

Automate Efficiency Creating Capacity in the Press Room



Engineering
GREAT Solutions

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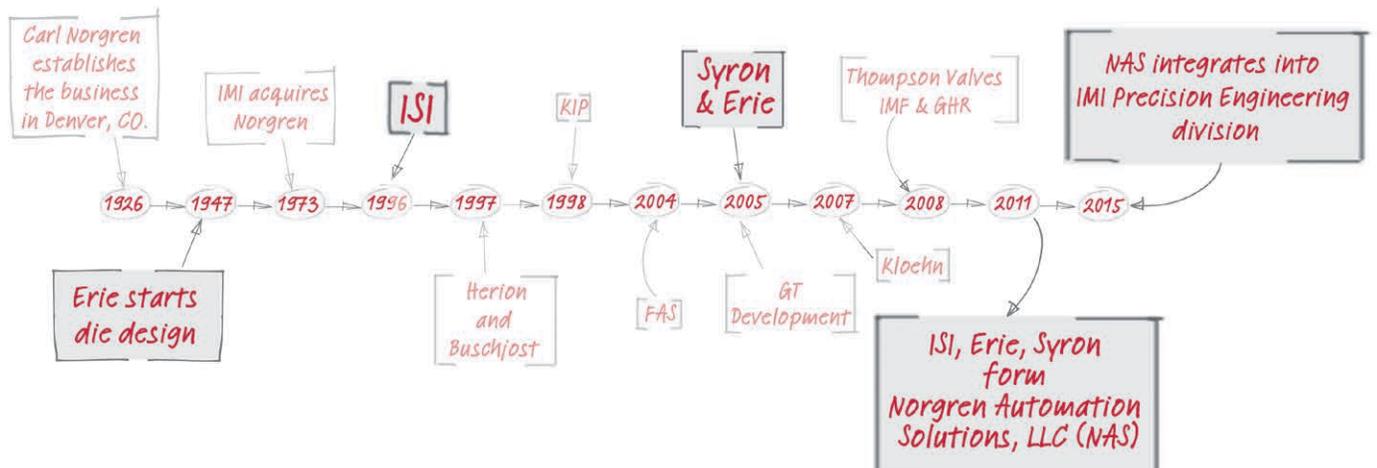


Engineering GREAT Solutions

IMI Precision Engineering is a world leader in fluid and motion control. Building close, collaborative relationships with our customers, we gain a deep understanding of their engineering needs and then mobilize our resources and expertise to deliver distinctive products and solutions.

Wherever precision, speed and engineering reliability are essential, our global footprint, problem-solving capability and portfolio of high performance products enables us to deliver GREAT solutions which help customers tackle the world's most demanding engineering challenges.

