

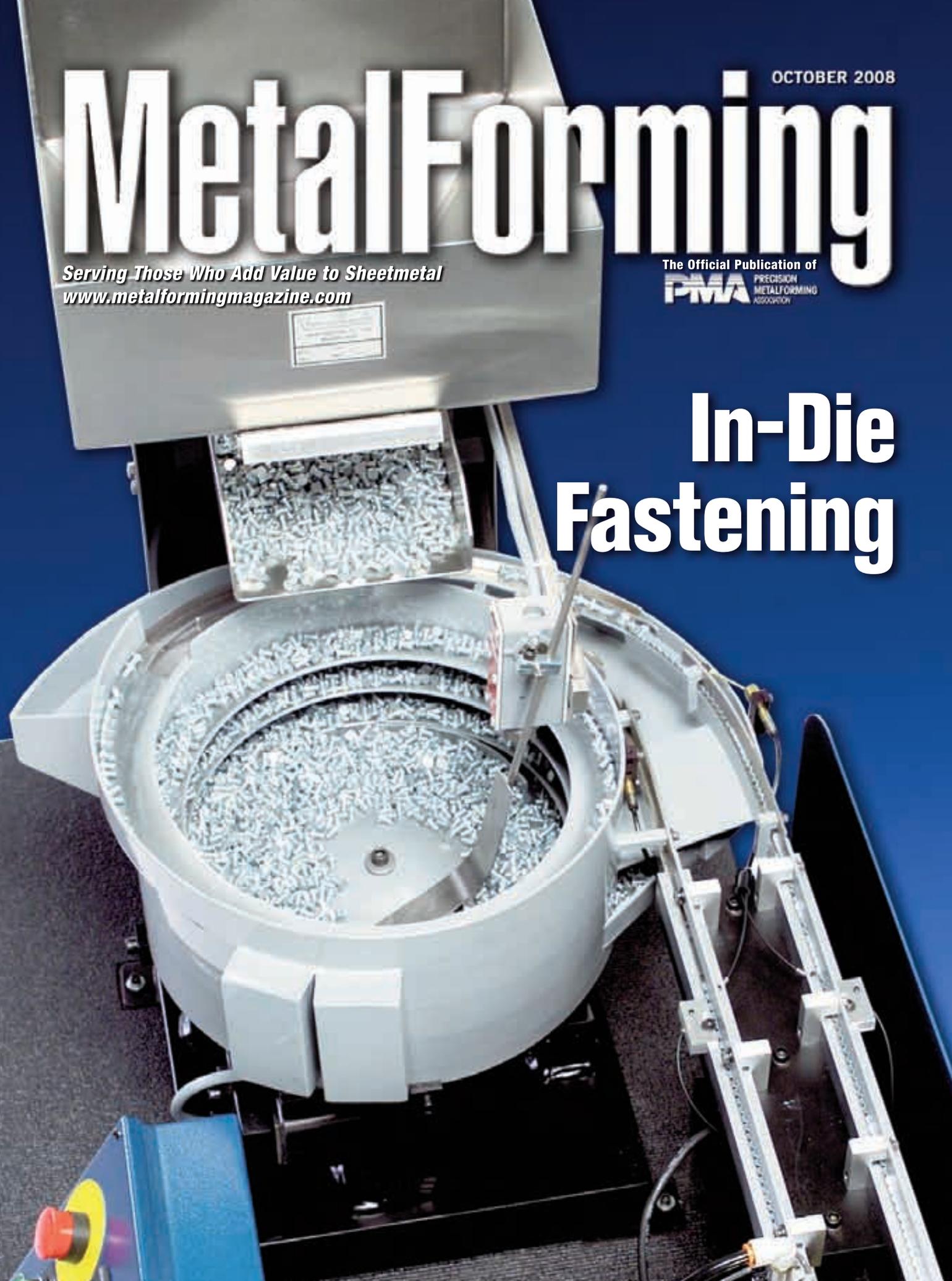
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In-Die Fastening



In-Die Fastening Pays Off at PWO Canada

This stamper employs in-die technology to attach fasteners to an automotive bracket at high speeds, heading off assembly concerns and improving productivity and part quality.

