



*The Finn Power C5 Compact Express provides highly compact load/unload automation by utilizing the space above and below the turret punch press.*

## Quality Hot and Cold Manufacturing

*Red Dot Corporation Provides  
Air Conditioning for Military Humvees.*

**F**or more than 40 years, the Red Dot Corporation, Seattle, WA, has earned a reputation as a pioneer in designing and manufacturing heating and air conditioning systems for the heavy-duty vehicle industry. This pioneer spirit began with Red Dot being the first company to supply integrated heat/air conditioning systems to Kenworth, Freightliner, Mack and Peterbilt trucks.

Today, Red Dot supplies many of the world's major OEMs of both on-Road and off-Road vehicles, as well as many smaller companies, in the development of durable HVAC units. To manufacture its products for the world market, the company's Seattle location has two buildings with 250,000 square feet of capacity and 450 employees. Red Dot also recently expanded its 75,000-square-foot facility in Memphis, TN, with 18 employees. Red Dot Europe, Ltd. operates a 25,000 sq ft facility in the U.K. with 18 employees.

### **Manufacturing Philosophy**

Red Dot's manufacturing philosophy is one that incorporates lean manufacturing techniques to optimize its



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**Jim Yantzer, Red Dot's production systems manager (right) and Jesse Smith, fabrication manager, inspect a part fabricated on the C5 Compact Express.**

flexibility in the processing of component parts and assemblies, while maintaining quality of workmanship and improving throughput. To achieve this, Red Dot draws from the following practices: Just In Time, to minimize inventory levels, pre-cut width coil stock, employee cross-training, computer-aided forecasting systems, manufacturing involvement in product design, building block sub-assembly, kan ban control systems to maximize flow rate, lean techniques to minimize cycle times and limits waste, low inventory of purchased materials and components, and employee participation in kaizen events to continuously improve processes and throughput

According to James R. Yantzer, production systems manager, Red Dot attempts to keep most manufacturing in-house.

"We like to control our own destiny in terms of quality and deliveries," explains Yantzer. "We are a vertically integrated company that manufactures more of the components used in its products than any other HVAC supplier in the heavy-duty industry. This includes the manufacturing processes involved in producing condensers, wire harness, tube assemblies, evaporators, heater cores and sheet metal components requiring specialized equipment."

Red Dot has the equipment, the technology, and the knowledgeable personnel required to build these components. The company's fabrication equipment includes turret punch presses, lasers, press brakes, tube benders, stamping presses, and spot welders.

"Our strategy is to continually invest in equipment and have the resources available that offer tremendous flexibility to quickly and efficiently build to customer specifications," says Yantzer.

### **More Turret Punch Press Capacity**

In 2004, Red Dot needed to increase its turret punch press capacity to keep pace with both double digit growth and a new government contract that put increased demands on the fabrication department. The U.S. military decision to armor plate all the HMMWVs (Humvees) used in Iraq

created a major challenge to keep the vehicle's cab temperature cool enough for the soldiers and marines to operate effectively. With the armor plating, temperatures up to 130°F were registered inside the cabs. In early 2004, Red Dot met the challenge and was awarded the contract to retrofit the armor-plated Humvees with air conditioning units. The project was completed in November, 2005.

While the company looked at equipment from several builders, they eventually chose the Finn-Power C5 Compact Express.

### **Standardized Equipment**

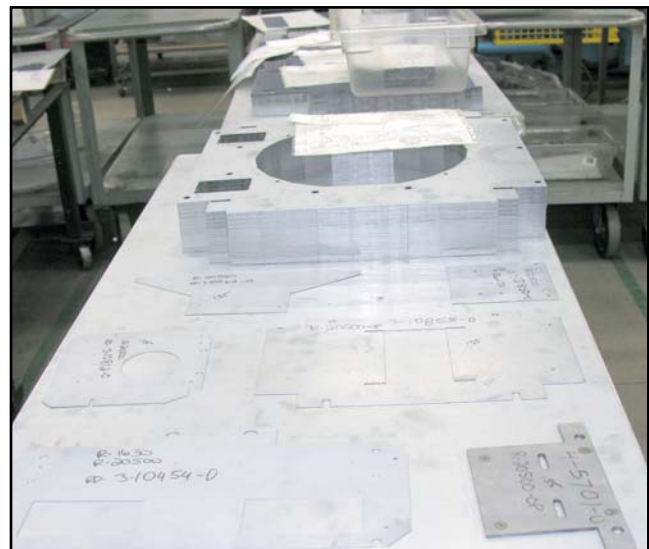
"We had previous experience with Finn-Power," says Yantzer. "We purchased the Finn-Power TP turret punch press 12 years ago and the F Series machine about six years later. One of our goals was to standardize our equipment for benefits in service and maintenance, tooling, software, etc. We had faith in the Finn-Power equipment and service from past experience, and we were quite confident with the C5 Compact Express as the machine of choice."

