WINTER
NORTON
CNC DRESSING TOOLS
Quality and precision achievements

Saint Gobain was founded in 1665 as a company with new ideas for the manufacture of flat glass. Since its foundation Saint Gobain has concentrated on innovation and expertise in the area of technical materials. Saint Gobain has become a market leader in many industries. Today Saint Gobain employs approximately 16,000 people in the areas of bonded abrasive products and dressing tools. Saint Gobain is present in 45 countries worldwide and is the largest manufacturer of dressing tools and abrasives in the world.

Advanced technologies

Manufacturing technology

Saint Gobain has developed up-to-date production facilities through continuous investment in manufacturing equipment. Its excellent on-time delivery performance is backed by in-depth product knowledge and very high quality levels.

Saint Gobain Diamantwerkzeuge is certified according to ISO 9001; ISO 14001 and has also obtained the prestigious FORD Q1 Certification.

Technology Centers for Abrasives Engineering

The objective of the technical centers are to develop and improve grinding technology. These are located in Germany (at Norderstedt, near Hamburg) and in the USA (at Worcester, near Boston).

They support customers in developing their demands for the future, allowing them to become world class in their application of dressing abrasives and tools.

These “Centers of competence” include developments like “Systemkoncept” that describe the microscopic interrelation of the process during dressing and grinding.

To gather and spread this knowledge of dressing and grinding, a European Technical Data Base (ETDB) has been created and is available at local levels.

Absolute Dressing precision

High accuracy dressing tools are needed to dress an abrasive wheel to close tolerances. Only then it is possible to guarantee the quality of the components produced. Saint-Gobain is known as a high quality and high precision manufacturer.

Increasing quality and accuracy demands, coupled with more economic machining solutions, are common requirements in modern machine tool building.

To satisfy these fast changing market requirements it is necessary to have a flexible approach to diamond tooling.
To choose the right dressing tool for the application it is necessary to know the required cycle time, the component profile and the tool cost.

Normally, stationary or rotating diamond tools are used to dress grinding wheels.

With CNC driven dressing tools, it is possible to create simple and complex profiles in different wheel widths.

By using the correct specification of dressing tool and dressing parameters, it is possible to influence the result on the component ground.

The use of CNC dressers allows the creation of a variety of profile shapes. In this type of application it is possible to affect the dressing results by changing the speed quotient, the dressing direction and dressing overlap.

For safety, diamond wheels are speed tested during manufacture. The finished wheel is engraved with the maximum speed, the drawing number and a unique manufacturing number, which gives traceability. With CNC-Dressers, an inspection report is created giving the actual dimensions produced, thus allowing the machine datums to be set accurately.
**Types of Dressing Tools**

When dressing a grinding wheel there is normally a choice of either stationary or rotary dressers.

Rotary dressers are normally used for the manufacture of components with complex profiles in a mass production environment.

To produce the correct geometric form and surface quality it is important to choose the right diamond specification.

<table>
<thead>
<tr>
<th>TOOL TYPE</th>
<th>EXAMPLE</th>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationary dressing tools</td>
<td>• Multi point dresser</td>
<td>• Influences the surface roughness of the grinding wheel</td>
</tr>
<tr>
<td></td>
<td>• Blade tools</td>
<td>• Flexible dressing system</td>
</tr>
<tr>
<td></td>
<td>• Blade tool with CVD or MCD inserts</td>
<td>• Low tooling cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Typically supplied from stock</td>
</tr>
<tr>
<td>Rotary dressing tools</td>
<td>• Rotary profile dresser</td>
<td>• Relatively short dressing cycles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Constant dressing with very low wear</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Profile roller dressers are dedicated to the component profile</td>
</tr>
<tr>
<td></td>
<td>• Rotary CNC dresser</td>
<td>• The surface roughness is influenced by a combination of the axial oscillation,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the effective width and the speed ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Flexible dressing system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Low tool cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Some availability from stock</td>
</tr>
</tbody>
</table>
CNC dressers are not dedicated to specific component profile and so give flexibility. The form is generated by the CNC control.

