

Whitepaper

The Best in Bending: Robotic Press Brake Equipment for Every Part Size, Weight & Complexity

The Future of Automation



Robotic brake press systems can offer significant cost and productivity benefits.

Are you still hesitant to automate your brake press operation? It may be time to rethink this before too much time, labor energy, and money is spent. The latest in robotic automation technology has proven to reduce part costs, increase quality, and level the competitive playing field.

Robotic Brake Press Systems can offer significant cost and productivity benefits to your overall manufacturing process when done properly. Robotic brake press systems come in small, medium, large, and custom configurations depending on your application and parts.

Midwest Engineered Systems has strong partnerships with Safan, Bystronics, and a variety of robot manufacturers to fully customize a profitable solution for your business. Let's dive into the details of robotic brake press systems so you can make the right decision for your fabrication process!

Reasons to Consider Press Brake Automation

The technology advances in Robotic press brake automation have proven to yield positive results for fabricators. The robot provides proper placement of parts which removes operator introduced inconsistencies. The robot will work with your brake press throughout the metal bending process and will consistently deliver the quality to each and every part.

Throughput

Automation delivers consistent output and enhanced throughput. Most non-automated cells operate at under 65% utilization! Robots are highly reliable and improve manufacturing uptime. Production scheduling and part run times will be predictable and consistently the same from run to run and shift to shift.

Labor Issues

Manufacturers have a difficult time finding workers to perform repetitive tasks consistently and do them at the same quality across all production shifts.

Safety Issues

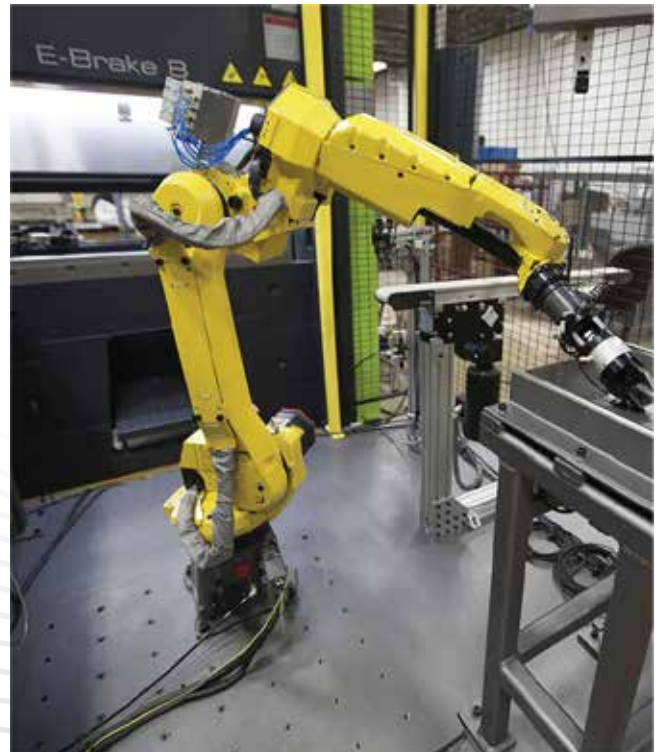
Eliminate the need to have two operators running heavy parts. One robot can produce a part that would require two operators and can produce that part in less time. Robotic press automation eliminates ergonomic issues and safety risks.

Quality

Automation increases quality in all aspects of your press brake operation and reduces product variation thus improving downstream processes. Consistent parts lead to better part fit up in downstream processes. This will lead to a reduction in production cycle time.

Competitive

Robotic automation has been proven to reduce costs & keeps US companies competitive in the global market.



Selecting A Robot

There are many factors to consider when selecting a robot model and brand:

- Part weight.
- Part size – Length & width.
- Press Bed Length - Is the robot selected capable of reaching the entire length of the press bed and perform the bending operation?
- Press Tonnage - Is the robot selected capable of handling the parts relative to the tonnage of the press to bend your production parts?
- Required reach - What is the robot's working range?
- Are external robot axis required for a servo positioning device to expand the robot's working range?
- How many peripheral devices will the robot have to reach?



