

Die-Design-and-Build Efficiencies via All-in-One Guided Lifters

Why custom-design and manufacture systems for progressive-die guided lifting every time a new project comes along, when standard off-the-shelf products have it covered?

BY BRAD F. KUVIN, EDITOR

Technology developments in the tool and die industry come fast and furious, as suppliers to die designers and builders know that their customers' lives are on the lines day in and day out. Engineers charged with designing progressive dies, with ever-increasing numbers of stations for ever-more-complex parts, and the production departments charged with turning those designs into finished dies, face lead times that seem to shrink every day—26 weeks of lead time became 20 weeks, then 12, and sometimes even less.

Among the tools used by die designers and manufacturers to keep the process sleek and responsive to the needs of their metalforming customers are software products; high-speed machining and grinding equipment and tooling; and off-the-shelf die-component solutions designed to take some of the die-build burden off of the die houses. The latter is the subject of this article.

The old-school way: constructing a progressive die with custom-engineered and fabricated lifters, requiring boring into the shoe, using a centerless grinder to turn up some rods, tapping the ends, placing caps on them, installing springs etc.

The new and improved way: using off-the-shelf nitrogen-gas lifters, which present die houses with one common solution applicable to every progressive die, with guaranteed performance, easy maintenance and simple and timely replacement. Time saved in the design and build process: 4 to 5 days, according to the folks at DieVerse Industries Inc., Valley View, OH, describing their recent experience with all-in-one off-the-shelf nitrogen-gas lifters—SLN.090 Micro Nitrogen Gas Lifters from



When we toured DieVerse Industries to learn how it applies nonrotating all-in-one nitrogen-gas-spring lifters, the firm was building a 120-in.-long progressive die to stamp these brackets for a spare-tire assembly for a 2008-model-year SUV. Shown is one test tool for the 11-station die.

Dadco, Plymouth, MI—applied to a recently completed 120-in.-long die.

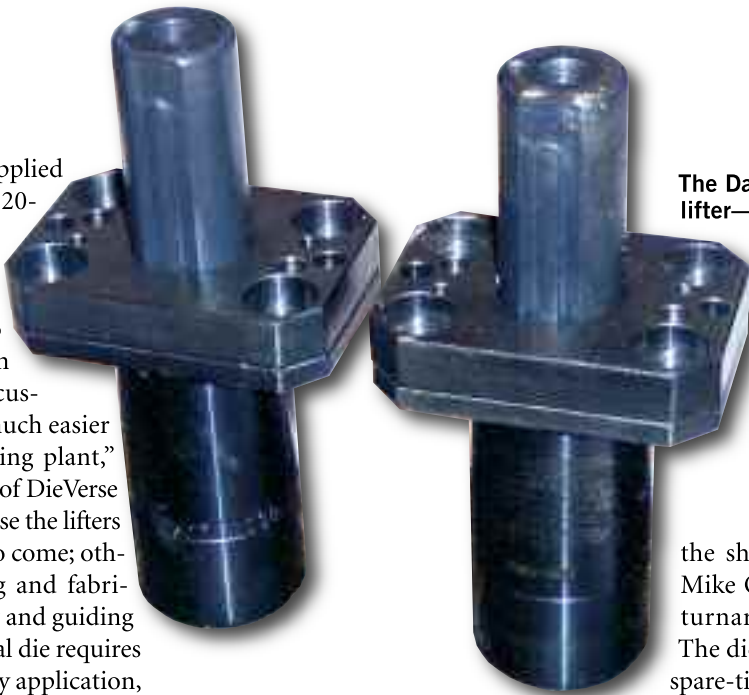
“We installed 16 of the Dadco stock lifters on this latest die, allowing us to streamline our fabrication process and provide our customer with a tool that’s much easier to maintain in its stamping plant,” says Emil Reljin, president of DieVerse Industries. “We expect to use the lifters regularly for a long time to come; otherwise, custom-designing and fabricating solutions for lifting and guiding the rails for each individual die requires a unique solution for every application, a huge waste of time and money. This device takes it down to one simple solution.”