BY LOUIS A. KREN, SENIOR EDITOR

PWO Canada, a Tier One and Two stamping supplier to the automotive marketplace, operates with 125 employees out of a 145,000-sq.-ft. plant in Kitchener, Ontario. Core competencies include complex metalforming and deep-draw

applications, courtesy of presses in capacities to 600 tons for progressive-die work and deep-draw transfer presses to 1200 mtons. In addition, PWO Canada specializes in rollforming and joining technolo-

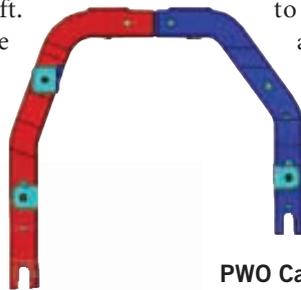
gies such as gas-metal-arc and resistance welding, friction welding, laser welding and in-die secondary processes.

New equipment and techniques for one in-die process, fastener insertion, has helped the company avoid assembly problems and gain valuable production speed.

Flexible System Added

Already experienced in using in-die-fastening technology, PWO Canada recently opted for the Pemsrter in-die fastener feeding system and fasteners from PennEngineering, Danboro, PA, for a set of German OEM parts. The Pemsrter in-die system, consisting of die tooling, fastener-feeding-system module and dispensing module, can be configured to feed nuts, studs or standoffs for multiple or single insertions, usually at the same speed as the stamping press.

As is typical with all in-die processes, employing fastener insertion within the press brings numerous advantages including elimination of costly and time-consuming secondary operations, improved quality, increased productivity, reduced work in process and



PWO Canada stamps a horseshoe-shaped mounting bracket with a total footprint of 13 by 14 in. (depicted above) that supports a cross-car beam and also mounts an optional heads-up display unit in a luxury automobile. A new in-die fastening system such as that shown here installs—from the bottom—three flush-mounted nuts on the bracket in a 600-ton progressive-die application at high speed. Flush mounting allows for a simplified part without extra forming and embossing needed to place a non-flush-mount nut.

reduced floor-space requirements.

One part PWO Canada supplies to the OEM, a horseshoe-shaped mounting bracket with a total footprint of 13 by 14 in., supports a cross-car beam and also mounts additional equipment to the dashboard carrier.

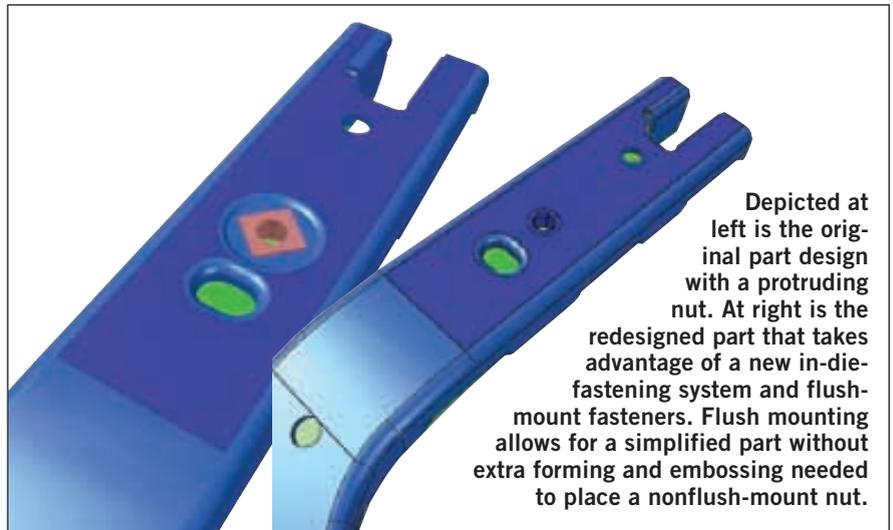
Flush-Mount Fasteners Ease Assembly Headaches

Each lefthand and righthand part, known as a HUD supporting frame, uses three nuts.