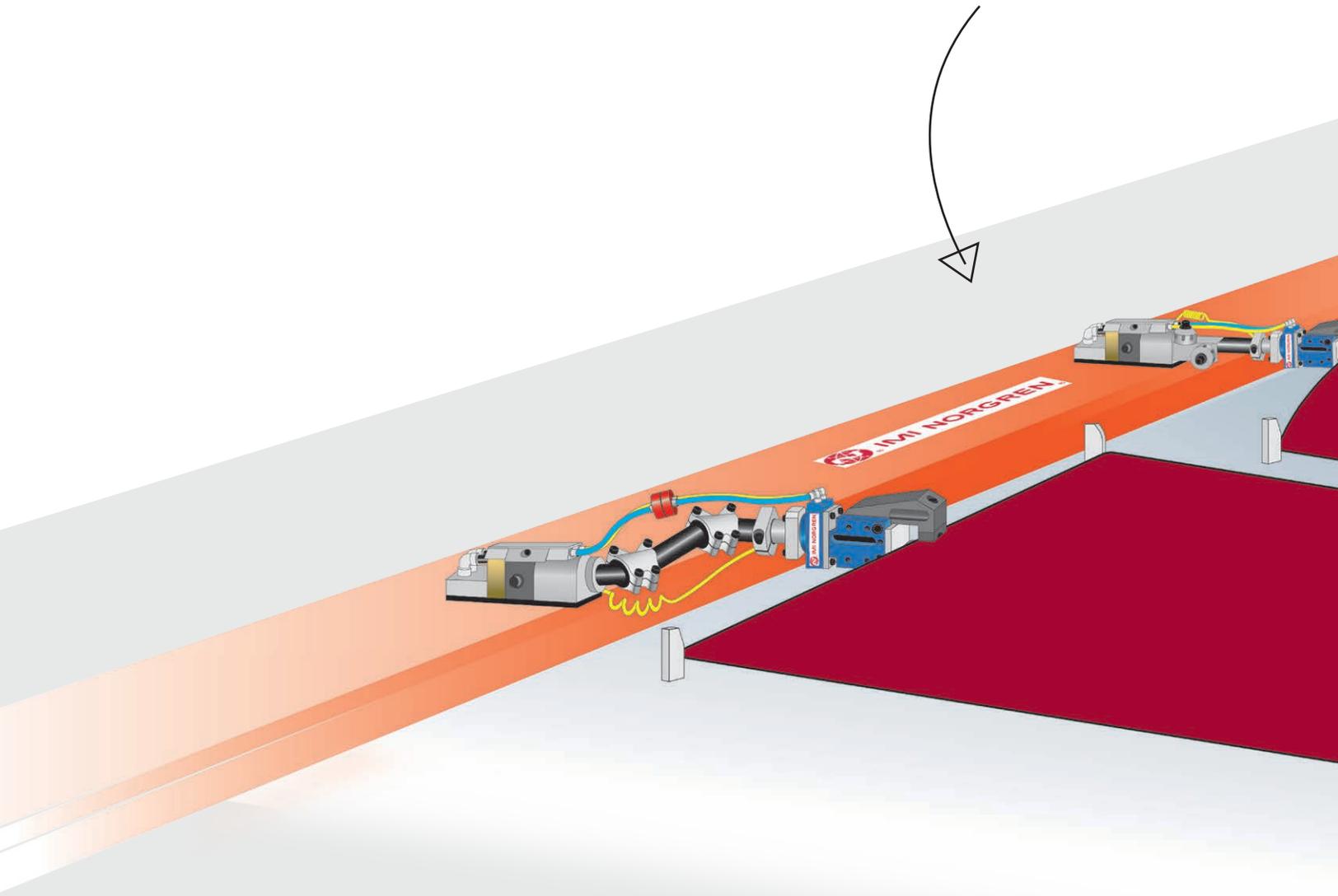
- > **High Performance Products**
Our world-class portfolio of fluid and motion control products includes IMI Norgren, IMI Buschjost, IMI FAS, IMI Herion and IMI Maxseal. We can supply these singly, or combined in powerful customized solutions to improve performance and productivity.
- > **Reliability**
We deliver and support our high quality products through our global service network.
- > **Partnership and Problem Solving**
We get closer to our customers to understand their exact challenges.



NAS Creates Capacity Since 1947

For over 65 years, IMI Precision Engineering's **Norgren Automation Solutions (NAS)** division has been a partner to automotive OEMs and Tier suppliers, solving pressroom automation problems and increasing press profitability. The company focuses on automation design, modular tooling and tooling integration for Tri-axis, Tandem and Crossbar presses, as well as welding operations.

*Engineering
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> Integrated Tooling (IT) and Automation

