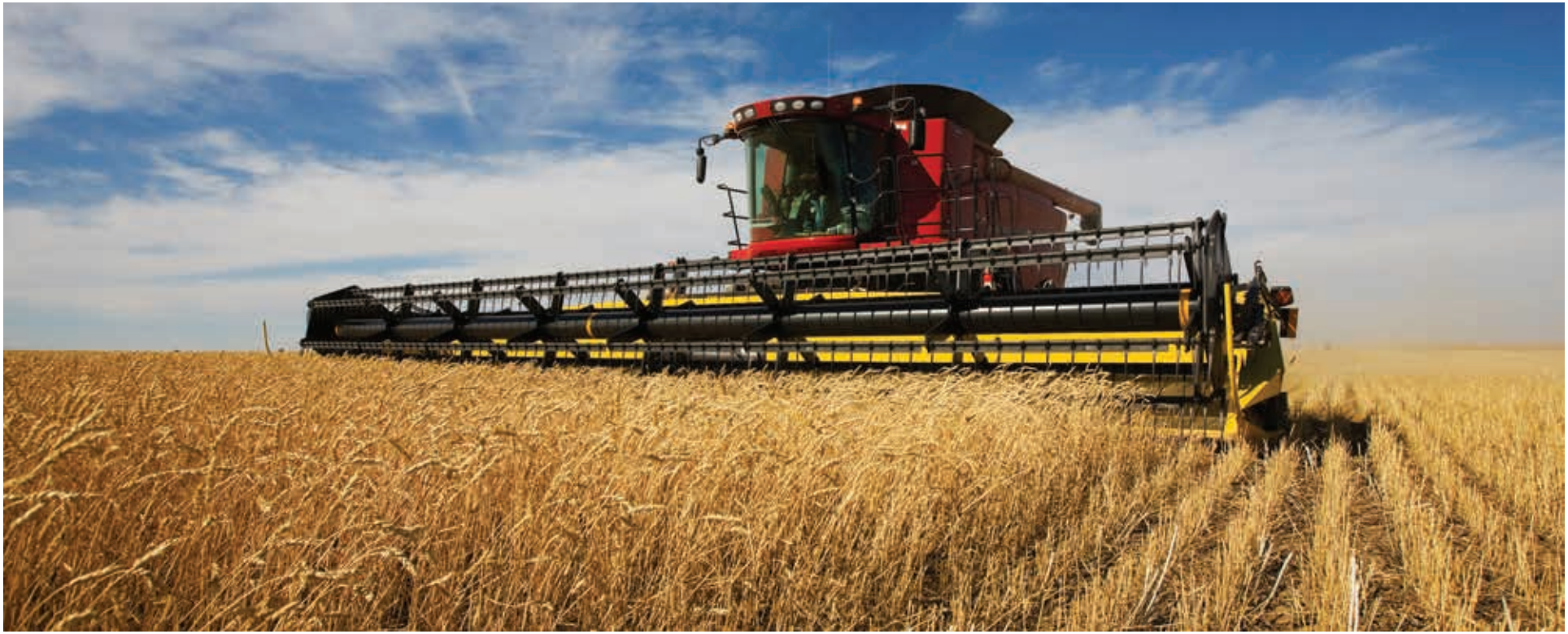
Fisher Barton



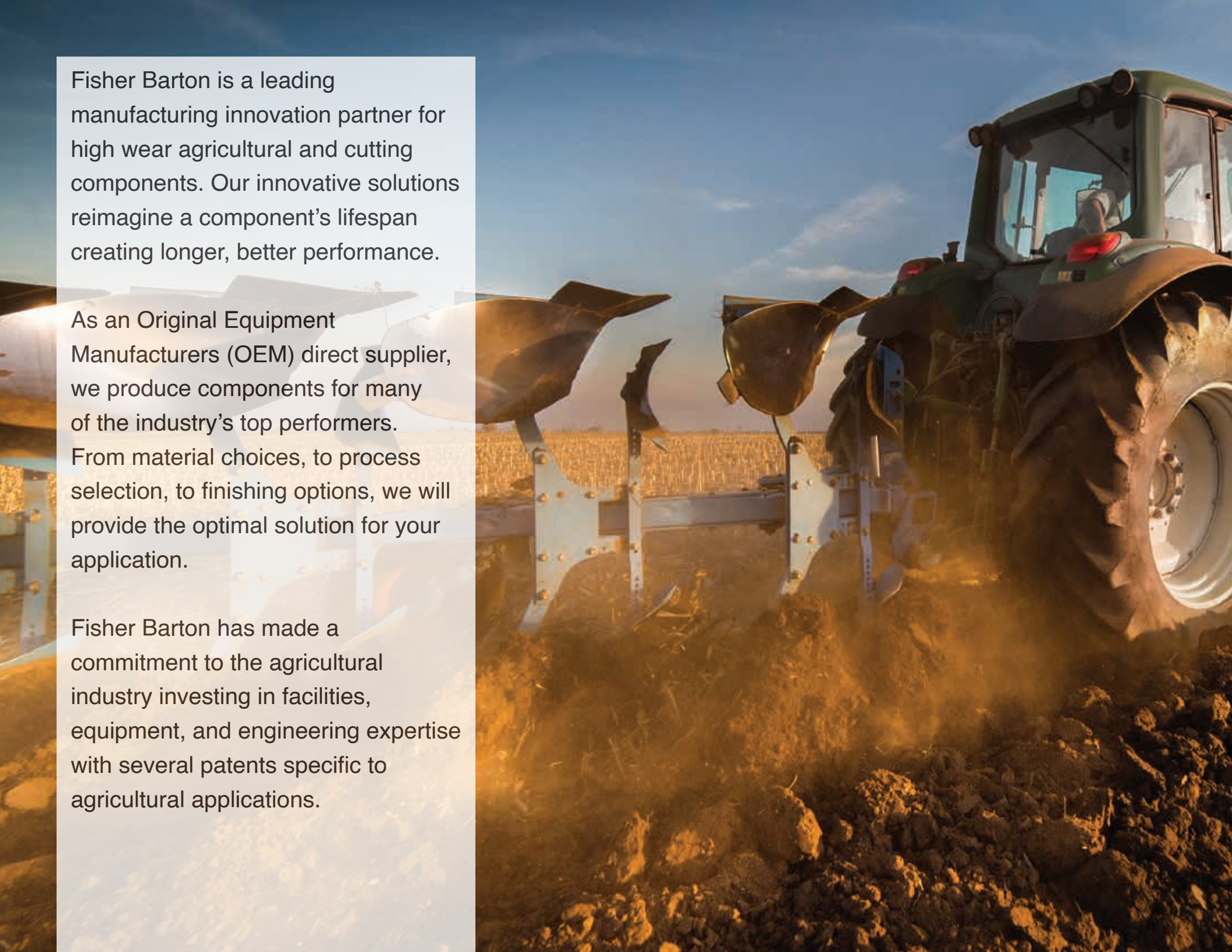
Agriculture

Wear Product Solutions

Fisher Barton is a leading manufacturing innovation partner for high wear agricultural and cutting components. Our innovative solutions reimagine a component's lifespan creating longer, better performance.

As an Original Equipment Manufacturers (OEM) direct supplier, we produce components for many of the industry's top performers. From material choices, to process selection, to finishing options, we will provide the optimal solution for your application.

Fisher Barton has made a commitment to the agricultural industry investing in facilities, equipment, and engineering expertise with several patents specific to agricultural applications.