System Peripherals

- Multiple infeed/outfeed configurations for continuous operation of the cell.
- Part carts for part introduction and part complete part take away.
- Robot vision.
- Custom end-of-arm tooling with multiple zones to handle a variety of parts. Vacuum, magnetic or pinch grippers?
- Automatic end-of-arm tool change options with or without a swivel.
- Squaring table to justify the part for consistent positioning in the EOAT.
- Re-grip stand(s) to re-orientate the positioning of the EOAT necessary for multiple bends in parts.
- Tool storage station.
- Automated part thickness gages.
- HMI for operator interface.



Equipment Involved

The equipment involved depends on our requirements. The key is to configure the system to maximize the system flexibility and Press Brake utilization.

Robot Mounting Configuration

- Static Robot Riser
- Robot Travel Track -Servo Driven
- Robot SwingFoot-Manual or Servo Driven
- Robot Underslung Gantry Mount

End-of-Arm-Tooling

- Are Multiple EOAT's are required?
- Type of EOAT – Vacuum, Magnetic, Pinch Gripper, and combinations
- EOAT Tool Changers and Swivel Units
- Robot Payload and Part Load

Factors to Consider when Choosing a Mounting Configuration

- Part Size
- Number of IN/OUT Stations
- Number of Peripheral Stations (i.e. Squaring Station, Vision Station, Re-Grip Station, EOAT Tool Stand, etc.)
- Will you want to operate the system manually as well as robotically?

Peripheral Equipment

- Vision Station
- Squaring Station
- Re-Grip Station
- Tool Storage Station
- Material Thickness Gage
- Infeed/Outfeed Stations

Offline Programming Software

Alma Cam Robowave bending software is an innovative software application that allows the programming of a press brake tending robot from picking the part at the in-feed to palletizing the part at the out-feed and all steps in between. This programming is done remotely from a PC and without stopping production. Automatic bend sequence definition, tool set ups, gauge positioning, and robot movements are all performed in a rapid and reliable way.

Main Advantages & Benefits of Offline Programming Software

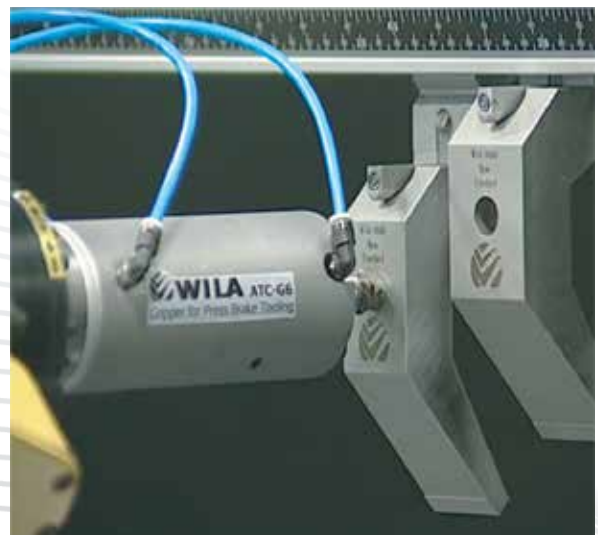
- Reduction in Press Brake idle time periods.
- Reduced time to production.
- Elimination of expensive programming mistakes (aka Robot/Tooling Interference).
- A single programming interface for all CNC press brakes.
- Support major robot brands – ABB, Fanuc, KUKA.

Tool Changers

Automated Press Brake tooling changes are possible. These systems allow the robot to change out the Press Brake tooling which insures proper tooling set up.

WILA ATC (Auto Tool Change)

- WILA makes it possible for robotic press brakes to bend small batches of various products in random order fully automatic.
- WILA makes bending on demand possible.



Cell Configurations

Small Press Brake

The small press brake system option uses a small to medium sized robot having 10kg-70kg payload. The press brake would typically be 20 to 50 tons with a bed length of 820mm to 2050mm.

