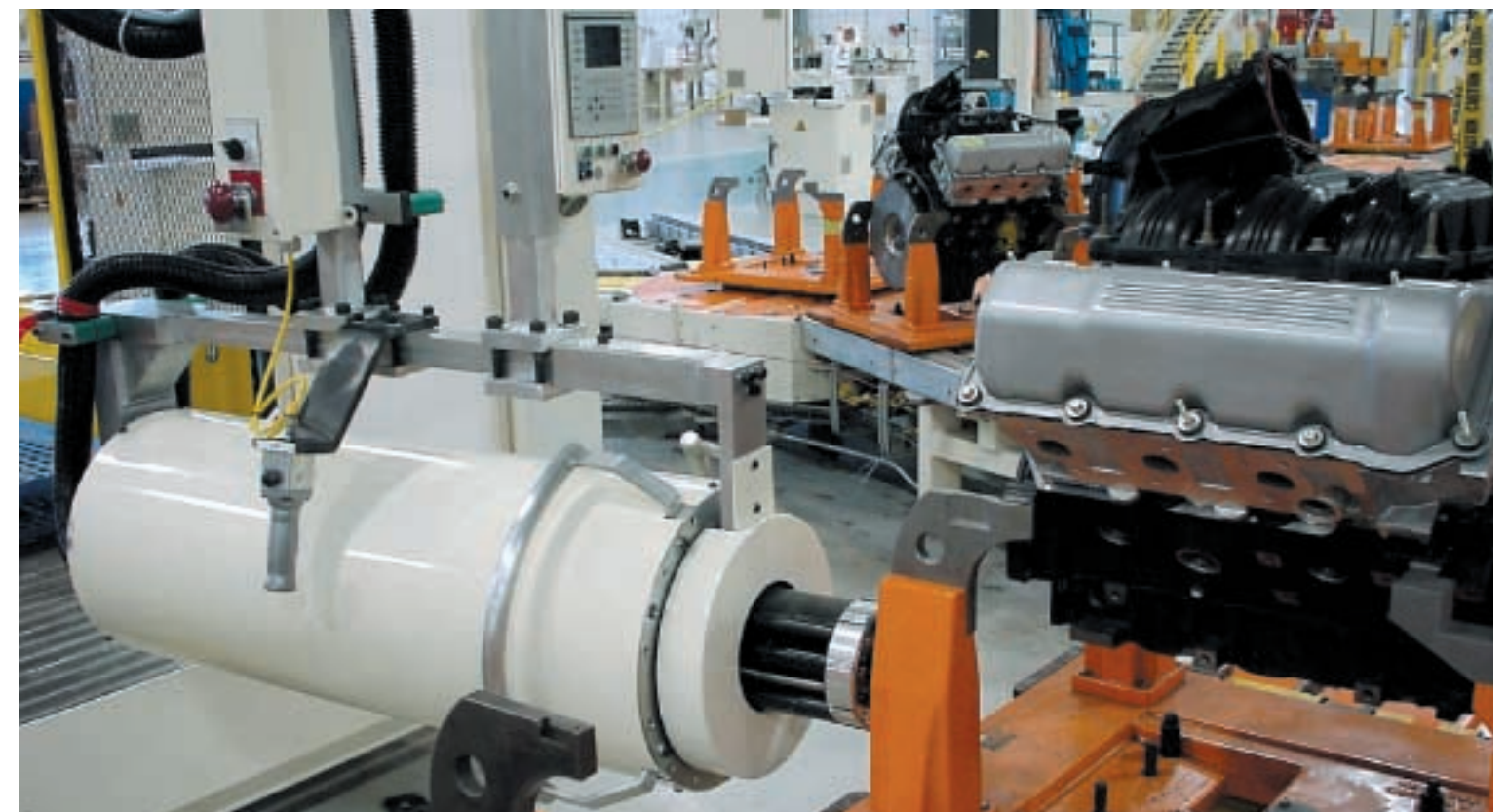
An automatic station on an engine assembly line uses two opposing electric power heads, each having 8 spindles, and a center power head of 6 spindles.



