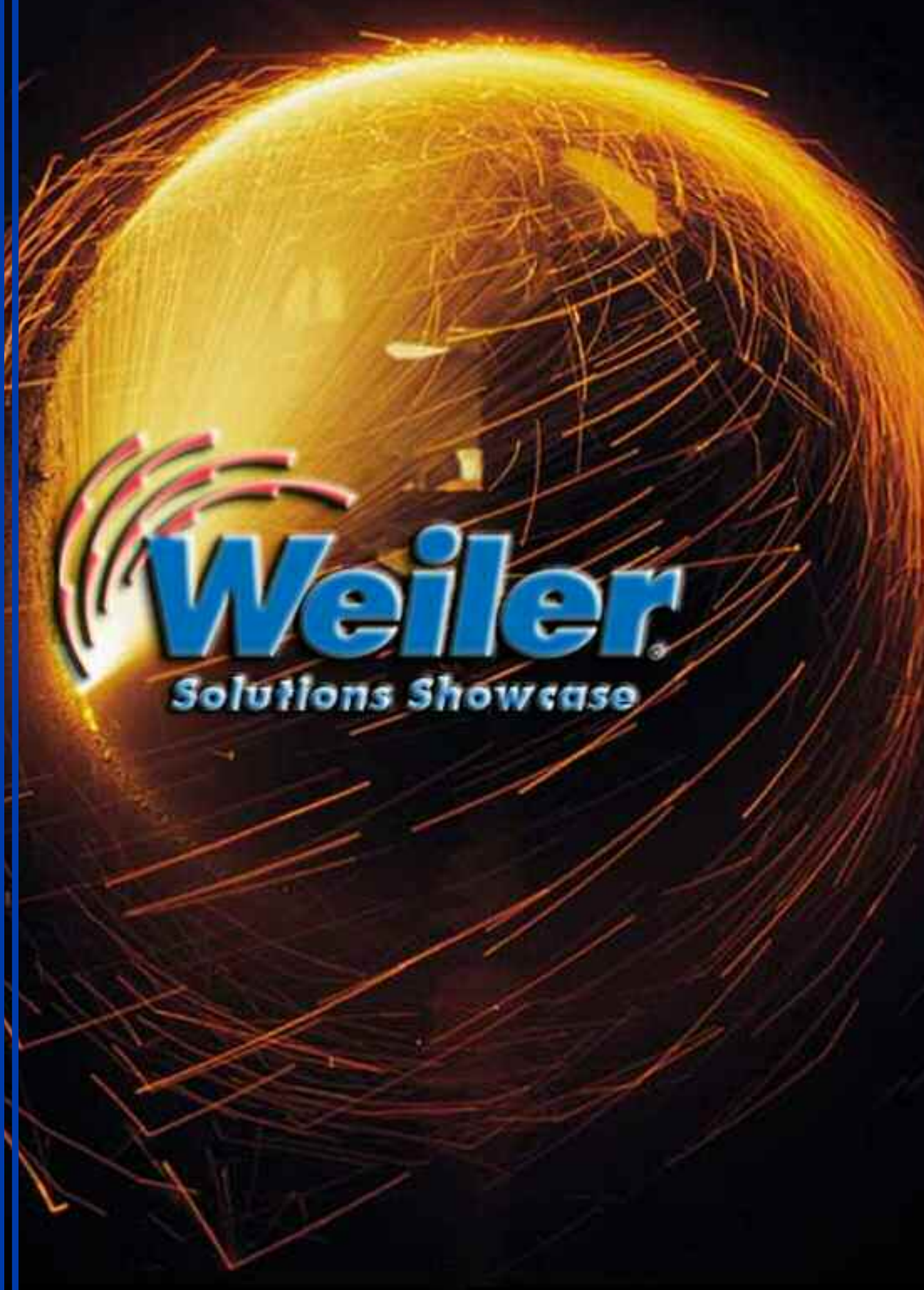

Weiler
Solutions Showcase

Solutions Showcase

Tube Deburring

Problem:
Structural tubing is fabricated into an abundance of different forms. In order to facilitate proper fit, the ends of the tubing must frequently be deburred.

Solution:
Wide face crimped wire wheel brushes are an extremely effective solution for tube deburring. Brushes can deburr the OD and ID of tubing at an extremely high rate and produce a media-cost-per-part of considerably less than $0.01 per part.

Gear Deburring

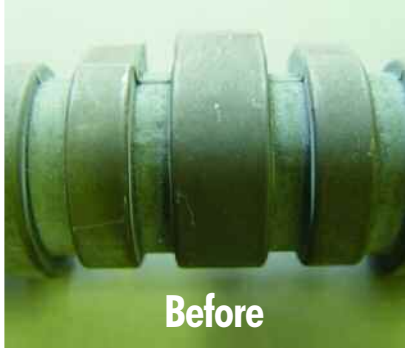
Photos courtesy of On-Line Services.