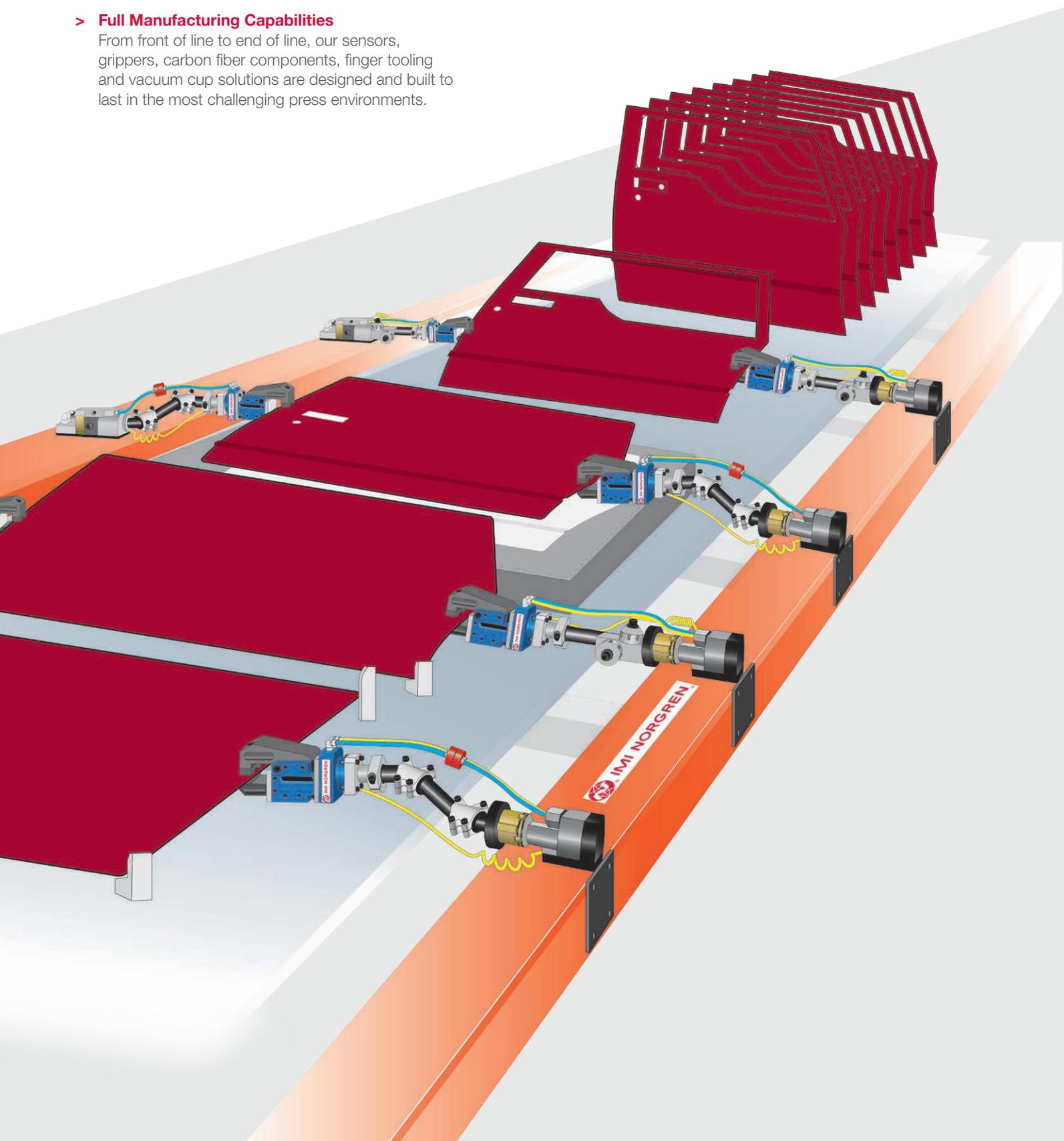
World class press automation requires the integration of die and tooling designs from the earliest stages of part development. Our applications group designs, builds and installs highly productive tooling packages that increase press throughput, reduce setup time or downtime and improve ergonomics and safety.

> Full Manufacturing Capabilities

From front of line to end of line, our sensors, grippers, carbon fiber components, finger tooling and vacuum cup solutions are designed and built to last in the most challenging press environments.

> Engineering Solutions

Engineering GREAT solutions for our customers is at the heart of everything we do. We help customers gain an advantage through increased output or capacity, reduced energy usage, and lower cost of ownership.



Automation Products

IMI Precision Engineering provides automation design and modular tooling for press lines in the automotive industry. With experience in die engineering, automation design and tooling, IMI Precision Engineering delivers industry-leading products for Tandem, Crossbar, Tri-axis and Hot Forming Press applications. In addition to automation design and assembly, IMI Precision Engineering also manufactures receivers, adapters, carbon fiber structures, sensors, grippers, finger tooling and vacuum cup products for automotive stamping processes. Through the IMI Precision Engineering group and other channels, we can support customers worldwide.

