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# FF Journal

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# DIRE STRAITS

NATION'S FAILING INFRASTRUCTURE NEEDS OVERHAUL

## LASER TECHNOLOGY

Automated fiber laser helps a shop to build tougher truck utility boxes

## SOFTWARE SOLUTIONS/ERP

Nesting and process improvement foster reliable ambulance production

## Spin City



### Higher tonnage and large-diameter draw forming help job shop boost output, stay ahead of the technology curve

**W**hen the need to add capacity prompted Columbia Metal Spinning to shop for a new press, the company sought to kill two birds with one stone.

“We have presses ranging from 50 to 250 tons,” says Ken Kolman, management representative and quality assurance manager for the Chicago-based job shop. “Since we were ramping up capacity with a higher tonnage press, we also decided to enhance

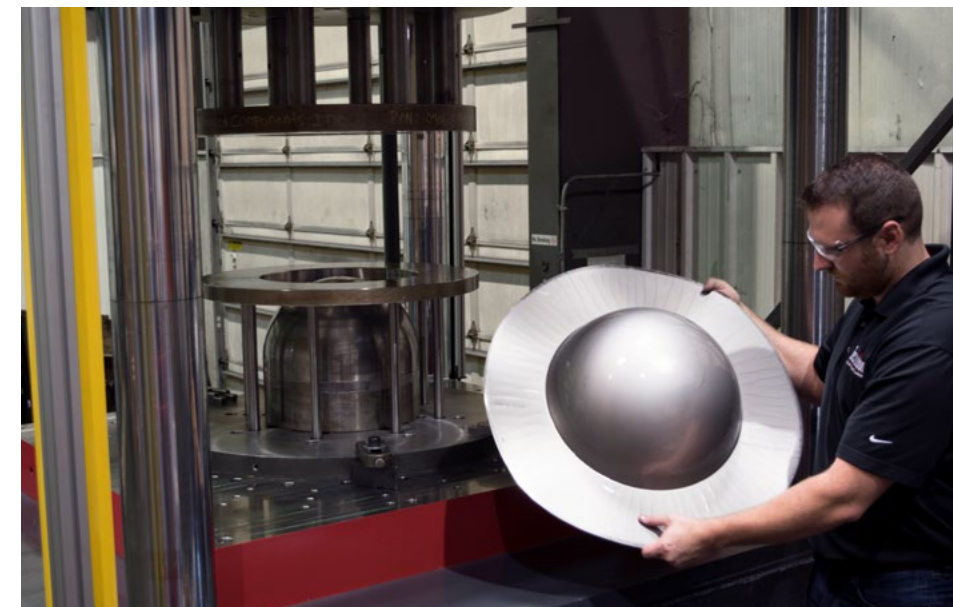
our capabilities. We issued several quotes, but Beckwood Press Co. had the advantage.”

For nearly seven decades, family-owned Columbia Metal Spinning has stayed abreast of metalforming technologies in its quest to provide cost-efficient, high-quality

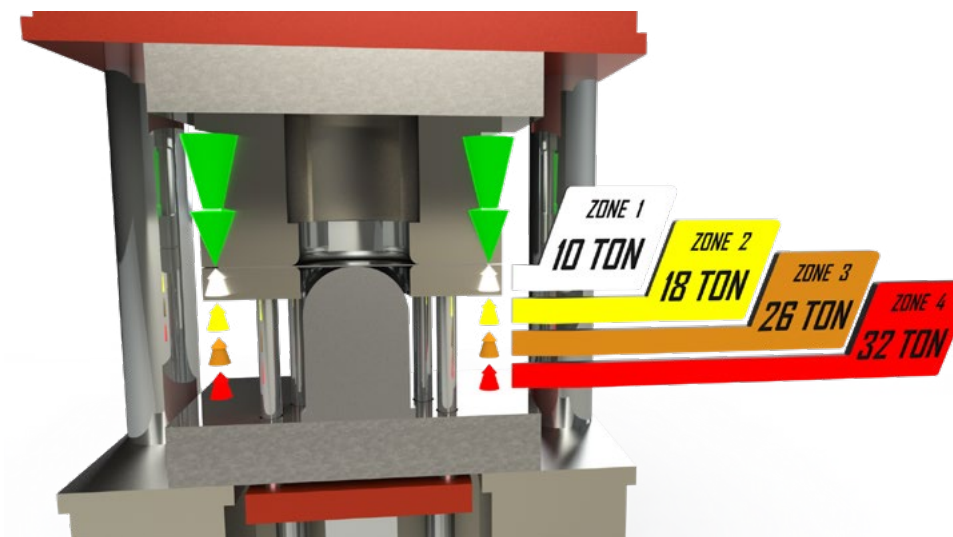
parts to the automotive, aerospace, oil seal and electronics markets.

The company is IATF 16949 certified. The supplemental standard, used in conjunction with ISO 9001, allows Columbia Metal Spinning to supply parts directly to automakers.