Problem:
Power transmission components like gears cannot function properly when burrs prevent correct engagement. Further, burrs which become detached from gears can become lodged in critical transmission components causing premature wear and potential failure.

Solution:
Knot wire wheel brushes with surface speed in excess of 6000 SFPM are an excellent solution for deburring gears prior to heat treatment. The high energy filament tips are able to separate burrs from base material and produce a uniform edge break, which protects the edge of the gear.

Solutions Showcase

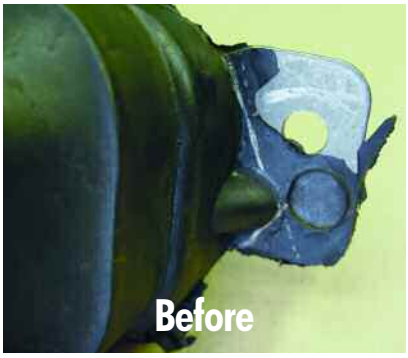
Scale Removal from Cam Shafts

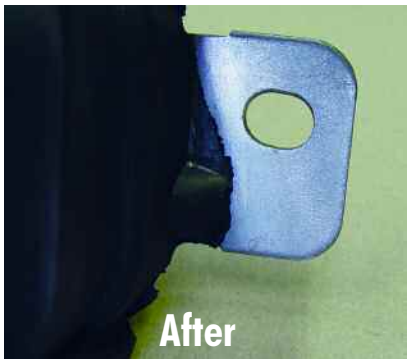


Problem:
Forged and cast components are commonly covered with highly adherent scale as well as flash that must be removed prior to grinding or machining processes. Failure to adequately remove flash and scale can cause downstream processes to be unreliable and costly.

Solution:
Customized equipment and special knot wire wheels can be used to clean and deflash components such as cam shafts. Brushing is often preferred over blasting and chemical processes that produce a waste stream which is expensive to manage.

Targeted Rubber Removal from Motor Mounts





Problem:
Mechanical rubber components such as motor mounts are produced through a process that commonly leaves flash and excess rubber on critical surfaces. In order for the component to function properly, this unwanted material must be removed.

Solution:
The non-loading nature of wire brushes makes them the best available solution in the marketplace for removal of rubber from targeted surfaces. This solution can be implemented off-hand or using automated equipment.

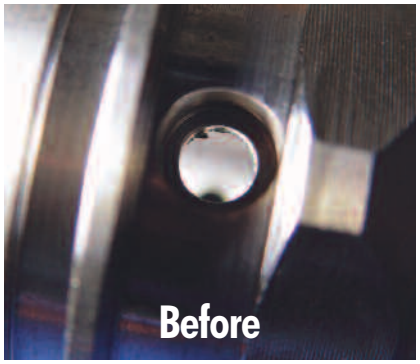
Solutions Showcase

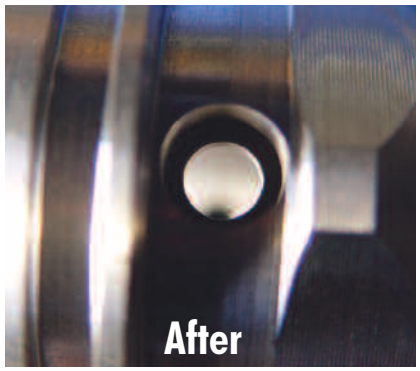
Multi-pass Weld Cleaning

Problem:
In order to prevent voids and inclusions in multi-pass welds, each bead must be cleaned before the next layer of material is applied.

Solution:
Weiler's stringer bead brushes are the established market leader for interpass weld cleaning. Their unique combination of stiffness and flexiblilty make them ideal for rapid removal of slag and spatter.

Deburring Intersecting Holes





Problem:
Relatively large, well-attached burrs are often produced on the edges of intersecting holes and bores when hard materials such as alloy steels are being machined.

Solution:
Bore-Rx™ deburring and finishing tools use interpolated tool paths. A Bore-Rx brush is performing a circular interpolation to deburr intersecting holes.

Solutions Showcase

Wood Distressing

Problem:
The popularity of aged wood has created a unique application in which new lumber is made to appear worn and weathered.

Solution:
Crimped or knot style wire wheels, when stacked together, will remove only the softer grains of the lumber leaving behind a rough and weathered appearance.