The stationary and the rotary dressers offered by Saint-Gobain allow excellent flexibility, give minimum dressing times with low dressing power.

CNC dressers are used on specialised dressing spindles. These contain high precision bearings with close roundness tolerances to ensure out repeatability and accurate geometries are achieved.

The super abrasive type is matched to the application. The options available are:
- Natural Diamond
- Natural ‘needle’ diamonds (long stones)
- Synthetic diamonds such as: CVD, PCD or MCD

### Factors influencing the performance of dressing tools

<table>
<thead>
<tr>
<th></th>
<th>Speed ratio</th>
<th>Over lap</th>
<th>Infeed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationary dresser</td>
<td>-</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>CNC dresser</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Rotary profile dresser</td>
<td>X</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

### Specifications of CNC dressing tools

#### CNC Dressers

<table>
<thead>
<tr>
<th>Manufacturing</th>
<th>Reverse manufacturing</th>
<th>Positive manufacturing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bond</td>
<td>plated</td>
<td>infiltrated</td>
</tr>
<tr>
<td>Distribution</td>
<td>random</td>
<td>scattered</td>
</tr>
<tr>
<td>Concentration</td>
<td>highest</td>
<td>scattered</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>UZ</th>
<th>TS</th>
<th>DDS</th>
<th>SD</th>
<th>SG</th>
</tr>
</thead>
</table>
Reversed plated dressers (UZ)

CNC Dressers are produced using a reverse plating method and a single diamond layer which gives good wear resistance.

It is possible to improve the wear resistance of vulnerable areas by using corner reinforcement.

Usage:
- Dressing of conventional grinding wheels

Natural diamond:
- Highest diamond concentration
- Random diamond distribution
- Highest accuracy of the diamond profile is achievable through of the manufacturing process
- Min concave radii of 0.03 mm
- Min convex radii of 0.1 mm
- A wide variety of dresser profiles are possible

General Limits
- Minimum diamond layer width for profile rollers is 10 mm
- Maximum outer diameter is 320 mm, bore tolerances are H3
- Minimum radius 3 mm over a 180° included angle

Examples:
- Special corundum grinding wheels
- Special fused alumina grinding wheels
- Ceramic bonded CBN grinding wheels
- Ceramic bonded diamond grinding wheels

Characteristic:
- Wear resistance
- Ability to dress small radii
- Profile relappable
- Supporting core
- Self sharpening ability
Infiltrated dressers have high wear resistance and are made with a single diamond layer. Improved wear resistance is possible with CVD, PCD or synthetic diamond corner reinforcement.

Usage:
- Dressing conventional grinding wheels

Natural and Synthetic diamond:
- Random and pattern set diamond distribution
- High precision through grinding the diamond layer
- Reinforcement of small radii by individually selected support diamonds
- Radii less than 0.4mm, set with ‘needle’ diamonds
- Minimum radius 0.1mm for included angle of 30 degrees
- Minimum layer width 2mm with maximum edge radius of 0.2mm
- Maximum outer diameter 340mm, bore tolerances are H3

Examples:
Infiltrated CNC roller dressers with PCD/CVD or MCD needles are capable of holding small radii. Depending on the wear condition of the layer, these dressers are relappable.

Usage:
- PCD for dressing of AL2O3 wheels
- CVD or MCD for dressing of microcrystalline AL2O3 wheels (TG/SG/XG etc.)

PCD,CVD,MCD and synthetic diamond:
- Pattern set diamond
- High precision through grinding the diamond layer
- Several relaps possible
- Minimum radius for included angle:
  \[ R = 0.05 \text{ mm for included angle of 35°} \]
  \[ R = 0.10 \text{ mm for included angle of 25°} \]
- Minimum layer width and edge radius for cylindrical type:
  \[ B = 0.5 \text{ mm} \]
  \[ R = 0.05 \text{ mm} \]
- Maximum outer diameter 340 mm, bore tolerances are H3

Examples:
Infiltrated dresser (DDS)

The Winter DDS dresser enables the high precision CNC dressing of vitrified bonded diamond and CBN grinding wheels.