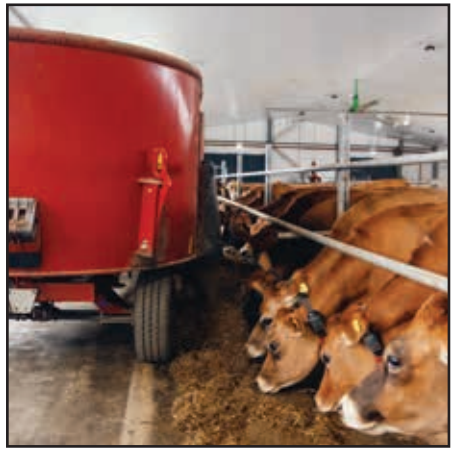


Harvesting

Crop harvesting equipment are some of the most complex machines on the farm. Whether it be hay and forage harvesting, combines, or cotton pickers, each piece of equipment uses multiple wearing components and knives. Fisher Barton has proven success in improving these critical components through the application of our surface engineering and coating methodologies.

Soil Prep and Planting

Creating an optimal seed bed is the first step for an effective crop. Today's modern tillage, fertilizing and planting equipment require increasingly sophisticated wear components to ensure productivity, crop yield and uptime. Fisher Barton has the experience and expertise to help with your most critical components.