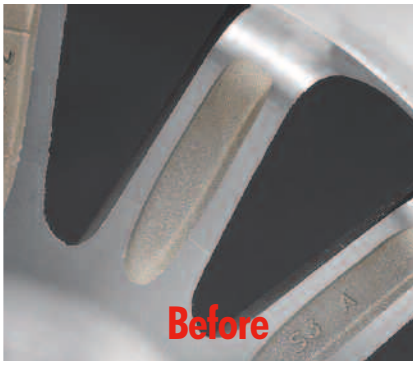
Reconditioning Automotive Components

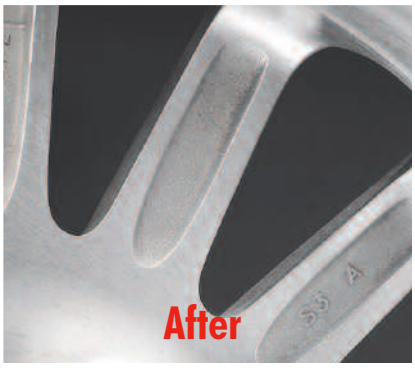
Problem:
The reconditioning of automotive components requires parts to be thoroughly cleaned without altering part tolerances established during the original manufacturing process.

Solution:
The surface-selective cleaning action of wire brushes make them ideal for removing heavy oxides and debris which accumulate on parts during use. Wire brushes are unique in their ability to separate surface contaminants from base material, leaving part dimensions unchanged.

Solutions Showcase

Aluminum Wheel

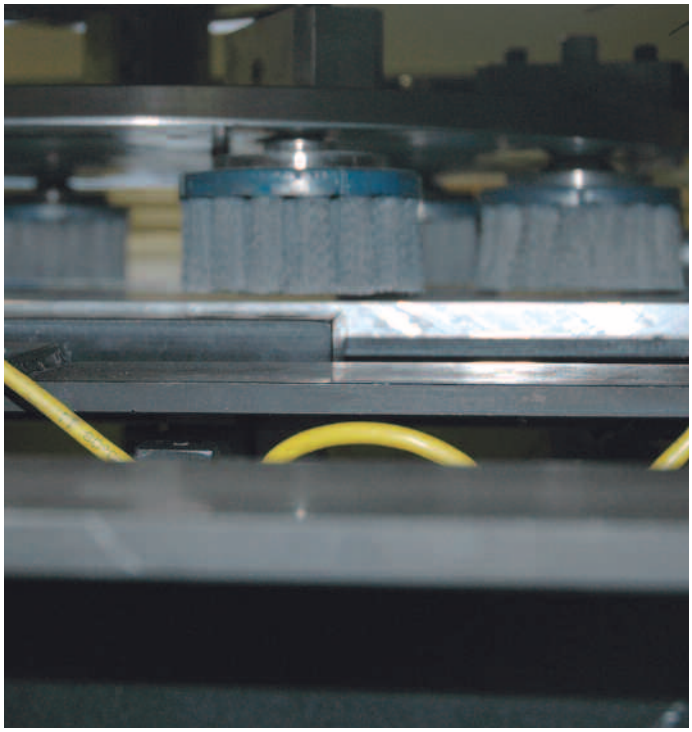


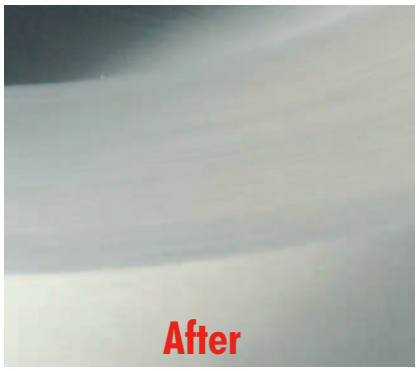


Problem:
Sharp burrs cause safety concerns due to handling issues. In the production of aluminum wheels, burrs and sharp edges can also contribute to problems with painting and powder coating.

Solution:
Weiler designs Nylox® disc brushes that are tailored to match the specific geometric features of each aluminum wheel. The customized design and use of next-generation filament technology ensures wheels that are thoroughly deburred at the minimal cost-per-part.

Washing Machine Door





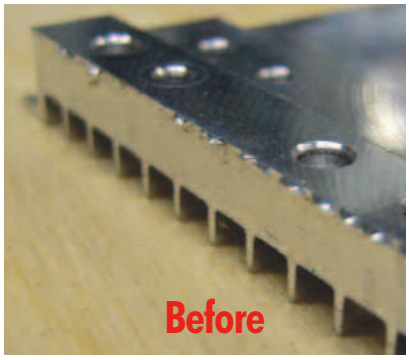
Problem:
While Nylox® brushes are most commonly used for deburring applications, they also have the ability to produce decorative finishes. Users who want to produce a distinctive appearance on their parts are faced with the challenges of producing a unique look, and maintaining that finish in a high production environment.