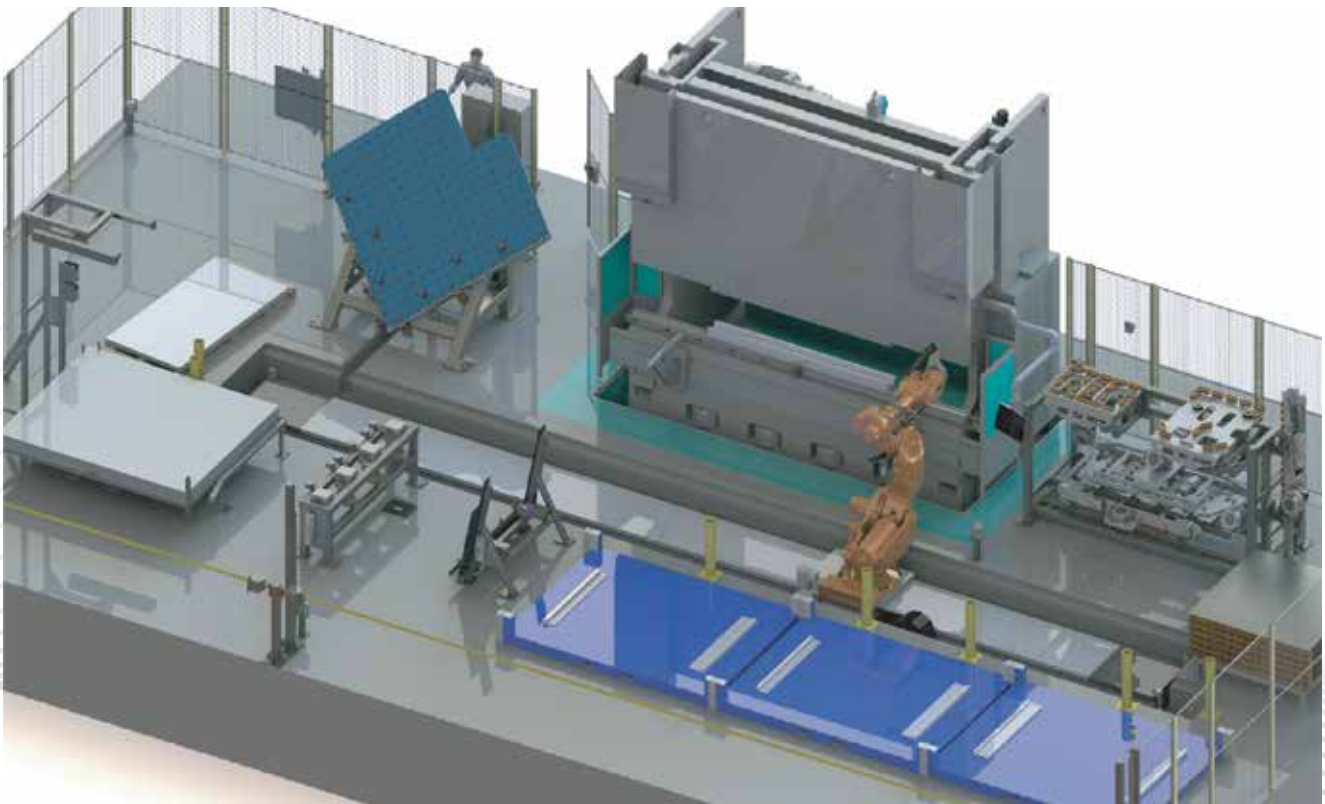
- Static mounted robot
- In-feed station
- Squaring station
- Out-feed station
- Three (3) EOAT with tool changer
- Tool stand which holds EOAT's
- System safety



Medium Press Brake

The medium brake press system uses a medium sized robot having a 90kg – 210kg payload. The press brake would typically be 80 to 200 tons with a bed length of 2550mm to 4100mm. It is common that the medium system has an RTU (Robot Track Unit), this is required to accommodate larger parts and the longer press brake bed length.