Tri-axis Press Room Tooling and Products

PGS Grippers

- > Size for size, deliver the best grip force in their class
- > Fastest actuation time of 0.05s close/0.09s open
- > Hardened steel chassis makes them extremely durable
- > Double blank and part-present sensors available

PGS Hot Metal Grippers

- > Operate in temperatures up to 1652°F (900°C)
- > Rear-mounted pneumatics
- > Specially tempered gripper pads
- > Longer service life and maximum performance.

Modular Tooling

Versa

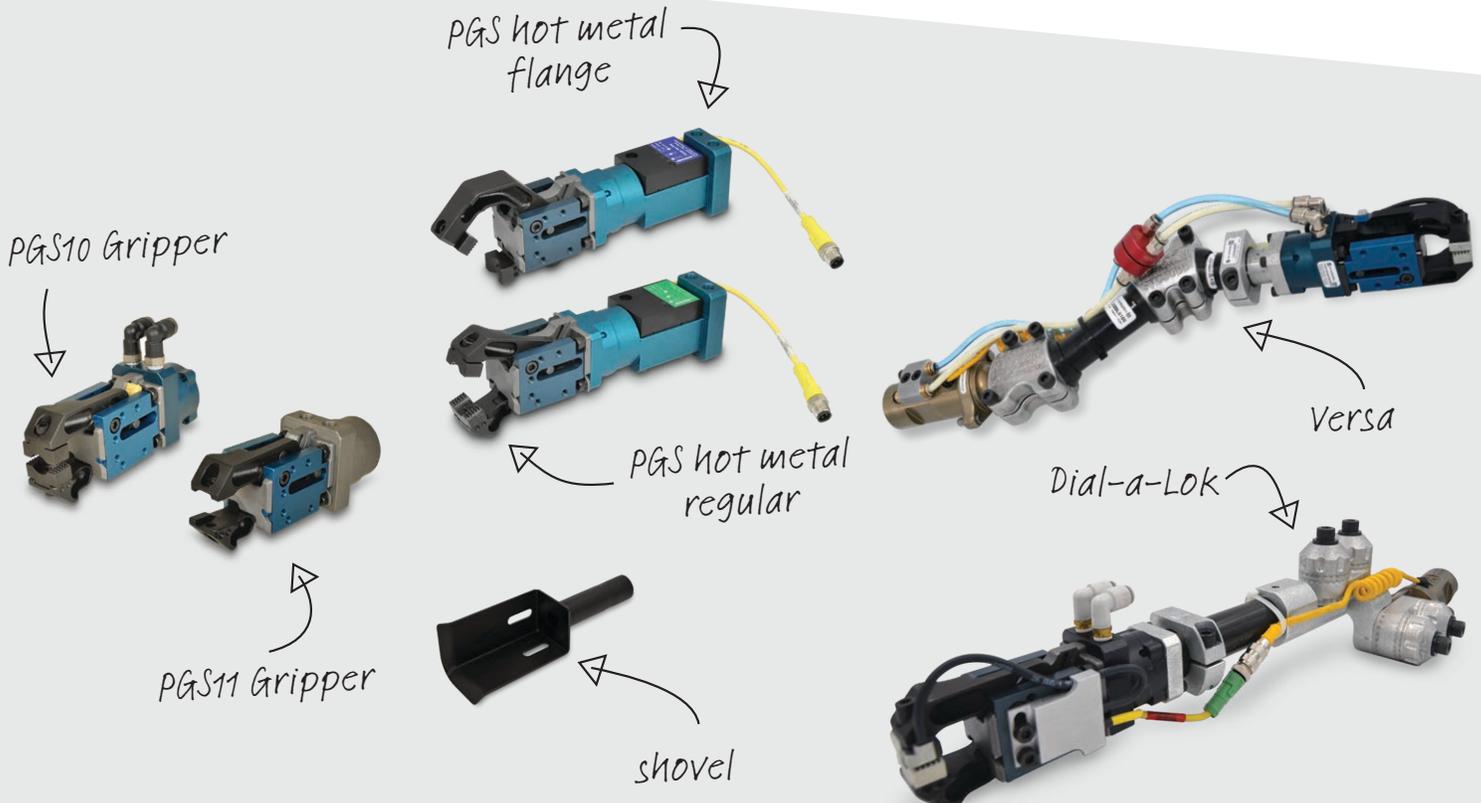
- > High strength tubular steel links
- > Aluminum ball-to-ball clamps
- > Maximum flexibility to fingers rated 250 ft/lb static/100 ft/lb dynamic load