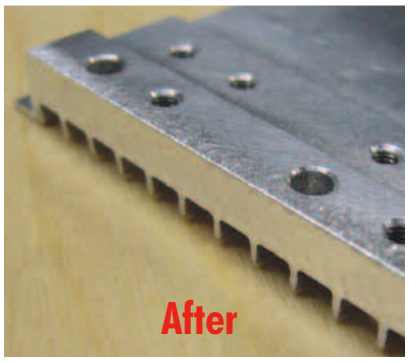
Solution: Small diameter Nylox disc brushes fixed to a rotating head are capable of producing the unique finish required by a home appliance manufacturer. A major benefit of the brushes is that they wear very slowly and expose new sharp grain during use. This ensures low media cost as well as finish consistency.

Photos courtesy of On-Line Services.

Solutions Showcase

Aluminum Extrusion

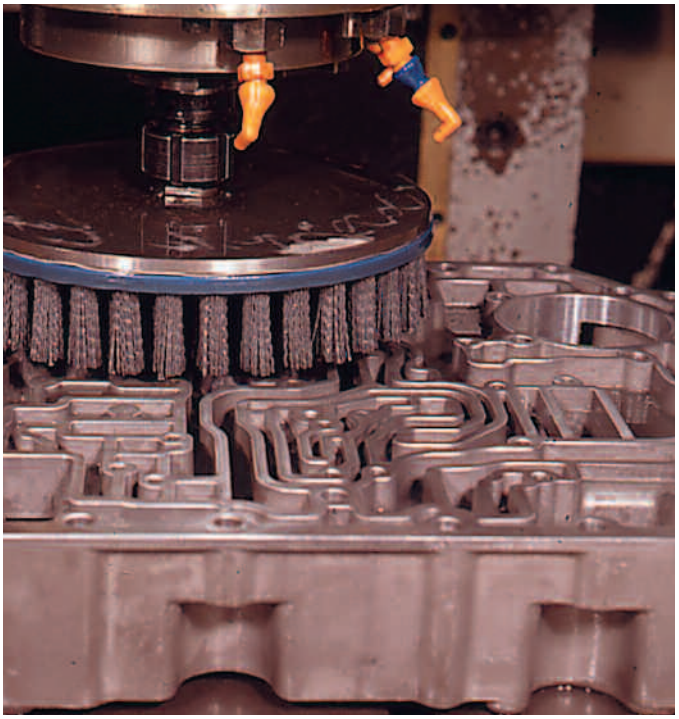


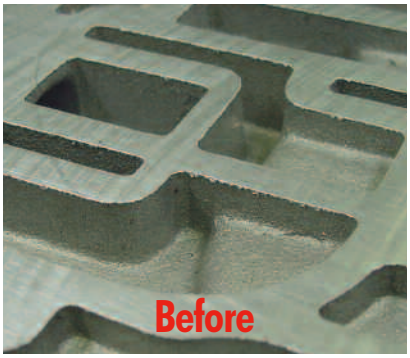


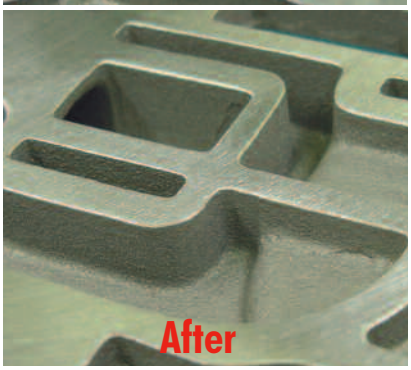
Problem:
Computer and communications equipment contain aluminum heat sinks which are critical to dissipate the heat produced by these systems. Machined surfaces on heat sinks ensure tight fit and proper mounting characteristics. However, burrs produced by machining processes must be removed to ensure they do not fall into the electrical components and short circuit their operation.

Solution:
Weiler developed a process for removing the burrs produced by the milling process. Using a 12" NMX style wheel brush at 1,200 RPM, an operator was able to remove the burrs off-hand during the cycle of the machining center.

Aluminum Automotive Transmission Valve Body





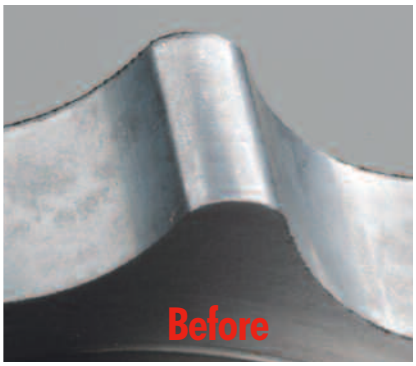


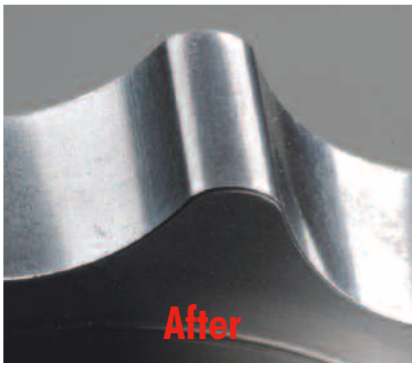
Problem:
Burrs on transmission components can break away from parent components during use and cause transmission wear and eventual failure. Therefore, fluid passages must be completely burr-free.

