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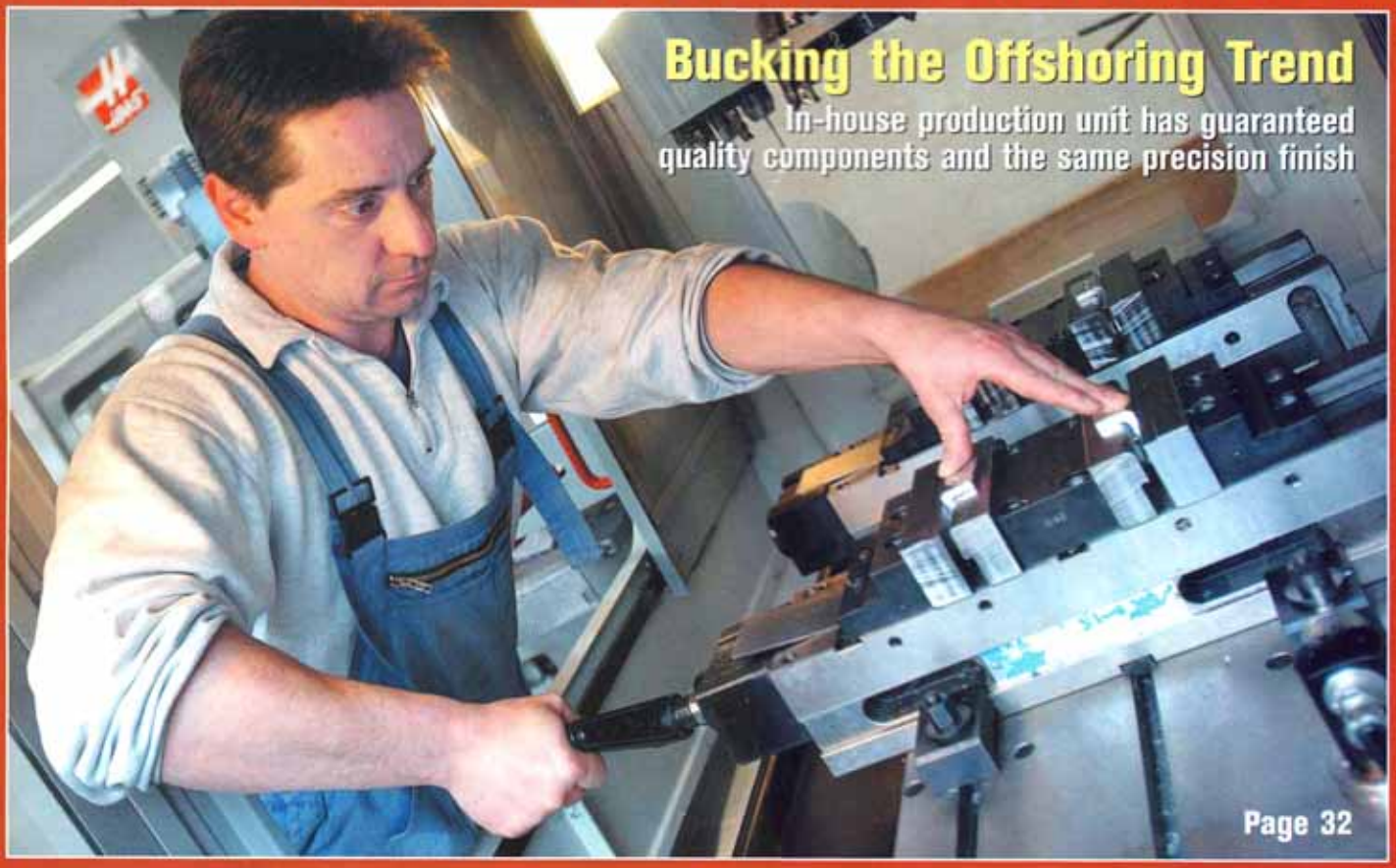
June/July 2006

Production TECHNOLOGY NEWS™

INNOVATIONS IN MANUFACTURING AND PRODUCTION



Bucking the Offshoring Trend

In-house production unit has guaranteed quality components and the same precision finish