Shown here is a five spindle wheelnut tool mounted to an overhead suspension system. The suspension system is mounted to an overhead track. At the conclusion of the fastening rundown, the suspension pushes the tool away from the wheel and returns the tool to a home position, ready for the next vehicle. The vehicle on the assembly line continues to move while the lugnuts are being tightened.



On top, a wheel lugnut tool prepares to fasten wheels to a commercial truck. Wheel lugnut tools are distinguished from standard horizontally aligned systems by their cylindrical shape because rotation is required for proper alignment with the wheel lugs. In addition, it has the ability to fasten alternate lugnuts with two successive rundowns. The equipment above is an alternate design for truck dual wheel assembly.



Shown above is a semi-automated multiple for flywheel assembly application.

Application Specific Assembly Solutions

Cooper Automation's fastening controllers have been supplied from one to thirty-six spindles. The fastening controllers utilize the latest in Pentium CPU technology, supporting EtherNet and FieldBus communication protocols as specified by our User's. Our controllers can provide a wide range of torque from 2 to 6,000 Nm with high accuracy and low scatter. The single and double-bay control panels shown can support up to 12 spindles within the single panel and up to 36 spindles within the double panel.

The new mid-six control panel is a wall mount design for up to 6 spindles with all of the same features as the larger panel.

In order to apply our powerhead designs, Cooper Automation also designs custom suspension systems to provide support and movement. In addition to custom built stations fitted with fixtured nutrunner powerheads, Cooper Automation designs, builds, installs, and provides service and support for complete fastening assembly lines.



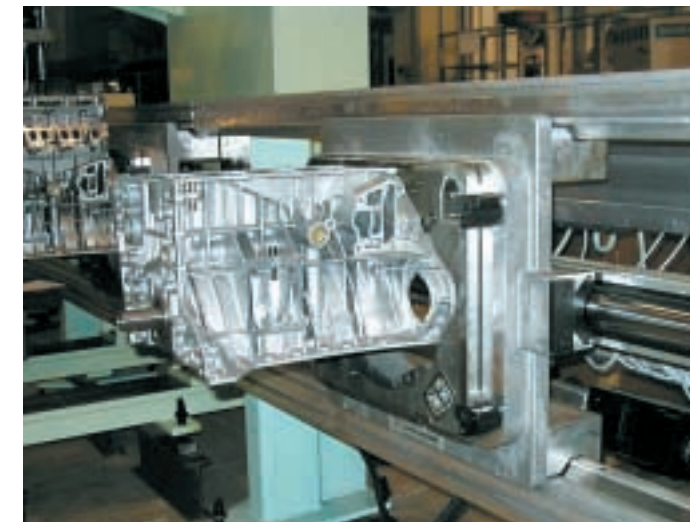
The new Mid-Six control panel is a wall-mount design capable of handling up to six spindles and has all of the features of the larger, free-standing panels.



Cooper Automation's 3 channel fastening cart provides the same fastening functionality as our multi-spindle stationary designs. This unit is packaged as a very compact and mobile fastening cart and is used in pilot plants, repair bays, and on-line station repair.