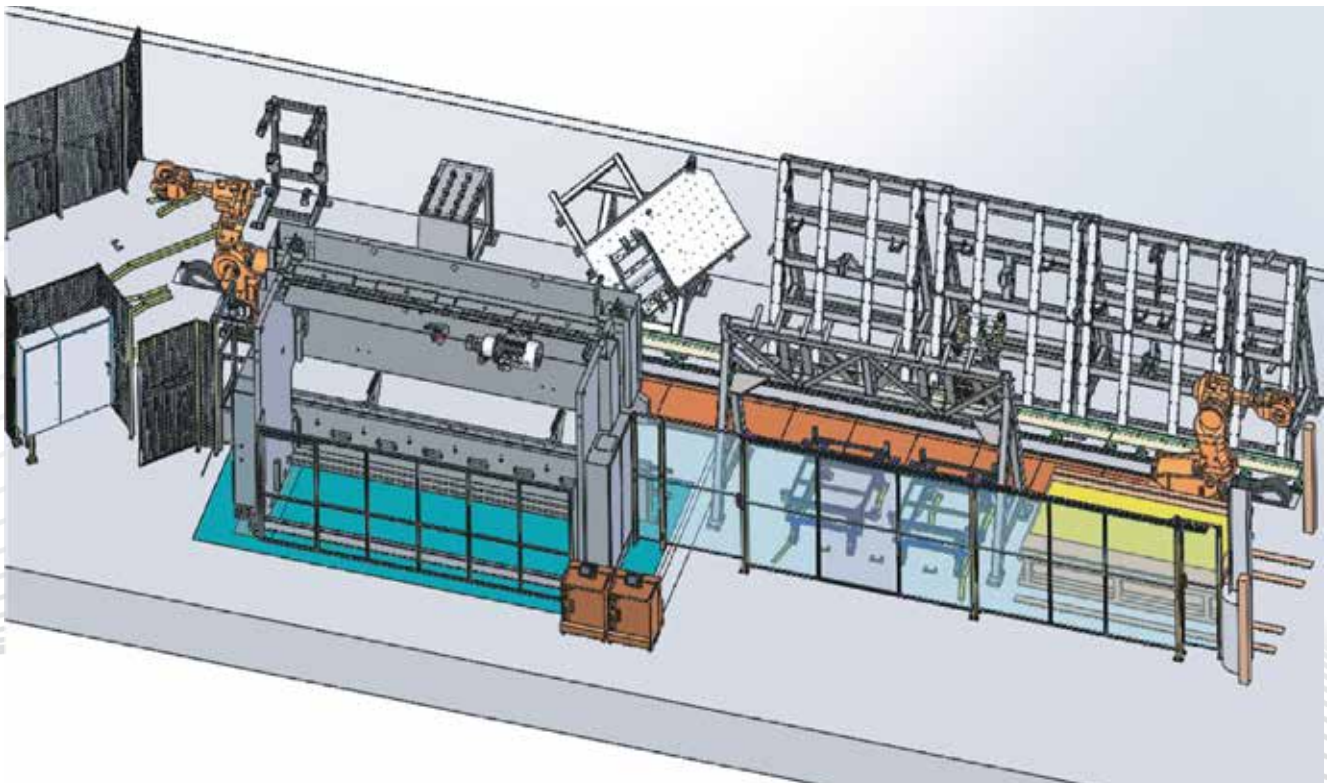
- RTU mounted robot
- In-feed station (normally multiple)
- Squaring station
- Regrip station
- Out-feed station (normally multiple)
- Three (3) EOAT with tool changer
- Tool stand which holds EOAT's
- System safety



Large Press Brake

The large press brake system uses a larger sized robot having a 500kg to 700kg payload. The press brake would typically be 200 to 400 tons with a bed length of 2500mm to 4100mm. A large system has a RTU (Robot track unit), this is required to accommodate larger parts and the longer press brake bed length. The RTU must be set into the foundation to optimize the robot work range.

- RTU mounted robot
- In-feed station (multiple)
- Squaring station
- Regrip station
- Out-feed station (multiple)
- Three (3) EOAT with tool changer
- Tool stand which holds EOATs
- System safety



Information Your Integrator Needs

Giving your integrator the proper information upfront will save you time and headaches. The more information your integrator has, the better they can help you reach the goals of the new automated system.

- Shop floor space available for the equipment.
- Part drawings – part drawings in the flat with bend data and part drawing as bent. If you plan on running multiple different parts we will need a cross section of the various parts to determine the proper system layout and the number of EOAT's needed.
- Press brake model number – MWES will work with your press brake supplier to get the solid models of the press brake from the press manufacturer.
- How many part input and output stations do you think you will need?
- Are you willing to use a manual roller carts to load flat blanks into the system?
- Do you have a robot preference? – ABB, Fanuc, KUKA, etc.



About Midwest Engineered Systems

MWES has identified the need in the industry to provide a complete solution for press brake automation. MWES has partnered with several well-known vendors to develop a complete and scalable robotic brake press solution to fit any metal bending application.

MWES has successfully implemented several Robotic Press Brake systems. We would like to discuss your manufacturing needs and how we can implement Robot Press Brake Automation to improve your manufacturing processes. Please contact us via the methods below. Let's get started today with a review of your needs!

MWES provides the equipment, process, and continued engineering support to our customers for the ever changing demands of metal manufacturing.



Contact Us Today

W238N1800 Rockwood Drive

Waukesha, WI 53188

414-327-0000

info@mwes.com

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