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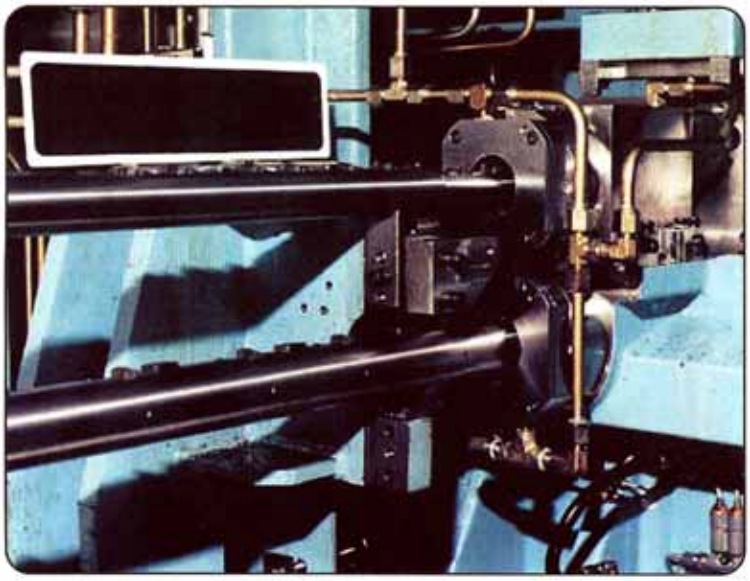
Quick change rotary bushings help line boring bars stay in position

No Downtime on High Volume Production Lines

Rotary bushings are commonly deployed in transfer line tooling applications such as automotive engine block cam, and crank boring. They pay automakers significant efficiency dividends because they guide line boring bars with the frictionless support they need to machine precision bores. A stride beyond the more common – and better known – common drill bushing, rotary bushings not only facilitate accurate cutting they also do away with heat, wear and chatter. Their use in production can boost CPK value as well, a calculation that gauges the extent to which a process has met the quality specification limits established by customers.

Rotary bushings are a small but vital component of high-volume manufacturing.



Although rotary bushings are a small but vital component of high-volume manufacturing they can also be an Achilles heel. This is attributable to the design limitations of most boring machines. Past practice involved mounting individual detail parts directly into the machine housing. The line boring bar moves through the bushings' inner diameter and – with the help of precision bearings – rotates without friction. The design of a great many machines involves the use of individual parts that comprise the bearing support and are built into the machine housing.

The inherent limitation of this design is that when new guide bushings are installed it may be necessary to remove the entire housing, rebuild it in the tool room, and then realign it back on the machine – further delaying production. This can also occur when the bearings, seals, or components go bad, and repair or replacement is required. Downtime results in both cases, and it always turns out to be extremely expensive.

A rotary bushing retrofit to a more easily replaceable part, on the other hand, can help stave off downtime. To accomplish this task, Gatco developed a quick-change, precision cartridge with a self-contained bearing assembly that is machine-installable in mere minutes and eliminates the time consuming and expensive replacement of individual detail parts.

The retrofit solution is available only from Gatco, Inc. of Plymouth, Michigan. These rotary bushings, frequently referred to as "Gatcos" throughout the industry, make a machine housing rebuild and realignment completely unnecessary. Rather than removing worn parts, ordering new ones and installing them, one simply slips the new cartridge in place and locks it down. Moreover, all the quick-change cartridges are factory pre-adjusted to customer specifications.

Gatco pioneered the anti-friction rotary bushing, and currently supplies the metal working industry with a virtually limitless range of shapes and sizes. Gatco rotary bushing solutions are customizable to requested design specifications, and are deployed in manufacturing plants worldwide.

Downtime Happens

As time is literally money in auto manufacturing, stalled production taxes a manufacturer. Given fierce international competition, spiraling labor expenditures, and microscopic profit margins - even a little downtime is extremely costly and should be avoided at all costs.

Even so, some amount of downtime will occur anyway, particularly where line boring bar supports are concerned. In a typical parts-punishing, high-production application such as engine block boring, trips to the tool room for repair and replacement are unavoidable and may be required several times per month. This can be a

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detriment for a U.S. automaker competing with top Asian competitors.

Companies like Toyota, Honda and Hyundai have mastered their production processes through incremental tweaking, and learned how to transition product from the manufacturing floor to the sales floor virtually without interruption. Taking a cue from the Asian example, American automakers and the industries that serve them are working on concepts that enhance production efficiency one step at a time.

A rotary bushing retrofit may prove a small but important step in that direction.

Successful Rotary Bushing Retrofits

Galaxy Industries is a machine shop based in Canton, Michigan that performs a range of machining work for major equipment manufacturers such as Caterpillar, Inc. and Eaton Corp. Galaxy used three bushings in engine block boring to pilot the line boring bar, and in 2005 all three wore out near the end of a Caterpillar job. Though the company had a spare set of bushings on hand, the cure wound up being worse than the disease.

"When the bushings wore out we were at the point in the job were we were ready to bore all seven crank journals in the engine block simultaneously," Plant Manager, Dale Funk recalls. "We had another set of bushings available but we didn't realize they were the wrong size until we had completely torn down the existing setup to install them. There had been a change in the crank bar, and it turned out that the bushings we had were too small. It really messed us up."

Armageddon followed. The operation ground to a halt for 24 hours, and the delay cost the company $150,000, not a penny of it recoverable down the road. That, by the way, did not take into account the $25,000 Galaxy had already invested in off-size bushings, or the time and labor entailed in the fruitless disassembly operation. Fortunately for the company, there would be a happy outcome.

