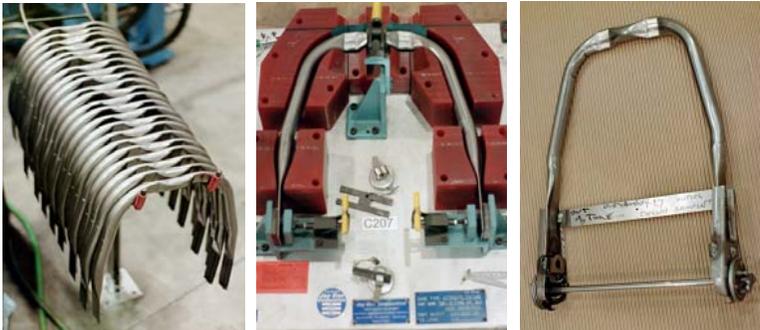


## Tube Bending and Fabricating Systems: Systems, Design and Capabilities Overview



Flexbending® system robotically loading of bent tubes into a 200 ton press

***Flexbending® technology from Wayne Trail provides maximum versatility with unparalleled productivity***

Tubular fabricated components have become the ideal engineered solution for an ever increasing variety of applications and markets – ranging from automotive and appliance, to HVAC, refrigeration, steel furniture, and more. With this growth, comes an inevitable demand for higher component part quality and productivity, with quick job change-over capability to meet end-user ‘just in time’ demands.

Wayne Trail has developed a wide range of flexible, cost effective tube bending and fabricating solutions that perform their functions reliably and effectively, returning maximum profit on investment.

This brochure will provide an overview of the various systems and designs we can supply to help you meet your upcoming requirements.



Flexbending® System with 1500RD series Rotary Draw CNC Benders

## INSIDE

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**FLEXBENDING® SYSTEM OVERVIEW**

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**DEDICATED TUBE MFG SYSTEMS**

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**MACHINES AND WORKSTATIONS**

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**TUBE FAB PROTOTYPING**

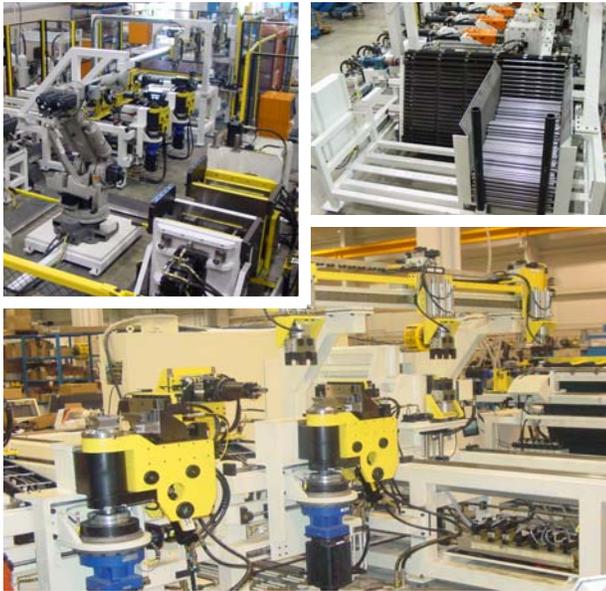
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**QA/QC CAPABILITIES**

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## Flexbending® Systems



- Run multiple tube products on one machine
- Quick change over for small lot size runs
- High production rates that will lower production costs
- Fully programmable bend parameters with auto-correct
- Easily re-configured to run new parts for future requirements

How important are these features to you when purchasing a new tube bending / manufacturing system? In today's ever changing business environment, flexibility can be the difference between being busy . . . or being left on the outside looking in.

Whether it is a family of oil sump tubes with 3 to 6 bends, trim, end form and assembly operations - or underbody lines with 30 or more bends and endforms, Wayne Trail has a Flexbending® system for you. These systems typically include tube hoppers, weld seam detectors and servo powered benders. Endforming, flattening, piercing, trimming, welding and assembly operations are common modules added to these systems. Parts are moved from station to station by a high performance servo transfer. In many cases a raw tube is entered into the Flexbending® system and a finished assembly exits the system.

## Dedicated Tube Manufacturing Systems

At times, required tube production rates or program life cycles will dictate the procurement of a dedicated manufacturing system for a single part or family of parts. Wayne Trail can satisfy these demands. In fact, many of the same modules used in our Flexbending® systems are also used in a dedicated solution. Pneumatic, hydraulic and servo driven transfers and a variety of bend head configurations can be supplied depending on requirements. The degree of automation is determined by the application, part volumes and of course, customer preference.



Feeder Bowls are often used in tube manufacturing systems to feed parts required to assemble various post bend components.