Dial-a-Lok

- > Slip-free locking system
- > Reaches specific incremental tooling set-ups in seconds
- > Increases throughput
- > Reduces downtime
- > Decreases changeover time

Shovels

- > Assembly accommodates size and shape variations of parts or dies
- > Four different locations for mounting part-present sensors



Crossbar and Tandem Automated Tooling

Modular Tooling

Featherweight Tooling

- > Increases robot capacity
- > Faster robot speed
- > Carbon fiber
- > Up to 70% lighter than traditional tooling

Vacuum Line

Round and Oval Vacuum Cups

- > Maximum suction

Convolutd Cups

- > Low profile for confined areas

Twist-Lok Venturi Connections

- > Quick cup release during changeover
- > Minimal downtime

SMX Spring Mounts

- > Lightweight
- > Variety of mounting options
- > Multiple stroke lengths

Sensors

Double Blank Analyzer (DBA)

- > Detects multiple blanks during load sequence
- > Protects dies and stamping machinery
- > Pass-through and contact-style sensors available
- > Multichannel controller with DeviceNet capability

Nut Sensors and Stud Sensors

- > Detect missing or unthreaded nuts or studs
- > Prevent defective parts from processing
- > Avoid downtime
- > All stainless steel construction

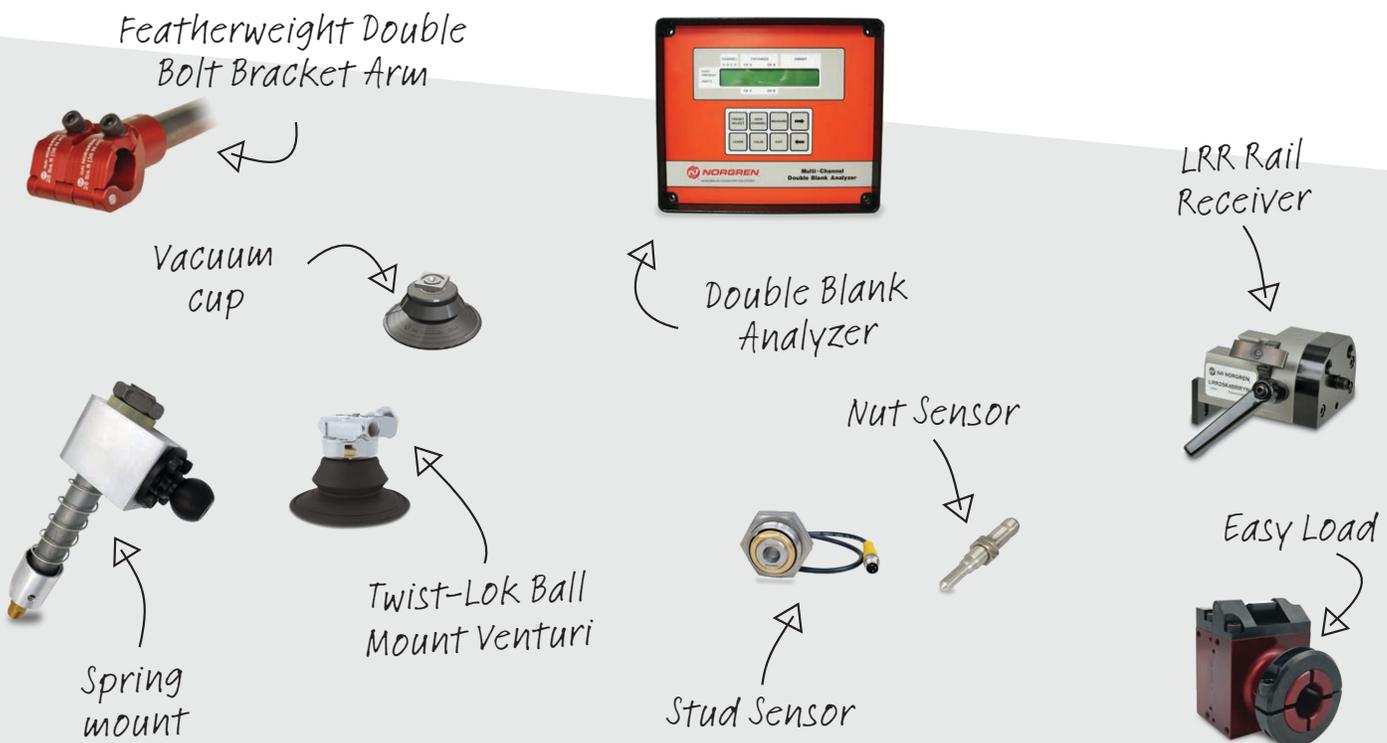
Receiver and Adapters

LRR/LRA Rail Receiver

- > Tooling mount/docking device
- > Quick change of transfer fingers
- > Steel locating pins for rotational stability
- > One-touch spring-loaded latch for easy handling