Livestock Feeding

Feeding and mixing equipment are essential to a successful livestock operation. Correct and efficient grinding and blending of hay, grain and silage is critical in achieving accurate and repeatable mix ratios to ensure the best nutrition for the herd. Fisher Barton is an industry leader in the manufacturing of high wear mixer knives that provide excellent cutting performance and long wear life.

Manufacturing Processes

Stamping/Forming

Stamping operations are suitable for both short or long production runs, and can be conducted with other metal forming operations including: forming, rolling, and bending.

- Tonnage - 100 to 1000 tons
- Sheet and Coil stamping
- General stamping
- Progressive die stamping

Welding Capability

Agricultural parts are ideal for our automated welding capabilities. We maximize efficiency with speed, accuracy, and repeatability of the highest quality welds for individual components as well as assemblies. We utilize indexing tables for repeatable product and high quality weld.

- Several stations that can weld parts with size of up to 2' x 6'
- Laser welding
- Robotic

Hard Face Weld

Hardfacing, also known as hard surfacing, is the application of a build-up of wear-resistant weld metal onto a part's surface by means of welding to extend the life of the part.

Laser Cutting

We have invested in the latest laser cutting technology to precisely cut a wide range of materials and thicknesses with intricate contours and high quality edges.

- 10kW Nitrogen cutting allows for fast, efficient processing
- Up to 1.25" thick material

Waterjet

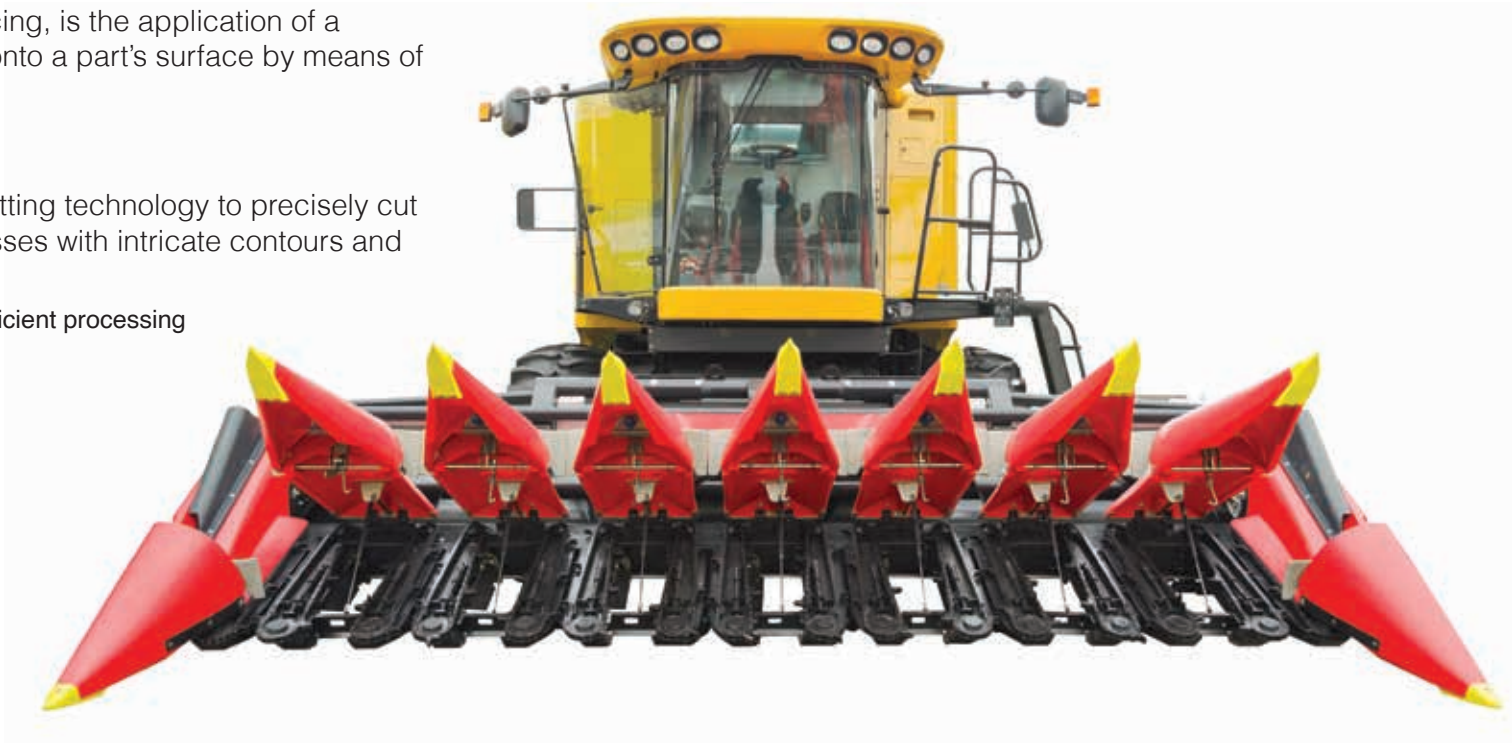
The cutting stream made up of a mixture of water and abrasive solution cuts through most materials including multi-layer materials, composites and hardened steels. The cold cutting does not affect the molecular structure of the material being cut with heat zones or hardened edges.