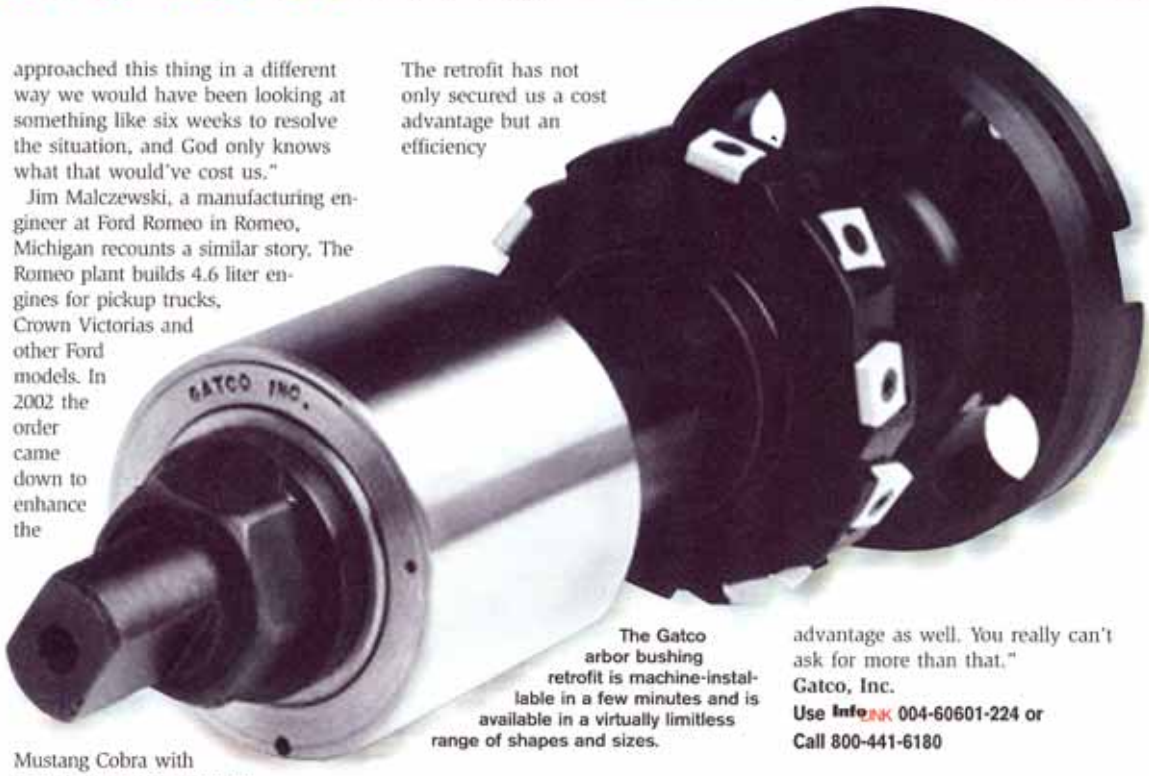
"We contacted Gatco for a retrofit, and they had the whole process wrapped up in just 24 hours," Funk says. "That was incredible. Had we approached this thing in a different way we would have been looking at something like six weeks to resolve the situation, and God only knows what that would've cost us."

Jim Malczewski, a manufacturing engineer at Ford Romeo in Romeo, Michigan recounts a similar story. The Romeo plant builds 4.6 liter engines for pickup trucks, Crown Victorias and other Ford models. In 2002 the order came down to enhance the Mustang Cobra with more horsepower, an operation requiring that the engines be beefed-up inside the vehicle's engine block. More stock would have to be machined, which would shorten the lifespan of the bearings involved to a mere three months. Replacement maintenance cost from deployment to replacement turned out to be a killer, and tool repair was becoming a pricy issue as well.

"The job was very rough on our equipment," Malczewski recalls. "Old bearings would fail prematurely, and tools were being literally destroyed, creating unwanted scrap cost. We also had to spend a lot of money to replace the busted tooling. When we finally got around to redesigning our tooling we decided to incorporate Gatco retrofit bushing. It turned out to be a wise decision."

According to Malczewski, prior to the Gatco retrofit, Ford Romeo was replacing bearings on a monthly basis. Since the install there've been no replacements at all. Ford is just now replacing bearings due to wear.

"The retrofit has already saved us roughly $100,000," adds Malczewski. "Some of the repairs were costing us $5,000 each and we were making them all the time. The investment we made in Gatco has really paid off. The retrofit has not only secured us a cost advantage but an efficiency advantage as well. You really can't ask for more than that."



The Gatco arbor bushing retrofit is machine-installable in a few minutes and is available in a virtually limitless range of shapes and sizes.

Gatco, Inc.
Use InfoLINK 004-60601-224 or
Call 800-441-6180