Dedicated Tube Manufacturing systems often require custom made tube hoppers. This system utilizes a scissors lift to elevate skids of square tubing, allowing the tubing to be automatically fed in the bending and forming stations.

## Integrated QA/QC Capabilities

While it is important to manufacture parts at rate, it is even more important to know that the parts you are making are correct. For this reason, Wayne Trail builds quality assurance features into every machine and module we supply. Tool



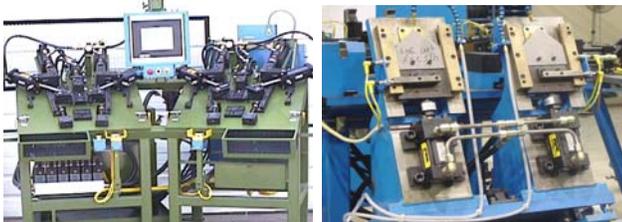
nests include part in place sensors. Hole presence is checked after all piercing operations. Assembly verification and vision inspection systems are often integrated into our systems. With the Flexbending® process, a Bend AutoCorrect Option is also available. This feature shown in the photo, allows bend corrections to be automatically downloaded from a non-contact measuring system. Tube variations resulting from different raw material lots or tooling can be quickly and easily corrected. In many cases, new tubes can be placed on the line and bent to specification within only a few bend-measure-correct cycles.

## Model WTFBS-1500RD-ER 'all electric' Flexbending® System

The ER series Flexbending® system is an 'all electric' integrated tube bending and fabricating system – built around the common platform of one or more fully electric (no hydraulics) CNC rotary draw bending stations. The system floor plan can be customized to meet customer requirements. Quality assurance features are built into every system and module. Layout of this system has been optimized to locate load/unload points in the same area and general orientation – minimizing fork lift routing and material handling tasks. Inspection stations or auxiliary devices can be located within or adjacent to the cell for efficient handling. Operator control devices, robot controllers and system electrical enclosures are positioned for easy access when performing set-up, diagnostic or maintenance routines. Full perimeter barrier fencing with interlocked access doors and sensors, provides a safe operating environment during system operation.



### Dedicated Machines and Workstations



Dedicated Tube Benders

Dedicated Shear Equipment

There are applications where automation simply cannot be justified due either to low production rates, short part life cycle, plant location, or a combination of factors. Regardless of the reason, Wayne Trail can offer all of the modules typically included in an automated system - as stand alone workstations, customized to fit individual customer needs. Multiple modules can be grouped into work cells, sharing controls, hydraulics and pneumatics to help reduce cost.

Wayne Trail has more than 40 years of experience in manufacturing this type of tooling and machinery. For your next project, talk to the pro's at Wayne Trail and see the difference experience makes.

### Tube Bend and Fabricating Prototyping Services



200 ton Hydraulic Press

1500 Rotary Draw CNC Bender

Wayne Trail is staffed with highly qualified, experienced personnel to evaluate your tube bending and fabrication application. Our team of engineers and technicians will support you in all phases of product design and development.

Our prototype tube cell includes a 75 ton mechanical press, a 200 ton hydraulic press and a 1500RD Rotary Draw CNC Bender. Other tube processing equipment includes a **Flex Lase** laser cutting and welding cell. A full range of manufacturing capabilities is also available via our large machine shop for part preparation, fixture design and build. Our inspection department includes CMM measurement capability.



## Facilities

With over 120,000 sq. ft. of office, manufacturing and assembly space in multiple buildings, we are located in Fort Loramie, Ohio, close to the Interstate I-75 corridor, and within easy driving distance of several major airports.

All of the technical disciplines at Wayne Trail, from marketing and sales, program management and engineering design, to purchasing, machine shop, tool build and field service - are dedicated to the success of our customers and fully meeting or exceeding their requirements and expectations.

## Installation and Start-Up Services



Wayne Trail offers expert installation and start-up support for every system we supply or service. From simple supervision and training, to complete turn-key installation, our field service team is available and eager to help you bring your system up to full production capability. Services we can provide include shipping and logistics, foundation prep, rigging, wiring and piping, area barrier safeguarding, site supervision, production support and more. We also supply system integration services for larger complex lines that require significant coordination between 3rd party vendor supplied equipment or existing, in-place processes. Our know-how and experience makes us the perfect partner for your next project.

## Product Support



From the time you first implement your process, to re-tooling or reconfiguration needed to adapt a vintage system to new requirements, Wayne Trail product support is there to help. We provide engineered spare part packages to protect your up-time, and can recommend upgrades that will improve your productivity.

Our service team can also arrange for system relocation, on-site refurbishment or factory rebuild service when required. From warranty needs, to preventative maintenance and replacement parts – our service department is on call 24/7 to provide you with timely and effective product support.