- Allows material versatility
- Can cut up to 6" thick material

Machining and Grinding

- Over 20 machining centers
- Added efficiency from upgraded work cells that include:
  - 4th axis machining
  - Pallet changers
  - Mirrored work cells for two step machining operations

Shop floor CMM's add consistent quality checks with limited downtime.



Coating Technologies

Laser Clad

Our laser cladding process applies a dense, metallurgically bonded coating which can be used to increase the wear resistance, corrosion resistance and/or impact performance of metal components.

- Multiple work cells
- Specialized optics for added efficiency
- Equipment developed to provide coating precision and accuracy
- Integrated manufacturing technologies incorporate cladding and machining into one piece of equipment
- No post-coating fusing required

Plasma Transfer Arc (PTA)

A process that deposits a iron, nickel and cobalt based coating on the internal surface of a cylindrical surface, or external surface of any geometry.

Thermal Spray

Our fully automated thermal spray coating processes are extremely versatile and able to create coatings out of almost an endless number of materials. The technology is used in the agriculture industry to provide engineered coated surfaces for improving the components performance.

- Flame Spray is an oxyfuel process where feedstock material in powder, wire, or rod form is fed into the flame, melted, and carried by the flame and air jets to the surface being coated. Our manufacturing process is vertically integrated with post-coating fusing (vacuum fusing or FluxFuse).
- HVOF High Velocity Oxyfuel uses a fuel gas (such as hydrogen, propane, or propylene) or liquid (such as kerosene) and oxygen to create a combustion jet. The process results in dense, well bonded coatings.
- Plasma Spray this coating technology uses a high temperature ionized gas, (a gas plasma) that is produced within the plasma gun. These temperatures are higher than any material melting point so many different materials can be melted and turned into coatings.
- Electric Arc - a spray coating process consists of two wires of desired materials acting as electrodes when they're fed through a spray gun resulting in high bond strength and adhesion.

Heat Treating

- Induction - a localized heat treatment controlled by heating and cooling of a metal or alloy in order to obtain a set of desired metallurgical properties.
- Austemper - the Fisher Barton austempering process provides a solution to the expansion problems inherent with conventional quench and temper heat treating.
- Annealing - Oil Quench & Temper - a heat treatment process that changes the properties of a material to increase ductility and reduce hardness by improving ductility and eliminating internal stress.
- Carburizing - a heat treatment process that produces a wear resistant surface while maintaining toughness and strength.
- Laser Heat Treat - treating process used to improve the strength and durability of component by hardening a specified surface with a laser generated beam.
- Vacuum Fusing - a heat treatment in vacuum environment to provide no oxidation and lower porosity when used in Fusionbond® process.

Packaging, and Shipping

- In house automated and manual packaging and kitting
- Complex and simple assembly
- Full service shipping including drop shipping to downstream distribution centers

Tool Design and Repair

- Full capability tool room for tool build and design
- In house tool maintenance provides better cost and less downtime

Tool room has developed solutions including:

- Patented serrations
- Forming of complex geometries
- Complex progressive tooling design and build

Our World Class Technology Center

The Fisher Barton Technology Center was founded in1973, and from there the first metallurgy lab was created in 1983. Today our Technology Center is staffed with materials engineers that are experts in materials selection, advanced knowledge of material characteristics, heat treating and application of wear coatings. These are the cornerstones of our customer success in the development of high wear solutions.