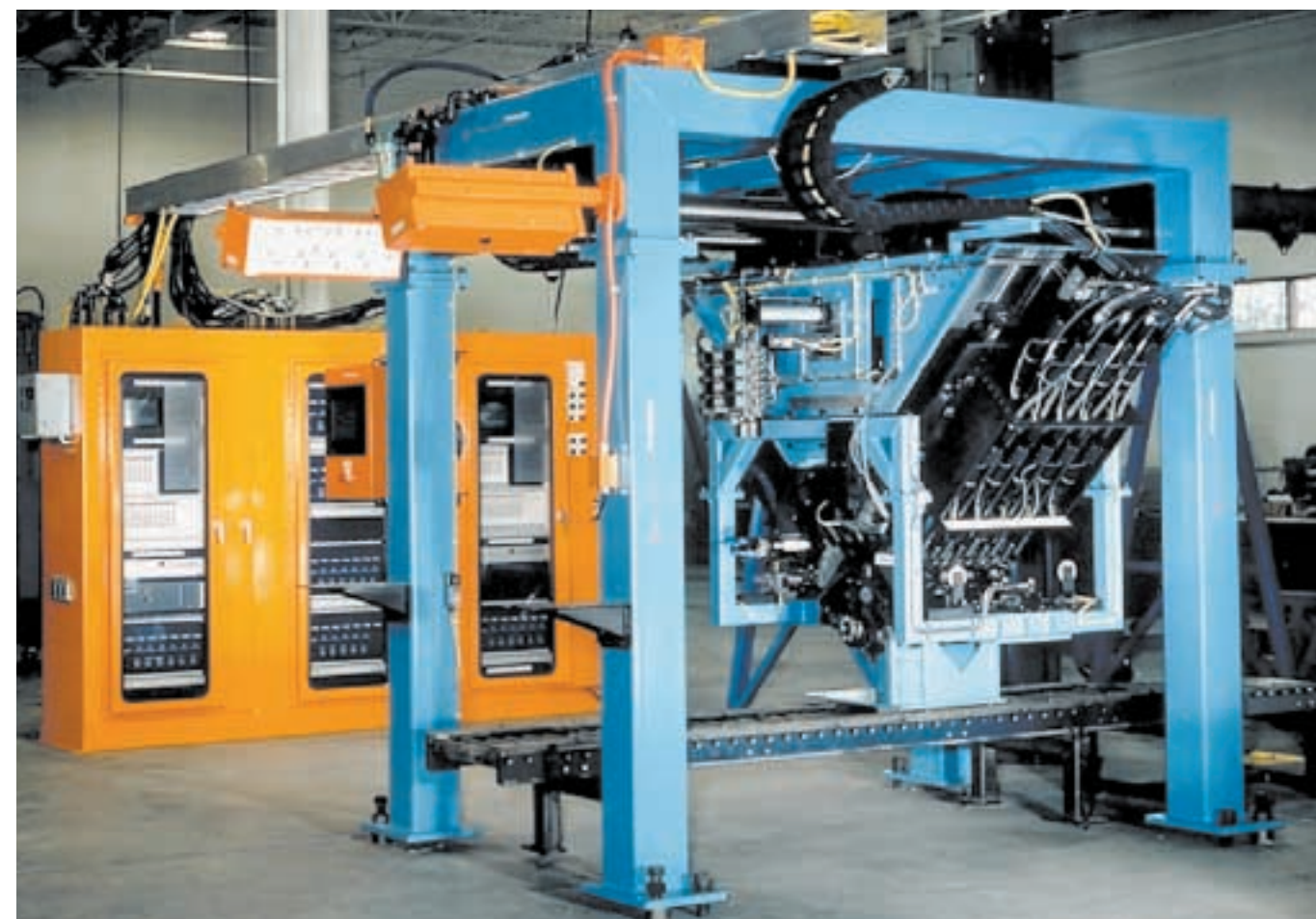


The double-bay fastening control panel shown above has a capacity of up to 36 spindles. This controller is air conditioned, and supports EtherNet and FieldBus communications using Pentium-4 CPU technology. Also pictured above right is a single-bay fastening control panel with capacity up to 12 spindles.



This GardoTrans installation shows a vertical system for floor level transport on the DaimlerChrysler Stuttgart 4 cylinder engine assembly line.

The GardoTrans 3 rail horizontal transport system shown at left is a typical engine assembly application.



An automatic 34 Spindle station fastens a diesel engine cylinder head. This station incorporates moving both powerheads (17 spindles each) which are synchronized to the speed of the engine assembly line which moves through the center of the station.

Training & Service Solutions

Cooper Automation provides complete training and support services at your plant or ours. Additionally, CooperTools provides these services on it's complete line of assembly tools.

In our demonstration and fastening training rooms, focus is on hands-on training of handtool and multi-spindle fixtured electric tools.



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