

A large industrial stamping machine, likely a progressive die press, is shown in a factory environment. The machine is blue and yellow, with a large metal mesh safety guard in the center. It has various control panels, including one with a digital display and buttons on the right side. The machine is mounted on a sturdy base with yellow safety railings. The background shows a typical industrial setting with concrete floors and other equipment.

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in today's  
global  
marketplace

**Flexible equipment choices allow stampers to meet challenges**

**F**or North American stampers, the challenge to maintain a competitive profile continues to dictate the necessity for the right metalforming equipment choices. Flexibility gives stampers the ability to meet current job demands and provides the infrastructure to support future requirements.

This equation changes though for stampers with overseas locations or plans to globalize operations. Because labor costs are typically lower, press flexibility and features like automation and quick die change become secondary. Instead, stampers must focus on being able to obtain service and

spare parts locally as well as meeting the safety standards unique to individual regions. This means identifying an equipment supplier capable of supporting specialized requirements in multiple locations.

Whether focusing on North America or supporting global facilities, there are

guidelines that can help stampers enhance the effectiveness of pressroom operations. In the United States, stampers can support ongoing growth and productivity by considering three primary elements when choosing equipment. First, press equipment should be flexible and have the capability to produce a wide variety of parts. This type of versatility means less equipment on the shop floor and less overall capital equipment costs. Second, stampers need to work toward improving machinery uptime with quick-change equipment that can reduce part-to-part





changeover. And finally, press automation must be considered to increase overall output. On a more fundamental level, press equipment must be reliable and well maintained. If equipment is initially sound and maintained on a regular basis, as part of a preventive program, stampers can avoid downtime due to unscheduled repairs.

### Multiple functions

Press flexibility can be determined by looking at the types of operations the press can perform. In addition to draw work and heavy forming, a versatile press must be able to efficiently perform blanking operations. The press should also be able to run progressive die operations with coil feeding or transfer operations with an in-press transfer system. For example, transfer presses can be designed with destack feeders and coil feeders. A destack feeder allows the

stamper to blank parts offline to save material, then run the transfer press using the blanks.

Multi-press systems that are automated offer another option for achieving flexible operations. When considering such a system, whether the focus is operations that use coil feeders or transfer feeds, the press of choice can be either a straight-side or a gap-frame design.

Double-crank straight-side presses (ranging from 300 tons to 3,000 tons and more) are used to produce massive parts requiring corresponding stroke lengths. When used in a line, automation can deliver improved productivity as parts move from press to press.

In a system with two or more presses, the straight-side can be run individually or, when extra tooling is required, as a single, large transfer press by initiating the intermediate stage between the presses and running them in a continuous, synchronized operation. Transfer system programming can optimize the acceleration/deceleration curves for maximum productivity and strokes per min. A free programmable dimension in three-axes capability (transfer pitch,

clamp pitch and lift pitch) can increase flexibility.

Tie-rod straight-side presses can be selected with long or short strokes for transfer or progressive-die operations and can significantly enhance flexibility in the pressroom. Suitable for large part production, these presses are also compatible with third-party transfer mechanisms.

Straight-side unitized frame presses (usually 200 tons to 400 tons) can be used for multi-purpose applications. When used as a transfer unit, two presses can provide up to 12 tooling stations with material feeding left to right through both presses. When used individually, the first press feeds left to right with up to six tooling stations. The second press can stamp a different part, feeding material right to left with up to six tooling stations. This combination can provide more tonnage capacity without the capital equipment costs of a dedicated transfer system.

A gap-frame press transfer system continues to offer a flexible alternative that is one-third the cost of a dedicated straight-side transfer system but preserves the advantages offered by transfer operations. The gap-frame press transfer system also gives stampers the capability to handle a wide range of stampings for future products. In fact, stampers can connect as many gap-frame presses as they need.

Unlike larger straight-side presses, the physical size of the gap-press transfer system is small and can be used in a factory with a low ceiling. The system doesn't require any large accessory equipment. Standard gap-frame presses do not require a pit, so press layout is easy to change. If a problem occurs with the transfer equipment, gap-frame presses make it possible for operators to perform normal production manually. Since the dies are the same size as normal gap-frame press dies, manufacturing costs are low.

Gap press selection for progressive-die operations is less complicated than press selection for transfer-die production. Progressive-die operations use a single press, while transfer operations can be performed in a single, two-point

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suspension gap press or in a multiple-press cell where one-and-two-point suspension machines are grouped to provide total capacity of 1,000 tons or more and a bed area of 20 ft. or more. Cycle speeds are quite close to those of a dedicated transfer press.

To further improve flexibility and

uptime, servo technology can be added to a range of mechanical presses including straight-side and gap. With servo technology, stampers can produce a wide range of parts from materials like aluminum, magnesium, high-strength steel and titanium while achieving higher speeds, higher working energy,



better control and precise accuracy. Pre-programmed motion curves and the ability to design programs unique to the job, along with the ability to quickly change parts, also add to the system's versatility. Compared to a conventional press line that operates in automatic single-stroke mode, a servo-driven gap-press transfer line run in continuous mode can deliver productivity rates up to 50 percent higher.