“As a job shop we will take on anything,” says Kolman, “but our bread and butter is the automotive seal industry.”



Columbia makes precision metal spinnings from almost any alloy in shapes up to 60 in. diameters with tolerances of +/- 0.001 in.



Beckwood’s Dynamic Cushion Control allows Columbia Metal Spinning to adjust the tonnage of the bed cushion throughout four travel zones for greater control over material flow.

In addition to metal stamping, deep drawing, machining and spinning, Columbia Metal Spinning has an in-house tool and die facility. According to Kolman, tooling costs for precision metal spinning can be a fraction of the cost for complex transfer dies used to stamp the same parts.

“For certain prototypes, we can go from blueprint to finished product in five working days,” he says. “Maintaining control over tooling costs gives us the design flexibility and the economies of scale we need for larger orders.”

#### Tailored solution

Columbia makes precision metal spin-

nings from almost any alloy in shapes up to 60 in. diameters with tolerances of +/-0.001 in. The shop’s spin forming prowess is what led it to Beckwood. “They build the Triform line of sheet hydroforming presses and attend some of our spinning trade shows,” Kolman says. “We were familiar with their reputation.”

Caleb Dixon, Beckwood sales engineer, says the two companies discussed sheet hydroforming, “but the components they make, in a lot of cases, are too large for this method.”

Because Beckwood specializes in building custom presses, Kolman says, “We knew they could tailor a press to meet our

requirements and handle the different materials we wanted to form.”

The press manufacturer used Finite Element Analysis (FEA) design software to ensure the machine was built to handle the shop’s arduous production requirements. “The software divides the press into different segments and simulates real-world manufacturing conditions to uncover any stress points,” says Dixon. “From a structural standpoint, this press is built to provide Columbia Metal Spinning with the longevity and performance to gain a competitive edge.”

Columbia Metal Spinning installed the Beckwood 450-ton hydraulic deep draw press in October 2017. With a 54 in. by 54 in. forming area and a 120-ton hydraulic bed cushion, the new machine expanded the company’s large-diameter draw forming capabilities.

#### Flow control

“The punch is mounted on the bed, and the blank material sits on the draw ring supported by the bed cushion,” says Dixon. “When the upper tooling contacts the blank, the cushion retracts downward, forming the material over the punch.”

On a conventional draw press, the bed cushion maintains equal tonnage throughout the stroke, which can cause wrinkling and tearing. Beckwood’s Dynamic Cushion Control allows Columbia Metal Spinning to adjust tonnage throughout four travel zones. This gives the operator greater control over material flow, allowing the shop to form complex parts with ease.

Columbia Metal Spinning is using the

# Stamping/Presses

press primarily to form prepped circles into hemispheres and flared tube ends. Material types range from Inconel and high-strength alloys to aluminum and brass-nickel. The machine runs 16 hours a day.

“We are using it to draw, size and blank,” says Kolman. “We’re running everything we can through this press. We are pushing the machine’s limits. The 54 in. by 54 in. sq. bolster gives us 60 in. of daylight. The larger work area provides us with so much more capacity. We’ve joked that we could fit our old press inside our new one.”

## Opportunities arise

Kolman says he appreciates “the tolerances we are able to achieve with this press, [which] are paramount for the components we need to produce. Capacity, close tolerances and repeatability also support very short timelines. The press has opened up doors to new production areas for us.”

This workhorse has given the manufacturer a “chance to perform long-needed service on our other presses because we have the capacity on this one” to cover maintenance outages on the others.

Columbia Metal Spinning is also seeing an uptick in research and development

“The press has opened up doors to new production areas for us.” Ken Kolman, Columbia Metal Spinning

projects. Kolman credits this opportunity to the new press as well as the shop’s cost-efficient tooling. Equipped with Allen Bradley controls, the intuitive system operates in manual mode to accommodate die set-up and maintenance as well as semi-automatic mode for continuous production.

“The press has allowed us to reduce the number of personnel needed for some jobs,” Kolman notes. “That was unexpected.” Once part recipes are perfected, they can be stored for easy recall, Beckwood Press’ Dixon says. “With minimal training, anyone can make parts on the press. Columbia Metal Spinning doesn’t have to rely on a manual controls system or highly skilled operators to maintain accuracy and repeatability.”

## Next steps

Flexibility helps the job shop manage any project that comes through the door. “It has

contributed to our longevity,” says Kolman. “Each industry has different specifications, different tolerances, and we’re able to fit the bill regardless of the parameters.”

Columbia Metal Spinning is considering adding hot forming capability. The application requires a highly specialized press capable of forming high-strength materials like titanium at temperatures up to 2000 degrees Fahrenheit. Based on the success of the relationship it has with Beckwood Press, Columbia Metal Spinning knows just where to seek a quote for that. FFJ

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**Columbia Metal Spinning**, Chicago, 773/672-3951, [www.cmspinning.com](http://www.cmspinning.com).



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