Solution:
A 10" Nylox® disc brush operating at 825 RPM in a vertical CNC machining center is an ideal solution for deburring this component. Since all of the burrs are on a single plane, the non-directional nature of a Nylox disc brush produces a part on which all edges have been uniformly deburred.

Solutions Showcase

Pump Gear



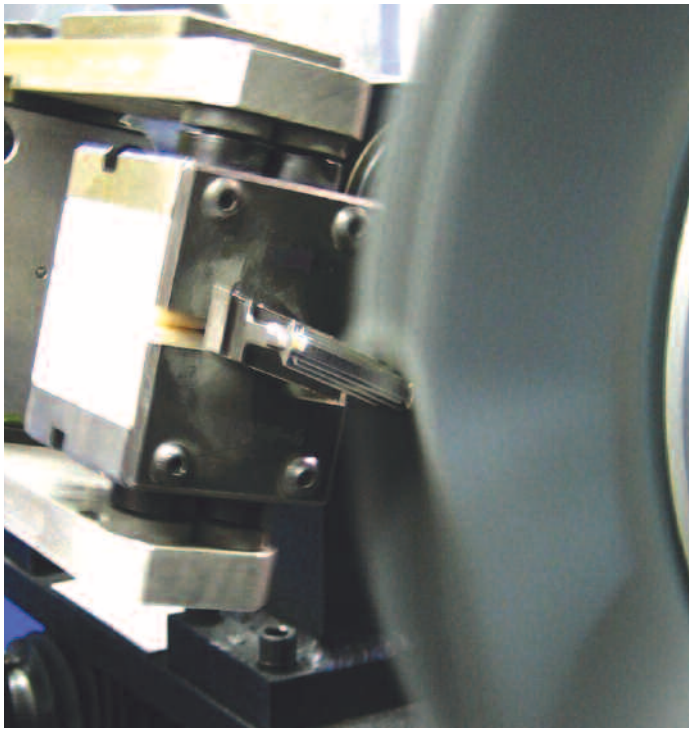


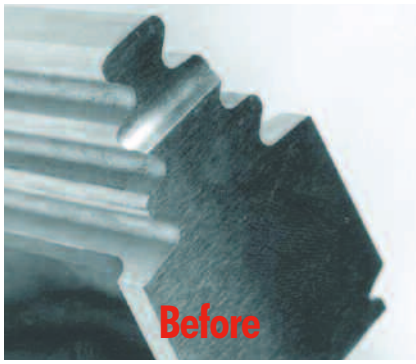
Photos courtesy of On-Line Services.

Problem:
Pumps are extremely susceptible to failure due to burrs. Due to the tight fit between components, all edges must be deburred and radiused to ensure proper function. Proper deburring of rotating pump gears is especially important.

Solution:
A dedicated machine running 14" Nylox® wheel brushes at 900 RPM was a low-cost solution for deburring these gears. By using dedicated equipment, cycle time was minimized and an acceptable edge condition was achieved.

Turbine Blades





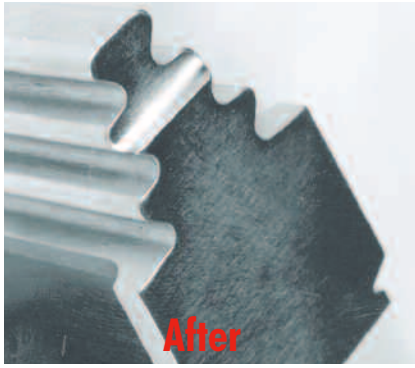


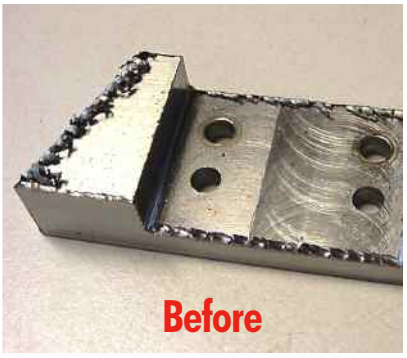
Photo courtesy of ACME Manufacturing.