The DDS dresser uses a constant ratio of contact area to total area, depending on a patented diamond distribution and concentration.

Usage:
- In process dressing of vitrified bonded diamond- CBN wheels

Natural diamond:
- Controlled diamond distribution
- High precision through grinding the diamond layer
- No backing layer for the diamond
- Ability to dress concave and convex profiles
- Constant layer width
- Ability to dress vitrified bonded diamond wheels
- Diameter 90 mm - 210 mm
- Layer width 0,6 mm - 1,2 mm
- Radius depending on layer width (0,3 mm - 0,6 mm)

Standard version:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Layer width</th>
<th>Core width</th>
<th>Bore</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) 120 mm</td>
<td>1 mm</td>
<td>15 mm</td>
<td>40 H3</td>
</tr>
<tr>
<td>2) 150 mm</td>
<td>1 mm</td>
<td>15 mm</td>
<td>52 H3</td>
</tr>
</tbody>
</table>

The dresser is constructed by clamping the diamond layer between two steel plates.
The metal bonded SD roller dresser is composed of a volume layer which can be resharpened several times.

These CNC dressers are highly capable in cylindrical, centerless and through feed applications where high surface roughness requirements are needed.

Usage:
- Dressing of vitrified bonded CBN wheels
- Dressing of conventional dressing wheels

Natural diamond and synthetic diamond:
- Random and pattern set diamond distribution
- High precision through grinding the diamond layer
- Variety of shapes to suit all machines/applications
- Design gives a constant cutting width ($b_d$)
- Several relaps possible
- Volume layer
  - minimum layer width 0.8 mm
    (only cylindrical)
  - maximum outer diameter 150 mm
  - maximum layer depth 10 mm
  - constant layer width

Examples:
Direct plated CNC dressers of this type have a well established pedigree. They are made using a single diamond layer giving a constant grinding width.

Core material is either steel or bronze.

Usage:
- Dressing of vitrified bonded CBN grinding wheels
- Dressing of conventional grinding wheels

Nature diamond:
- Maximum diamond concentration
- High roundness accuracy through finishing the diamond layer
- Constant layer width from a radial single layer
- Minimum radius size dependent on diamond grit size
- Variety of shapes to suit all machines/applications
- Standard dresser shapes held in stock
- Maximum outer diameter 340 mm
- Bore tolerances are H3

Examples:
Selection matrix for CNC dressers

This matrix is designed to help find the best suited dresser for an application. The choice of dresser depends on the machine/wheel specification, the geometry and the surface roughness required. The following is a guideline recommendation only.

(A team of technical support staff are available for a more detailed application enquiries, see back cover for details)

Can the wheel be dressed on the grinding machine?

YES

Does the grinding machine have the equipment for rotary dressing?

YES

Does the grinding machine have a CNC controller?

YES

What grinding wheel specification will be dressed?

Vitrified bonded wheel
Diamond grinding wheel

Vitrified bonded CBN grinding wheel

Conventional grinding wheels

What type of profile will be dressed?

