

FORGING®



MAINTAINING MACHINE- READINESS

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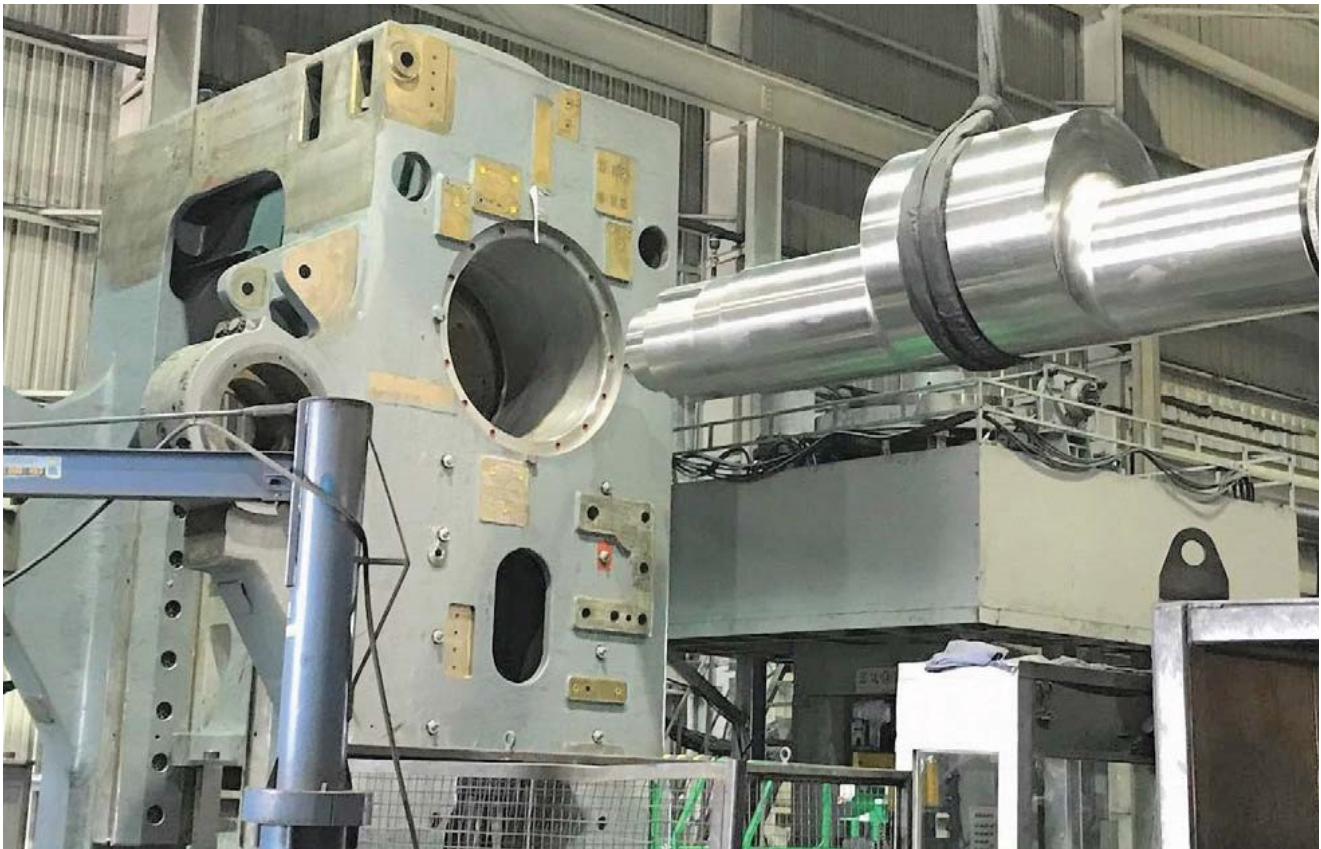
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ACCELERATING REPAIRS TO PREP FOR OPPORTUNITIES

Expediting machine restoration can help forgers expand cost-effectively, to be available for new business as the supply chain reshores and manufacturers look for new supplier options.

JEFF ELLIOTT



The manufacturing supply chain is changing quickly. The recent economic slump and the COVID-19 pandemic have disrupted international supply chains, and capacity consolidations now have some observers identifying an opportunity for domestic operations — including forgers — to pick up new business in 2020, and beyond. However, securing new business may require some forgers to reactivate idle or out-of-commission machinery and operations on an accelerated schedule, meaning quickly initiating the necessary equipment repairs or rebuilds.

Naturally, any such solution also would have to be done as economically as possible, and engaging additional capacity would have to improve the forgers' parts-per-hour production rates, perhaps with a smaller workforce than may have been relied upon in earlier uses of that equipment.