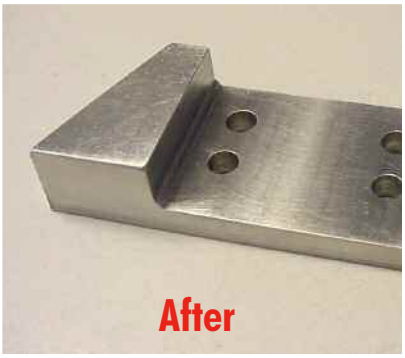
Problem:
Protecting turbine engine components against high-temperature fatigue is critical to ensure safe, reliable engine operation. Component edges must be burr-free and generally require an edge radius in the range of 0.005" to 0.060".

Solution:
Robots are extremely well-suited for this application because they can manipulate the component in many orientations in relation to the brush. Weiler works closely with users and robot integrators to develop products and process programs which maximize brush life while generating exceptional part quality and consistency.

Solutions Showcase

Tool Steel Deburring

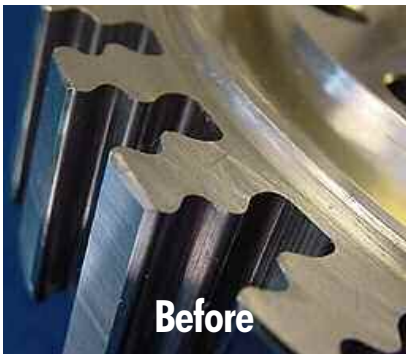




Problem:
Traditional nylon abrasive brushes were not sufficiently aggressive to remove large burrs from materials like tool steels and stainless steels.

Solution:
Weiler's next generation filament technology, embodied in the company's line of Burr-Rx™ brushes, create sufficient aggression to handle the toughest deburring jobs. This enables more users to capture the benefits offered by in-machine deburring.

Turbine Blade Holder Deburring

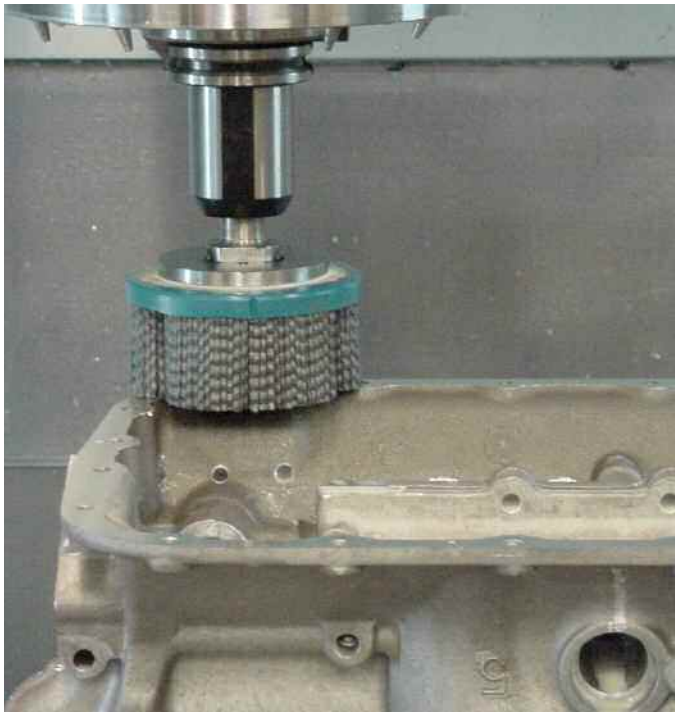


Problem:
All edges on aircraft engine components must be deburred and radiused to ensure against fatigue failure. In many situations, this work is highly labor intensive and introduces cost and inconsistency issues.

Solution:
Some part geometries lend themselves to in-machine deburring solutions. In these cases, the same CNC-based precision and efficiency used to machine the part can be used to deburr it.

Solutions Showcase

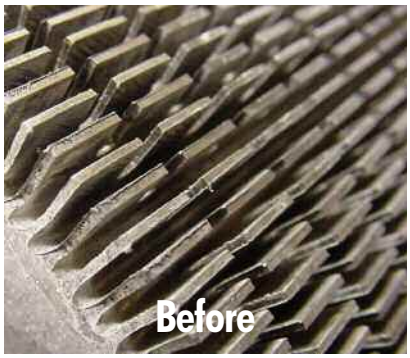
Crank Case Deburring



Problem:
Manual deburring is a major source of OSHA claims relating to muscular-skeletal-disorders. As a result, users have aggressively attempted to minimize manual deburring.

Solution:
In-machine deburring is exceptionally easy to implement when burred edges lie in the same plane. Disc brushes can be mounted in a CNC machine's tool changer and fed across the part like a face mill. The latest generation of brushes can process aluminum parts at over 100"/min.

