Sustainable process optimization when fettling

Maximum efficiency due to excellent tool life and stock removal rate

Comfortable working with low dust and vibration loads for the user
Electroplated diamond tools
Information on processing grey and nodular cast iron

The use of efficient tools for surface finishing and cutting of materials is an important factor for economic value in many processes and industries. With their high hardness, they have a particularly long tool life and are an established problem-solver in many industries: Particularly in processing grey and nodular cast iron they achieve sustainable process and costing optimization.

Diamond
The abrasive Diamond is termed “superhard” because it significantly beats the conventional abrasives aluminium oxide and silicon carbide in terms of hardness. This feature is the basis for the very high tool life of diamond tools.

Electroplated bond
Electroplated diamond tools have a monolayer of abrasive coating on a metal substrate. The individual diamond grits are bonded through an electroplated nickel layer. They project well out of the bond so that very open, easy cutting tools with exceptionally large chip spaces are created.

Hardness comparison of abrasives

<table>
<thead>
<tr>
<th>Hardness Knoop N/mm²</th>
<th>Aluminium Oxide (A)</th>
<th>Silicon Carbide (SiC)</th>
<th>Diamond (D)</th>
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</thead>
<tbody>
<tr>
<td>7.000</td>
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<td>6.000</td>
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<td>4.000</td>
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<td>2.000</td>
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<td>1.000</td>
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Advantages for cast machining
Electroplated diamond tools have a range of advantages in processing grey and nodular cast iron which increase the efficiency of fettling:

- Less tool changes and lower set-up costs due to the excellent tool life.
- Reduced wage costs due to quick, aggressive grinding with maximum stock removal rates.
- Optimal machining of deep-set hard to reach areas due to the constant tool diameter.
- Comfortable and quick removal of metal penetrations due to the superhard abrasive diamond.
- Low dust load due to the dimensional stability of the grinding tool (no tool wear).
- Reduced vibration load due to the form stability of the tool (no imbalance).
- Dressing work and cost savings due to the consistent tool shape.
- Relief of the tool user due to the reduction of the necessary contact pressure.

Note
Due to the single layer configuration and the specific wear behavior, electroplated tools do not have to be dressed.

Dressing leads to destruction of the tool!

Conditions for use in cast machining
For the successful use of electroplated diamond tools, the following conditions must be taken into account for processing grey and nodular cast iron:

- Only for processing grey cast iron (cast iron with flake graphite inclusions – GJL) and nodular iron (cast iron with nodular graphite inclusions – GJS)
- Use high performance tool drives with exact concentricity and precise holder requirements.

High-performance tool drives from PFERD are ideal for machining cast iron.

As part of PFERDVALUE®, PFERD offers ergonomically optimized tools and tool drives that contribute to greater safety and working comfort, and thus to health protection.

As a part of PFERDEFFICIENCY®, PFERD offers innovative, high-performance tool solutions and tool drives with outstanding added value.

For more information on this topic, please refer to our brochure “PFERDVALUE – Your added value with PFERD”.

PFERDVALUE® – Your added value with PFERD
Results from the PFERD test laboratories as well as from the product tests by independent testing institutes prove: PFERD tools offer measurable added value.

Discover PFERDERGONOMICS® and PFERDEFFICIENCY®.

As part of PFERDERGONOMICS®, PFERD offers ergonomically optimized tools and tool drives that contribute to greater safety and working comfort, and thus to health protection.
PFERD specializes in the support and production of customer-specific electroplated diamond and CBN tools. Almost all tool blank geometries can be coated with various grit sizes. The electroplated bond also enables the economic production of small batch sizes. Because of the diverse possibilities, our production can respond to individual customer requirements with a high degree of flexibility.

Our technical advisors will be happy to visit you on-site to develop individual tool solutions for your applications. **Get the best possible advice for superhard solutions!**

### 1. Process analysis and tool development

**Contact us at [www.pferd.com](http://www.pferd.com) and arrange an appointment with our experienced sales representatives and technical advisors.**

If you already have precise ideas about the desired tool, you can provide us with a technical drawing or a dimensioned sketch and information on the desired abrasives and grit sizes.

Our employees will **analyze your application with you on-site** and develop the most economic individual tooling solution for you! You will then receive a quote. Three production variants are possible:

### 2. Production

**Complete production**

From design and construction, through manufacture of the tool blank (steel, stainless steel or brass) and its coating with diamond or CBN grit, to the balancing of the finished tool, PFERD offers you all the production steps from a single source. This guarantees you the highest level of quality, flexibility, and on-time delivery.

**Coating**

Steel, stainless steel or brass blanks provided by the customer can also be coated with diamond or CBN grit – an early, close cooperation is recommended.

**Recoating**

PFERD offers recoating of blunt tools with steel or stainless steel blanks as an economic alternative to replacement production. Tools with brass blanks cannot be recoated.

### 3. Use

Our flexible production and global logistics network ensure that you receive your new tool on time.

If desired, your personal sales representative and a technical advisor will set up all the process parameters together with you.