Repair and reuse — Perhaps the most immediate and econom-

A custom stocking program for long-leadtime items — such as main gears, eccentric shafts, rams, etc. that forging operations do not typically keep in inventory — can avoid weeks or months of downtime.

ical option for adding production capacity is simply to repair existing or out-of-commission machinery, to get it running to spec with greater efficiency. This can be as simple as replacing parts that are worn, out-of-tolerance, or broken, to bring the machinery back online.

“We stock a lot of the perishable items that are common to every forging machine, including friction plates and driving plates for presses and upsetters, or piston heads, rods, rings, and packings for hammers,” explained Ken Copeland, president of Ajax-CECO, a manufacturer of forging equipment since 1875.

With its 2019 acquisition of Erie Press Systems, Ajax-CECO is the largest OEM supplier of forging equipment in North America and an expedited domestic source for forging equipment.

Forging operations sometimes get into trouble when a part that needs replacement is one that was built decades ago, and by an OEM that is no longer in business. Sometimes, it may be unclear that drawings still exist for the part that is needed.

Relatedly, problems occur when forgers send parts to machine shops to be reverse-engineered and machined. Machine shops often do not have access to critical specifications about high wear parts, including the material grade of the steel, the heat-treating process used, and tolerances that all were engineered specifically for that piece of equipment. “The result can be parts that fail prematurely or wear much faster,” Copeland said.

Ajax-CECO offers a stocking program for long lead-time items, such as main gears, eccentric shafts, rams, etc., that many machine operators do not keep in stock, due to the cost. In such a program, the part is held in inventory for the customer. The customer pays a percentage of the cost and then the balance when it takes possession of the part — even if that happens years later.

“A custom stocking program with minimal up-front investment can eliminate months of downtime due to long leadtime parts,” according to Copeland. “Instead, multiple machines with parts of similar size and design can have the parts manufactured to a semi-finished state in preparation for use with any of the machines. When needed, the exact dimensions for the down machine can be provided so the part can be completed to spec, ready to install.”

Rebuild and remanufacture — When the scope of work goes beyond repair, a machine rebuild is an economical, accelerated option to bring additional equipment online. “It takes a lot less time to rebuild equipment than to make and ship a new machine,” Copeland explained. “Depending on the scope of the work, it can take just a few months for a rebuilt unit to become operational.”

In a rebuild, all high-wear items like bearings, bushings, seals, and liners are replaced to get the machine in good working condition. All major components, including the frame, are inspected and repaired, if necessary. Recommendations are provided to the customer and the final work-scope developed to meet the new manufacturing need. This approach significantly reduces the overall cost of the forging equipment, compared to purchasing new machinery.

Rebuilds, which ranked among forgers’ top capital investments of the past year (along with modernizing controls) can be approached several different ways: Forging equipment can

be sent to the OEM for rebuilding; the OEM can send repair personnel to the manufacturer’s location to rebuild equipment on-site; or, the OEM can supervise a rebuild by the operator’s maintenance staff. This allows the in-house staff to ask questions, learn more, and understand better the operation of the equipment they are maintaining.

If even more extensive work is required, remanufacturing still can save time over buying new equipment, according to Copeland. Remanufacturing basically means stripping down the machine to the cast frame and replacing all the internal parts.

“With a remanufacture, you save time having a new frame cast,” he said. “A remanufacture can be completed faster than a buying new (machinery) at about 85-90% of the cost, and usually would carry a new machine warranty.”

One of the advantages of rebuilding or remanufacturing forging equipment is that the scope of work also can include adding significant automation upgrades. Copeland explained that it is not uncommon for a forger that has — or acquires — an older model machine to add to or upgrade its automation functions. Many manual forging tasks are being replaced with the mechanical “hand” of a robot or by

integrating servos that can lift, insert, and deposit workpieces.

By making those improvements, tasks that once were performed manually — such as moving heavy steel workpieces in and out of a hammer or die press — are automated now, improving productivity and elevating worker safety. Employing a team of operators to lift hot and heavy workpieces into and out of a forging press is no longer an effective way to work, or to improve productivity.

Automation can be used for die service and tooling changes, too. “By automating forging operations to perform some of the tasks of a human operator, productivity can increase from several hundred pieces per hour to up to 3,000, depending on the type of products being forged,” said Copeland.

A manufacturing recovery and reshoring supply chains remain in forecasts, for now. Although forgers may be reluctant to purchase new equipment to pursue opportunities for additional business, repairing or rebuilding equipment can quickly and economically prepare their operations to compete for greater market share.

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