Heat Sink Deburring

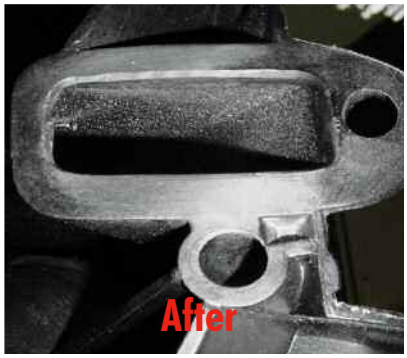


Problem:
Complicated and intricate edge geometries can make some parts virtually impossible to deburr by hand.

Solution:
The ability of fine filaments to uniformly cover a complicated surface allow brushes to quickly and thoroughly deburr complex parts.

Solutions Showcase

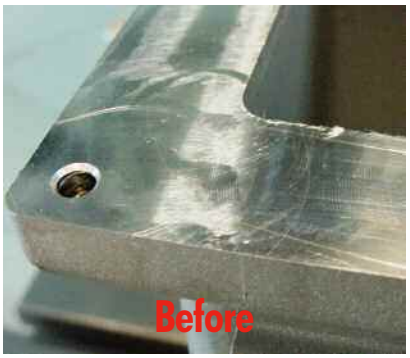
Plastic Intake Manifold Deburring



Problem:
Like metal components, plastic parts often require deburring in order to ensure proper fit and function.

Solution:
Due to the variation in mechanical and thermal properties of plastics, brushes are usually engineered to specific customer requirements using process development capabilities of Weiler's applications lab.

Aluminum Housing Finishing



Problem:
As customer specifications for part surface finish become more and more stringent, the need to automatically remove marks leftover from machining operations has grown.

Solution:
Weiler's Nylox® disc brushes are ideal for removing milling marks. Brushes are commonly used to produce surface finishes of 20 microinches or better.

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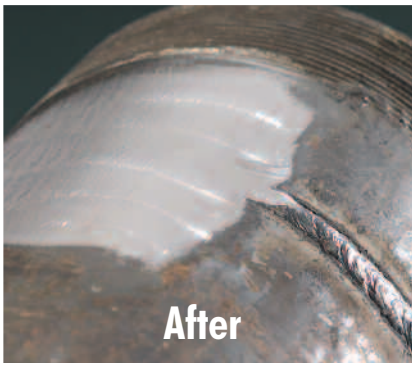
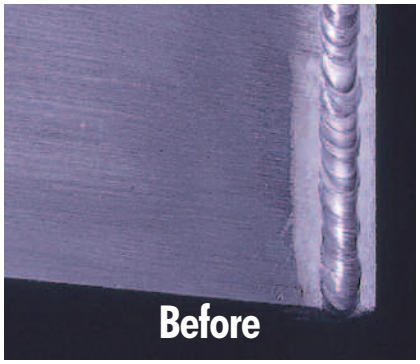
Steel Pipe

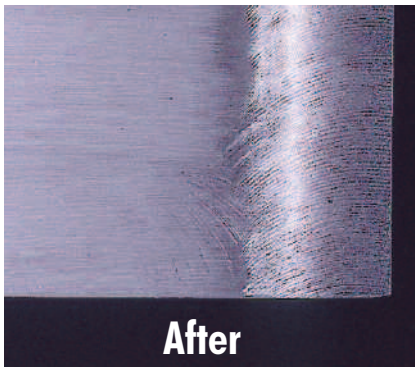


Problem:
When blending welds on curved surfaces, operators are challenged to select a media that can quickly remove material without undercutting or generating objectionable flat areas.

Solution:
The combination of compliance and aggression makes the Tiger Disc Big Cat® ideal for grinding and blending. By increasing the applied force, the operator can increase the cut rate. By reducing the load, the operator can easily match the welded area with the surrounding curved surface.

Aluminum Frames





Problem:
Aluminum welds are particularly difficult to blend due to the tendency of the chips to become welded to the abrasive media. This causes the cut rate of the abrasive to fall rapidly and generates an expensive grinding operation.

Solution:
Weiler's AL-tra Cut™ discs are specially formulated to prevent loading by lowering the grinding temperature. A 60 grit AL-tra Cut disc can blend an aluminum weld bead much faster than a conventional disc without loading.

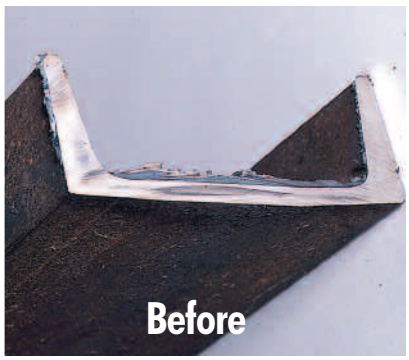
Solutions Showcase

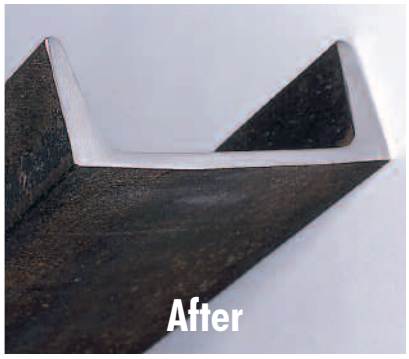
Snow Plow Blade

Problem:
Grinding fillet welds is a difficult, time-consuming process that is often expensive to perform.