Dadco, which introduced the SLN.090 lifter in June 2004, offers the unit with force on contact from 40 to 200 lb., in a basic and slotted style for use in single-point, multiple-point and rail-lifter applications. It includes the firm’s Micro 90 nitrogen-gas spring housed inside the guide rod, which is double-keyed to prevent rotation.

Leap of Faith Requires Leap in Technology

Reljin, who launched DieVerse in 1994 in a 3300-sq.-ft. leased building in North Royalton, OH (a suburb of Cleveland), and via a pair of expansions grew that facility to 10,000 sq. ft., took a leap of faith late in 2006 when he moved to his current 65,000-sq.-ft. location. The move enabled him to take all of the equipment he had acquired over the years and had placed in storage and move it out onto the shop floor and ready it for production and tryout of tooling and dies. Hence the increased attention being paid to gaining efficiencies in all of his processes and procedures. Reljin estimates that since 1997 he’s been able to cut his labor content in half.

“The pre-engineered lifters are just one example of how we’re leveraging technology to remove labor content and increase throughput,” Reljin says. “While I can’t control the price of steel,



The Dadco Model SLN.090 compact lifter—DieVerse employs 16 of them in the 120-in.-long die we saw under construction to lift a total of eight rail sections—has a double-keyed guide rod to prevent rotation and eliminate the need for additional guiding components. Introduced this month: the 450-lb.-capacity SLN.180.

my heat treating costs and a lot of other costs of doing business, I can find ways to take man-hours out of my processes.”

DieVerse has had as many as 18 employees, and today serves its primarily automotive customer base with 13 employees. Included on its equipment list are 14 networked CAD workstations, five tryout presses with capacity to 900 tons, 20-ton bridge-crane capacity, eight wire-EDM machines, and a number of milling machines including a 12-ft. Cincinnati mill and a Mazak CNC bridge machining center with a work envelope of 78 by 55 by 22 in. that allows the firm to bore its shoes complete—pins and bushings, screws and dowels—all in one setup. Through the firm’s recent expansion and installation of new die-build and tryout capabilities, Reljin hopes to expand his customer base beyond the Midwest and make a splash into the burgeoning Southeast metalforming market.

“While our core customer base in and around Cleveland has been for stampers of automotive brackets and similar parts, we’re now equipped to handle bigger tooling and deep-draw work, as well as transfer dies,” says Reljin.

Streamlining Production, and Otherwise Carving Costs

Describing the 120-in. progressive die under construction when we visited

the shop, Reljin’s general manager Mike Oravetz boasted of a 12-week turnaround for design and build. The die, for stamping a bracket for a spare-tire assembly for a 2008-model-year SUV, features 11 tool stations, eight rail sections (four each in front and back) and 16 of the Dadco lifters. In production, the die will process 21.2-in.-wide strip, flanged with a hook-rail configuration on both sides to better lock the material to the tool and stiffen the strip as it feeds.

“The original die design called for 12-in.-long rails, based on rails constructed of ½-in.-thick steel,” recalls Oravetz. “We called our heat treater who said it could provide us with the rail sections to our required flatness tolerances in 22- to 25-in. lengths. That took our design down from seven rails front and back to four, and eliminated six lifters from the project, saving us and our customer time and a lot of money.”

“We also were able to reduce the pitch between die stations and remove one station, to slash overall die length from 134 to 120 in., and also design the tool to reduce stock width from 22 in. originally to 21.2 in.,” adds Reljin. “We built temporary tooling to prove out the process and expect the tool to make a good part the first time in the press. We definitely have confidence that the off-the-shelf all-in-one gas-spring lifters will work properly right off the bat, without sticking. Those rails will travel perfectly, every time. And should they need replacement after months of production, our customer will be able to do so quickly and easily.”

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