Easy Load

- > Lightweight manual tool changer
- > Strong
- > Compact
- > Designed for Tri-axis, Tandem, Crossbar and robotic applications
- > One-hand operation
- > Quick set-up



Applications and Automation Services

Efficient and productive press operation begins with the seamless integration of part motion, die structure and finger tooling. To produce world-class panels and optimize productivity, the stamper, die supplier and tooling designer must work together from the earliest stages of part development.

We offer a multi-step system that coordinates process, die and finger designs to produce tooling that consistently runs at the specified rate of strokes per minute (SPM) shortly after installation and start-up.



Press Automation and Simulation

Through CAD animation press simulation we replicate the motion of transfer tooling through a press line. This software allows designers to detect any clearance issues or flow interference, thus avoiding crashes and ensuring that tooling performs to design specifications. We can also physically measure or scan presses to create a press model and detect tooling interferences.

Finger or Tooling Concept Review

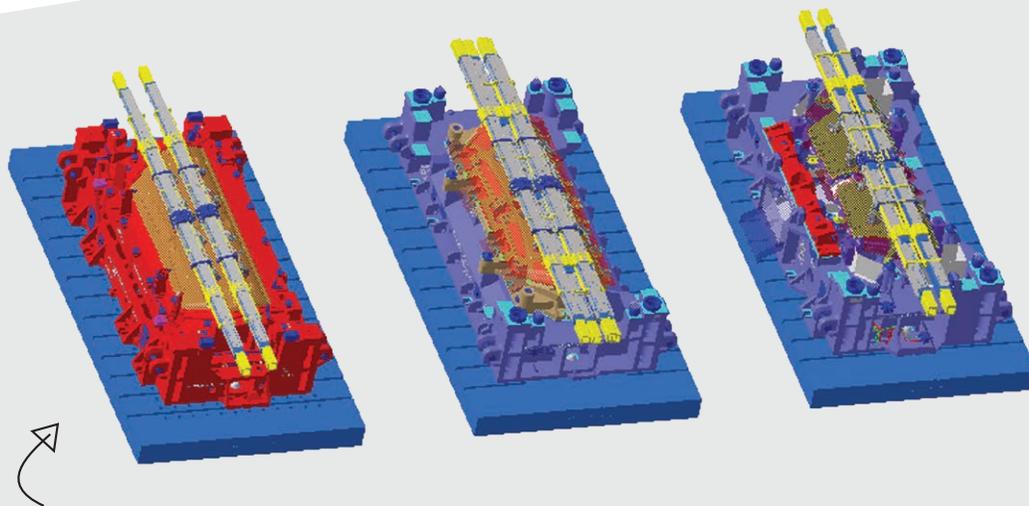
Our finger concept review is an initial concept analysis of the ability of grippers and vacuum cups to transfer a panel across the press. This concept strictly proves panel transferability before advancing to the design of modular tooling.