“The negative effects of other fastener designs was the embossing and forming required on the steel surfaces to allow clearance for the fastener,” explains Lew Carlton, sales and project manager at PWO Canada, who was responsible for sourcing a new in-die-fastening system and facilitating its design and launch. “This recess then would cause mounting problems with the method designed for installation.”

The solution: flush-mounted nuts installed via the Pemsserter in-die system in a 600-ton progressive-die operation. The cold-rolled steel accepting this nut insertion is 1.5-mm thick.

“For this light material, PennEngineering provided a robust fastener design that achieves the push-out and torque requirements for our part,” says Carlton. “The Pemsserter system feeds three M8 nuts at a time in different stations of the tool with each press stroke, from the bottom up. This is not a conventional direction of feed in most applications. Fortunately for us, PennEngineering had a bottom-feed process that accommodated our engineering



change after the tool was built.”

Simple to Set Up and Operate

Commenting on the feed equipment, Carlton noted that PWO Canada tool-makers and maintenance staff were pleasantly surprised at the ease of setup. That’s assisted by the use of multi-pin twist-lock connectors that makes the Pemsserter in-die system virtually plug-and-play, according to PennEngineering officials. All that’s needed to operate the system: a standard 110-V receptacle and shop air. On top of that, the system stays online, according to Carlton, with minimal service required.

“This equipment has run virtually maintenance-free through insertion of more than 1 million fasteners without incident,” he says, adding that personnel also were impressed with the compact size of the feed apparatus as well as the ease of integration with the

tooling and the feed system. “And the ability to outperform our press speeds went well beyond that of competing systems.”

The insertion process offered by the system allows nut feed from either the top or bottom, which Carlton says assisted in tool design, with quality assured via the built-in nut-detection and sensing system that provides direct feedback to the press control. To run the process, an operator is guided by a touchscreen interface and online library of fault/help screens.

Along with the technical prowess of PWO Canada’s new in-die-fastening process, Carlton cites engineering and technical support as well as a concise training program from PennEngineering that allowed a successful launch at his facility.

“No tweaking, no retrofitting, no major adjustments,” he says. “We just hit the ground running.” **MF**

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Leaders in thin sheet fastening

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PEMSERTER® IN-DIE FASTENER FEEDING SYSTEM

The PEMSERTER in-die fastener feeding system brings new dimensions to stamping capabilities. It incorporates the latest technologies to deliver the performance that is needed to compete in the highly competitive stamping industry. It eliminates the secondary operations typically required for fastener insertion, thus reducing overall labor costs, improving part quality and dramatically improving product through put.

Benefits of using the in-die fastener feeding system are:

- Increased productivity.
- Increased quality.
- Cost effective.
- Reduced inventory/WIP.
- Reduced manufacturing lead times.

Recognizing the need for flexibility, the system can be configured to feed nuts, studs, and/or standoffs for multiple or single insertions, generally matching the stamping press rate.

As designed, the system interfaces with the die and the press with surprising ease. Through the use of multi pin twist lock connectors it is virtually plug and play. All that is needed to operate the system is a standard 110V receptacle and shop air.

Other advantages are that the standard tooling is in press removable and can handle complex work pieces reaching into areas generally considered inaccessible. Additionally, if required special tooling can be engineered to fit your specific application.

During operation the operator is guided through the process by the touch screen operator interface and the on-line library of fault/help screens.

The complete in-die fastener feeding system consists of the die tooling, fastener-feeding system module, the die-sensing module, and the support needed to make every project a success.



Precision track system properly orients fasteners.



System equipped with quick change tooling.



System can be configured for single or multiple insertions.



Uses standard 110V supply and shop air to operate. Adjustable controls are easily accessible through the secured access door.