In January, 2005, the Finn-Power C5 Compact Express was installed at Red Dot. The C5 Express added unmanned operation to the C5 turret punch press through highly compact load/unload automation. The unit's loading/unloading solution utilizes the space above and below the machine—requiring only slightly more space than a turret punch press.

"The small footprint of the C5 Compact Express makes it easier for one operator to run two machines," says Yantzer. "We configured the machines for that end and also to maximize efficient part flow."

The 20-station, 33-ton C5 hydraulic turret punch press has a maximum sheet capacity of 50" x 100" and is available with either Siemens or Fanuc controls.

Tooling flexibility is also important to Red Dot. Up to 10 auto-index and Multi-Tool® holders may be installed in a Finn-Power turret. Red Dot has four Multi-Tool cassettes



**Three Finn Power turret punch presses produce most of the sheet metal pans at Red Dot.**

# DESIGNED AND BUILT LIKE SOMEONE'S LIFE DEPENDS ON IT!



*U. S. Marines on the Humvee that has been retrofitted with armor and a new air conditioning unit from Red Dot.*

in the C5—a 24 station, two 10-station, and an 8 station. Red Dot also has six full tonnage auto-index stations and two indexable upforming stations.

## ***Indexable Upforming***

Unique to the C5 turret punch press, full tonnage indexable upforming allows complex forming operations to be made quickly by using a single forming tool. An index mechanism is used to turn the forming tool into an NC programmed angle.

Finn-Power's upforming feature provides a precise process for knock-outs, louvers, and other forming. Finn-Power resolved the conventional problem of the die height impeding free sheet movement. Finn-Power's design allows forming heights up to 16 mm (0.62") with the forms made by the die moving upwards and then retracting, allowing completely free sheet movement, eliminating scratched or jammed sheets.

"We use dimples on our parts for locating spot welds," explains Yantzer. "It's important for us to have dimples that can go up or down—sometimes both on the same part. We also use louvers and flanges on our parts."

## ***Other C5 Features***

Other features of the C5 turret punch press include:

- Super fast servo hydraulic punching: Nibbling speeds up to 1100 hpm. The servo-controlled ram, stroke speed, and position are fully and individually adjustable in both

directions.

- Easy loading: Four optimally-positioned gauge pins allow easy loading of blanks or full-sized sheets. Sheet loading is performed with a simple push and always close to the table edge. Sheet supports rise from the table to allow easy positioning of heavy material.

- Efficient unloading: The C5 delivers the processed components to a freely programmable position on the table, increasing the operator's efficiency. The entire material flow on the C5 can be conducted from just one side.

- Automatic Clamp Setting & Movement: Finn-Power's patented automatic clamp setting PCS is a standard C5 feature. It automatically positions sheet clamps according to the numerical program, virtually eliminating punching of the clamps.

- Catch & Carry Work Chute: Finn-Power's Catch & Carry work chute mechanism allows the reception of several components to 19.7" x 19.7" in size onto a level from which they subsequently exit from the machine as a stack.

And how has the C5 performed at Red Dot?

"The Finn-Power turret punch presses make most of the sheet metal parts for our HVAC units," Yantzer says. "We couldn't have completed the military project in-house without the addition of the C5 Compact Express. In addition, during C5 installation and training, the Finn-Power technicians gave our engineers ideas on how to design products to best use the features and capabilities of the Finn-Power turret punch press." ■

# EXPRESS

your  
company's  
productivity  
with

# FINN-POWER



The Finn-Power **C5 Compact Express** is your company's ticket to increased productivity. It adds unmanned operation to the C5 turret punch press versatility through highly compact load/unload automation. The C5 Compact Express is fast, with simultaneous loading and unloading during processing.



**Indexable Upforming**



**Easy Loading**



**Easy Unloading**

Here's a few of the features that set Finn-Power's C5 apart from the pack:

- **Super Fast Servo Hydraulic Punching** – Nibbling speeds up to 1100 hpm. The servo-controlled ram, stroke speed, and position are fully and individually adjustable in both directions.
- **Indexable Upforming** – Available only on the Finn-Power turret punch press, complex forming operations can be made quickly by using only a single forming tool.
- **Easy Loading** – Four optimally positioned gauge pins allow easy loading of blanks or full-sized sheets. Sheet loading is performed with a simple push and close to the table edge. Sheet supports rise from the table to allow easy positioning of heavy material.
- **Efficient Unloading** – The C5 delivers the processed components to a freely programmable position on the table, thus, increasing the operator's efficiency.
- **Catch & Carry Work Chute** – Allows the reception of several components to 19.7" x 19.7" (500 mm x 500 mm).

The 20-station, 33-ton **C5 Hydraulic Turret Punch Press** has a maximum sheet size of 50" x 100" (1270 mm x 2500 mm) and is available with either Siemens or Fanuc controls.



**FINN-POWER**

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