Finger or Tooling Integration

Our finger integration package is a study at the start of the die design that identifies interference areas and part flow issues related to gripper and cup positions. The package provides process flow, panel position, rail position and press/transfer specifications.

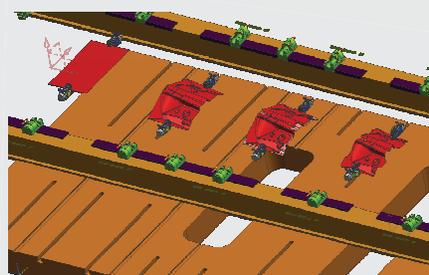
Finger or Tooling Integration Review

Finger integration review adds tooling and motion curves to create a design envelope for the die supplier. We evaluate the finger integration package by verifying that the selected motion curves fall within press parameters and stamper specifications.



Press Automation and Finger Integration Package services

Finger Concept Review



Press Room Automation and Finger Integration Services

Tri-axis Transfer Press

Three axes of movement – clamp, lift and pitch – transfer a blank through a series of dies, creating a finished part.

- > Fingers made from grippers can be built and adjusted in unique orientations without special fixtures
- > Numbered component joints for ease of design
- > Hot Metal Grippers for hot form presses
- > Dial-a-Lok and Versa round tooling combine infinite adjustability with high strength

Crossbar Transfer Press

One bar across each station of a die where tooling is on top of the part transfers blanks across a series of dies.

- > Suction cups and venturis are frequently used to transfer parts
- > Featherweight round tooling promotes higher strokes per minute

Tandem Transfer Press

This process is involved at the beginning of a sheet metal die design to determine how a sheet metal panel will transfer through a stamping press.

Front and End of Line Tooling

- > Destacking system can be designed using gantry overheads or robotics in the Front of Line (FOL) that feeds single sheets into a press
- > Double Blank Analyzers can be used in FOL to eliminate press damage by separating oily or sticky sheets
- > Robotic Carbon Fiber Global Booms with Automatic Tool Changers – round tooling spring mounts and clamps can be mounted at either front or end of line to transfer panels
- > End of Line (EOL) Tooling is a fully automated robotic system that transports panels from dies to conveyor or panel storage racks
- > Design ensures maximum throughput during loading and unloading
- > Ensures panels do not crash, preventing damage of expensive dies
- > Minimizes cost of capital required to purchase FOL by overlaying blanks into fewest possible panel size families
- > Integrated design optimizes and stabilizes panel lift and transfer



Carbon Fiber Versatile Master Boom

Tri-axis Transfer Press



Carbon Fiber Booms and Crossbar Design and Repair

- > Increase stability – stop the shaking!
- > Improve precision
- > Reduce weight and increase speed
- > Repair easily
- > Configure to any shape or size

Die Engineering

Die engineering innovates die design solutions tailored for your transfer press needs.

- > 3D die processing creates ideal die layouts minimizing the number of dies needed and reducing machining waste
- > 3D die design modeling replicate die functions by filling gaps between dies and orient and rotate parts in a series of dies
 - Linear slides
 - Rotary cams
 - Ideal stations
 - Tipping stations
- > Feasibility press studies perfect the die process by automating sheet metal motion plans through a press or within multiple presses and idle stations

Custom Projects

Custom equipment can be designed to bridge gaps between operations to amend press processes for new parts or to reuse old tooling equipment in new applications or plants. Some examples include:

- > Turnover stations to resolve a pitch problem
- > Solving clearance issues
- > Special part shapes
- > Limits on the number of die stations in press rooms