**Allow yourself to be persuaded by the quality, performance and economic value of PFERD tools.**
In foundries, the automation through stationary CNC fettling centres or robots is continuously optimized. The aim is to make workplaces more ergonomic for workers and to reduce processing times. PFERD offers individual on-site consultation on the special grinding application of your fettling centre or robot.

Whether you need grinding points for interior work on workpieces or grinding wheels with an outer diameter of up to 600 millimetres – PFERD develops and manufactures the optimal solution for your application. Electroplated tools from PFERD are always characterized by maximum precision and long service lives.

**aggressive**

**long-lasting**

**highly efficient**

**dimensionally stable**

**economic**

PFERD supplies you with the optimum tool solution for your automated application.
Electroplated diamond tools
Catalogue range for processing grey and nodular cast iron

Diamond cut-off wheels

Electroplated diamond cut-off wheels with grit size D 852 are exceptionally well-suited to machine grey cast iron and nodular cast iron (GG and GGG or GJL and GJS).

Advantages:
- Very long tool life
- Ideal for work on deep-lying areas because of the constant tool diameter
- Easy and quick elimination of burning-in
- Minimized dust formation due to wear-resistant coating and coarse chips

<table>
<thead>
<tr>
<th>Description</th>
<th>EAN 4007220</th>
<th>D [mm]</th>
<th>Cutting width T [mm]</th>
<th>Blade thickness E [mm]</th>
<th>Centre hole dia. H [mm]</th>
<th>Grit size</th>
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<tbody>
<tr>
<td>Grey and nodular cast iron (GG and GGG or GJL and GJS)</td>
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<tr>
<td>D1A1R 230-3.8-22,23 D 852 GAD</td>
<td>956021</td>
<td>230</td>
<td>3,8</td>
<td>1,8</td>
<td>22,23</td>
<td>D 852</td>
</tr>
<tr>
<td>D1A1R 400-4,5-40,0 D 852 GAD</td>
<td>947449</td>
<td>400</td>
<td>4,5</td>
<td>2,5</td>
<td>40</td>
<td>D 852</td>
</tr>
</tbody>
</table>

Diamond reinforced grinding disc

Because of their application-specific design, these diamond reinforced grinding discs are particularly suitable for comfortable and quick elimination of burning-in.

Advantages:
- Constant tool diameter
- Reduced tool changing times thanks to long tool life
- Minimized dust as tool does not wear
- 178 mm type is very light thanks to its GRP backing pad

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<tr>
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<tr>
<td>SA-D 10YS/X 125-22,23 D GA</td>
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<tr>
<td>SA-D 10YS/X 178-22,23 D GA</td>
<td>941409</td>
<td>178</td>
<td>22,23</td>
<td>D 852</td>
</tr>
</tbody>
</table>

The use of the clamping flange set SFS 76 reduces noise development during manual grinding. It can be used with the diamond cut-off wheel D1A1R 230-3.8-22,23 D 852 GAD on angle grinders with M14 thread. Ordering data and more detailed information about the clamping flange set can be found in Catalogue 206.

PFERDVIDEO
You will receive more information here or at www.pferd.com

PFERDEFFICIENCY® recommends electroplated diamond tools for long, fatigue-free and resource-saving work with perfect results in the shortest possible time.
Our range is well thought out
Further PFERD solutions for processing grey and nodular cast iron

**Catalogue 202 – Burrs**
With the CAST cut, PFERD has developed innovative burrs especially for work on cast iron. They achieve up to 100 % higher stock removal performance in comparison to conventional cross cut burrs.

The TOUGH and TOUGH-S cuts achieve high stock removal and a high-quality surface finish. They are robust, high-performance and minimize tooth breakage, splintering as well as burr failure. They have been specially developed for tough applications with high impact loads and und can be used in combination with long-shank versions.

**Catalogue 203 – Mounted points**
Mounted points in hardness grade R with extremely hard, sharp-edged abrasive grit achieve a high tool life, especially in foundries and when fettling. Wedge-shaped abrasive segments are excellently suited to processing intersections and removing separators on sand moulds and cores in foundries.

**Catalogue 204 – Fine grinding and polishing tools**
All tools made from coated abrasives in the aluminium oxide A, ceramic oxide CO and CO-COOL versions, especially COMBIDISC® abrasive discs and COMBICLICK® fiber discs, are particularly suitable for processing grey and nodular cast iron.

**Catalogue 206 – Grinding and cut-off wheels**
Based on decades of experience with grinding tools for fettling and using state-of-the-art manufacturing technology, PFERD manufactures all typical bonded grinding tools for foundries. They offer high stock removal rates and a very long tool life when machining grey and nodular cast iron.

**Catalogue 207 – Stationary cut-off wheels**
Stationary cut-off wheels from the SG-TABLE line with the abrasives silicon carbide (C) and the SG-HEAVY DUTY line with the zirconia alumina/aluminium oxide (ZA) abrasives are particularly distinguished by their short cutting cycles and high tool life. PFERD offers a special laboratory program for preparing samples for metallography. We would be happy to advise you on custom-made tools for your special applications.

**Catalogue 208 – Industrial power brushes**
The extensive range contains high quality technical brushes for the professional processing of grey and nodular cast iron. We would also be happy to advise you on custom-made tools for your special applications.