Partnering with our Technology Center is the first step. Our process starts with material selection. From all types of materials, including tool steels, carbides, high carbon steels, ceramics to nano-structured materials we understand the chemical and structural behaviors of these materials and apply patented heat treating processes or advanced coating methods to restructure the component materials to be more resistant to wear in its application.

Materials Analysis and Testing

Sophisticated analysis of surface structure is performed by our Technology Center staff using scanning electron microscopes (SEM) to see how the materials are distributed and identify precisely how fractures are occurring. Energy Dispersive X-ray Spectronscopy (EDS) is combined with SEM to give us the unique ability to qualitatively and quantitatively measure chemical differences between phases in areas as small as 1/10 the diameter of the human hair. The EDS can produce a color contour map of each element found in the sample. The map allows us to visually inspect the chemical differences within a small sample.

Advanced mechanical testing including impact, abrasion, erosion, and fatigue testing allow our engineers to control the variables affecting the force, conditions and failure points on components. As production of components has become more complex, our sophisticated and rigorous testing ensures safety of the design and component durability.

Patented Development

MARBAIN® is a patented base material used in Fisher Barton component production. The advantages of the base material are exceptional durability, hardness characteristics and lower costs.

FluxFuse® is a proprietary heat treating process that minimizes distortion and warping of components while providing consistent uniform fusing conditions for adhering thermal spray coatings to base materials.

Quality

As your premier solutions provider, we work to ensure your products are equipped with best-in-class components. All of our factories are ISO9001:2015 certified and we are members of leading associations where we interact with our peers to be a good steward of the environment and be in compliance with the latest standards and practices: American Society of Agricultural and Biological Engineers, Association of equipment manufacturers, Precision Metalforming Association, ASM International, and the Thermal Spray Society.

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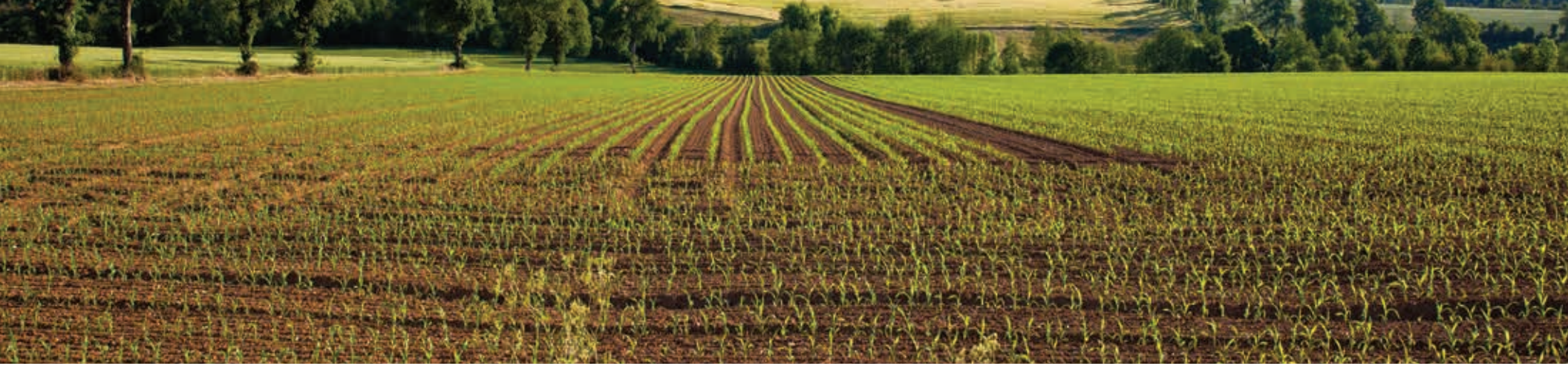

Why Fisher Barton

The ever-increasing sophistication of agricultural equipment and farming practices demands fresh and innovative answers for complex problems. Fisher Barton is a trusted partner of Agricultural equipment manufacturers that has been solving the industry's toughest wear problems for over 50 years.

The combination of our Technology Center, vertically integrated manufacturing facilities, talented design and manufacturing engineers, and our proven application experience provides our customers the absolute best value in wear components and industrial knives.

Fisher Barton is more than a source for high-quality parts; Fisher Barton is your partner for the highest quality solutions found —anywhere.

Fisher Barton

fisherbarton.com

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