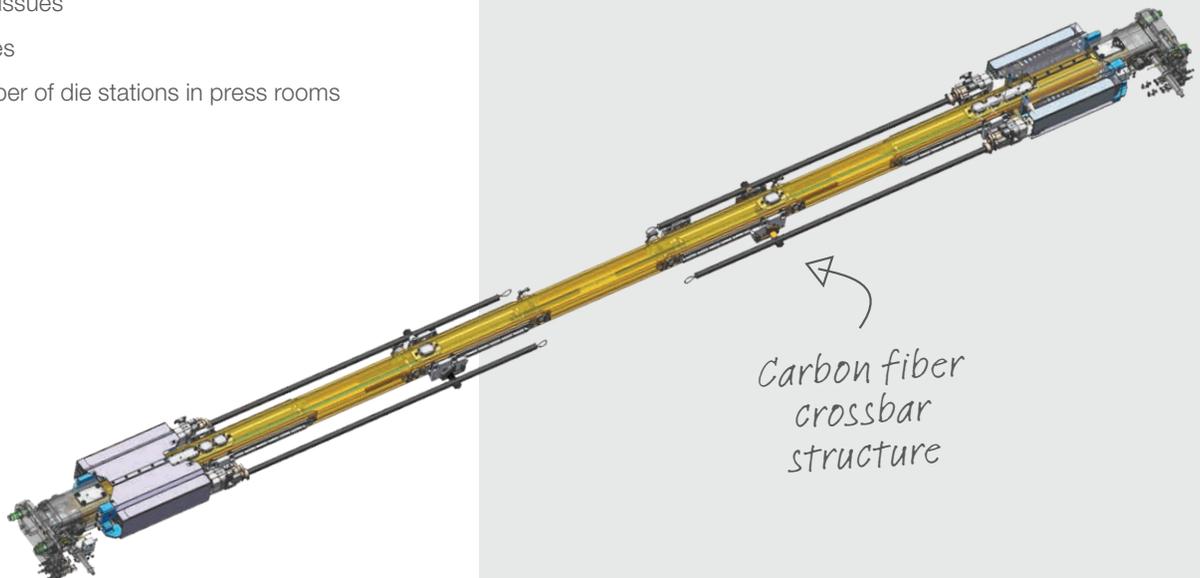
Carbon fiber global boom



Die Design



Carbon fiber crossbar structure



New Products

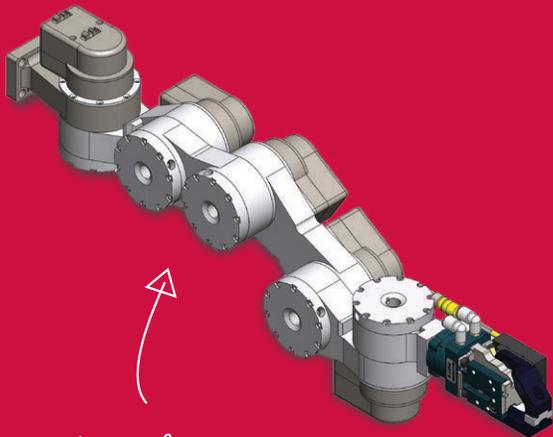
COMING SOON

Transforming Tooling

This is industry's only automation tooling that can transform between jobs and accommodate multiple panels. With user-friendly controls, the system ensures reduced changeover time, optimized pick point placement, and improved safety while eliminating the need for costly floor storage.

New Black Slice

This is an engineered solution for supporting panels in press idle stations. The ergonomically friendly, removable system incorporates the concept of 'poka-yoke' using template location codes to prevent placement mistakes. Moreover, to help minimize storage space when not in use, templates join together.



Transforming Tooling

New Black Slice (NBS)



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Fax: 248-585-7751
Email: sales@kamcocontrols.com
Web: www.kamcosales.com

Mosier Fluid Power

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Email: sales@mosierohio.com

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📍 IMI Precision Engineering sales, manufacturing and technical centers

📍 Value Added Resellers/ Distributors



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Japan

Taihei Boeki Co., Ltd
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IMI Precision Engineering operates four global centres of technical excellence and a sales and service network in 75 countries, as well as manufacturing capability in the USA, Germany, China, UK, Switzerland, Czech Republic, Mexico and Brazil.

For information on all IMI Precision Engineering companies visit www.norgren.com/automationsolutions

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