## Quick die change

Typically, when stampers consider quick-change equipment that can reduce part-to-part changeover, the focus tends to target quick die-change systems. To reduce part-to-part changeover time, all aspects of the stamping operation, from coil feeding, part destack changeover and die change to part and scrap removal must be analyzed and evaluated. Every piece of the metalforming system must be reviewed from the perspective of reducing downtime and improving changeover time.

There are a number of solutions available to address these areas. They include such items as a blank feeding device that can increase productivity by sensing and correcting double blank misfeeds and reloading the blank feeder without requiring the operator to stop the press. The blank feeding device should be able to automatically discharge extra blanks when a double blank is detected. Blank hold devices allow blanks to be automatically held while the next blank stacker is changed, eliminating the need for the operator to



Aida builds a PMX progressive die press fitted with LFG feeder levelers.

#### The international marketplace

Stampers with locations overseas or those that are planning to open a manufacturing facility overseas already have access to low-cost labor. Consequently, elements like press flexibility, quick die change and automation become secondary considerations. Cost savings

must instead be based more heavily on machine uptime. The ability to obtain service and spare parts locally, rather than incurring the time and expense of having parts shipped from a distant location, becomes critical.

Sourcing local brands to ensure replacement parts are commercially

stop the press when the supply of blanks is low. A data bank formula device can also raise productivity by making it possible to perform die changes more quickly.

A servo transfer mechanism gives a press the ability to change the motion profile for the transfer pitch, the transfer bar-clamp motion and the lift motion. An electronic servo transfer mechanism can deliver increased production speeds and greater efficiency because all three profiles can be adjusted and retuned for each part or each job to achieve optimal operating speed. In addition, once job programs have been written, they can be stored in job memory, eliminating the need to constantly reprogram the press.

#### Automation

In addition to the press itself, automation can include coil feeding for progressive die operations, transfer units or press-to-press robots (pick and place and articulated). When considering automation, it's important to understand the production rate of the press, the off-loading of the finished part and the limitations of the operator. If parts are especially large, the ability of the operator to lift and place the part repeatedly might ultimately call for automating part removal and stacking.

Stampers who install flexible equipment and incorporate a system-wide approach to part-to-part change-over and make automation part of their operations, have an opportunity to remain competitive with lower-cost labor markets.



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available is an important contributor to machine uptime. Partnering with a press supplier able to support multiple global locations can ensure quality of replacement parts and provide other important services. Machine uptime is critical to production, and having spare parts on hand can greatly reduce the

amount of downtime on a press.

A press supplier with local service and support capability can provide a recommended spare parts list based on the critical parts needed to keep a press in production. The list of recommended spare parts should be based on availability, delivery and the level of

importance of each part. Stampers should also look for a supplier that can provide updates when parts become obsolete, helping them to stock up through spare parts purchases or upgrade their equipment with new components.

For stampers with established facilities overseas, a supplier that can provide preventative maintenance programs and services like identifying, installing and incorporating the right stamping press solutions for jobs coming in the door can also be important.

When Formex Automotive Industries, S.A. de C.V., a manufacturing division of Magna International Inc., was awarded three contracts from General Motors Corp., the Mexico-based manufacturer found a total capabilities solution with Aida. The contracts dictated that Formex produce chassis as well as other stampings and assemblies. Turnaround time on press delivery was key. "We needed equipment that was reliable, but the capability to deliver the presses on time and provide the necessary customer support were critical considerations," said Formex's press-room manager. Formex purchased two Aida SMX 1,000-ton straight-side presses that were delivered from the Aida-America Corp. facility.

The package included a transfer system with free programmable dimensions in three axes; transfer, clamp and lift pitch. Aida integrated a third-party automation supplier's transfer system to give Formex maximum productivity and strokes per min. Coordinating full rigging and erection for the system, Aida provided onsite project management and translation services. It also gave American-based offsite project management and support for the package after installation. Activity was coordinated between the Swiss automation supplier, Aida's parent company, Aida Engineering in Japan and its North American headquarters for successful implementation of the necessary components.

## Safety Compliance

Another U.S.-based manufacturer also found help in developing a manufac-

turing system for a fabricated product. Aida-America designed and manufactured the control system and shipped it to Japan, where the presses were designed and built. The total systems were then shipped to customers' facilities in the United States and Mexico for installation.

When the manufacturer decided to expand this technology to Europe, Aida-America, Aida-Engineering's high-speed division and Aida-Europe partnered to build a system that complied with CE requirements. The presses were purchased in the United States and shipped from Japan to Aida Srl, located in Italy, to reduce shipping and logistics costs. CE compliant controls and ancillary equipment were installed on the press systems before being shipped to the customer's facility in

another European country.

Stampers in the international marketplace must also be able to meet local safety standards and regulations. Equipment in Europe must be CE compliant; in the United States, Ansi and OSHA



**Complete systems from Aida that include gap press transfer systems with ServoPro technology enhance lean manufacturing processes.**

standards dictate equipment operations. CSA standards apply to machines installed in Canada, while machines in Japan must meet JIS standards. A press supplier knowledgeable about the requirements unique to each country can substantially help a stamper ensure machine uptime and improve shop safety while avoiding the downtime that could result from a failed inspection. In today's global economy, stampers that understand the dynamics of their target markets can more effectively identify the tools and services they need to be competitive. FFJ

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