Solution:
Weiler's Trimmable Tiger® Flap Disc offers the ability to create a flexible grinding media that can easily blend fillet welds. The disc's trimmable design also ensures economical operation by allowing the operator to maintain disc flexibility throughout its life.

Steel Channel





Problem:
Burrs produced by cut-off operations are dangerous and can prevent parts from fitting together properly.

Solution:
Coated abrasive flap wheels are flexible grinding products which are ideal for light stock removal applications. A 60 grit wheel can be used to remove a large burr and produce a smoothly blended edge.

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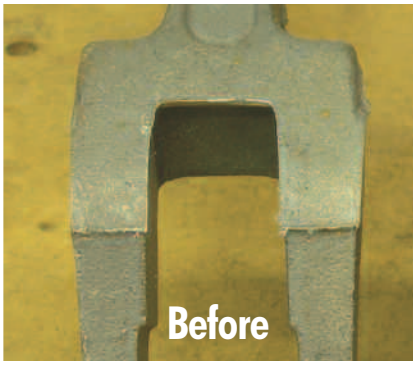
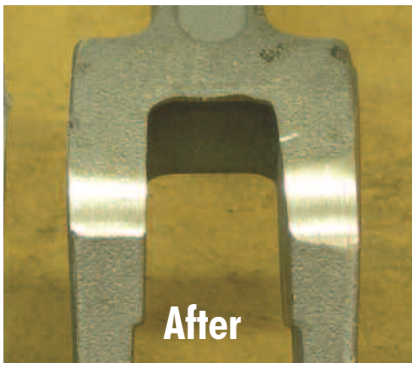
Steel Handle

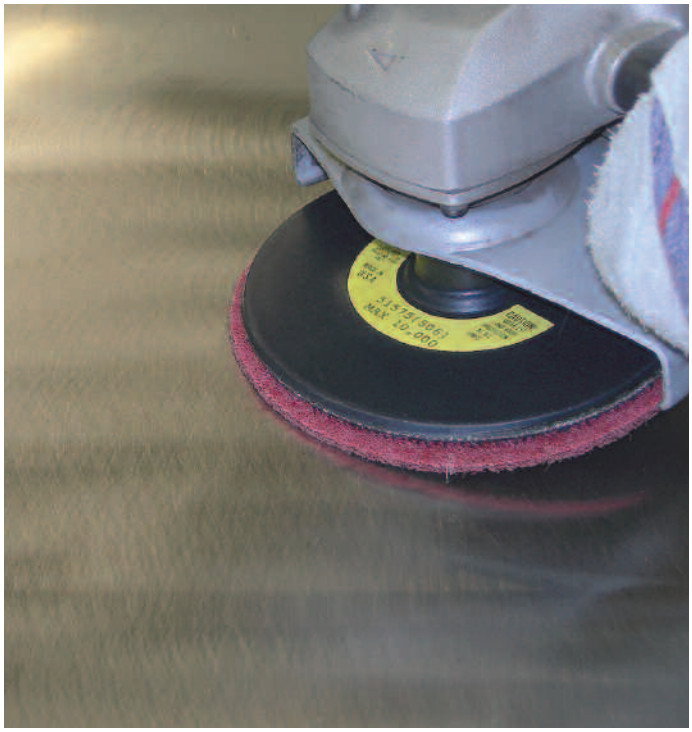


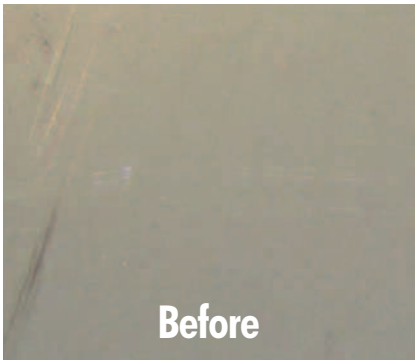


Problem:
The removal of parting lines is a common application in the foundry business.

Solution:
Weiler's selection of coated abrasive belts includes high performance and value products that help users control their production costs. Belts with 36 and 40 grit are commonly used for parting line removal.

Stainless Steel Plate





Problem:
Many fabricated products require cosmetic finishes which are free of handling marks and other surface defects.

Solution:
Surface conditioning discs are available in three different grades and commonly used in applications requiring surface finish improvement with minimal stock removal.