Concave/Convex

Convex/Cylindrical

Concave/Convex

Convex/Cylindrical

DDS

SG / SD / DDS

SG / SD

TS

TS / SD / UZ / SG

NO

External profiling

NO

Stationary dresser

NO

Dedicated Profile dresser
Stationary dressing tools for CNC dressing

<table>
<thead>
<tr>
<th></th>
<th>Needle Blade Natural diamond</th>
<th>Needle Blade Synthetic diamond</th>
<th>Blade with Natural diamond grit</th>
<th>Multi-Point Dresser Natural diamond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle Head (profile) grinding</td>
<td>XX</td>
<td>XXX</td>
<td>X</td>
<td>unsuitable</td>
</tr>
<tr>
<td>Plunge grinding</td>
<td>XX</td>
<td>XXX</td>
<td>X</td>
<td>unsuitable</td>
</tr>
<tr>
<td>Internal grinding</td>
<td>XX</td>
<td>XXX</td>
<td>XX</td>
<td>X</td>
</tr>
<tr>
<td>Centerless through feed grinding</td>
<td>XX</td>
<td>X</td>
<td>XXX</td>
<td>XX</td>
</tr>
<tr>
<td>Flat grinding</td>
<td>XX</td>
<td>-</td>
<td>XXX</td>
<td>XX</td>
</tr>
</tbody>
</table>

XXX = first recommendation, XX = second recommendation, X = third recommendation.

Stationary CNC dressers are very easy and flexible to use and are a low cost option.

Saint-Gobain has a standard range of blades tools which use natural and synthetic diamond and which are suitable for any technical / cost requirement.

Examples

Blades Tools using natural diamond grit:
For economic dressing with high consistency. Useable diamond layer length of 15mm gives long life.

Multi-Point Dresser:
Very economical tool for straight dressing with high dressing speed and low technical demands.

Blades tool with synthetic monocrystalline diamond (MCD)
Capable of the highest demands of repeatability and surface finish. Used to dress microcrystalline Al2O3 Wheels.

Blades tools with synthetic multicrystalline diamond CVD
Economical for highest demands on repeatability and consistancy of dressing.
Stationary dressing tools
for contour controlled dressing

Dressing of profiles with blade tools:
Dressing tools use ‘needle’ form natural or synthetic diamonds.
Needle diamonds are especially suited to dressing profiles using infeed and angular infeed.

Natural diamond:
An effective diamond layer width up to 15mm gives a very economic dressing solution.

Using precise diamond setting patterns, it is possible to overlap rows of stones to ensure that consistent dressing results are achieved.

Synthetic diamonds:
The constant cross section given by rows of synthetic diamonds, guarantee a constant dressing behaviour through the complete life of the dressing tool.

Straight dressing with Multi-Point blade tools:
The hard-wearing nature of diamond grit combined with a special setting pattern, which is matched to the application, gives a constant dressing behaviour with a long life.

Multi-Point blade tools:
A blade tool using a single layer with diamond setting matched to the process requirements. These can dress a grinding wheel giving repeatable results and with a high surface roughness.

These dressing tools are very robust and efficient where low dressing requirements are needed.

### Selection of grit size

<table>
<thead>
<tr>
<th>Grit size of grinding wheel</th>
<th>Synthetic diamond size</th>
<th>Natural diamond size</th>
</tr>
</thead>
<tbody>
<tr>
<td>46 46 bis 60 80 bis 100 120 bis 240</td>
<td>1 x 1 0,8 x 0,8 0,6 x 0,6 0,4 x 0,4</td>
<td>NT100 NT100 NT100 N800</td>
</tr>
</tbody>
</table>

### Selection of grit size

<table>
<thead>
<tr>
<th>Grit size of grinding wheel</th>
<th>Diamond Igel</th>
<th>Diamond blade tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>36 bis 46 46 bis 54 54 bis 80 80 bis 120 120 bis 180</td>
<td>D2240 D1001 D711 D426 D301</td>
<td>D1181 D1001 D711 D501</td>
</tr>
</tbody>
</table>
Diamond dressing pins and cups for small grinding wheels

Diamond dressing pins and cups are suitable for dressing small internal grinding wheels.

**Diamond dressing pins**

**4BZ 07B**

**50S 07B**

**Diamond dressing pins**

<table>
<thead>
<tr>
<th>Shape</th>
<th>D</th>
<th>T</th>
<th>X</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>4BZ 07B</td>
<td>15</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>50S 07B</td>
<td>15</td>
<td>10</td>
<td>4</td>
<td>30</td>
</tr>
</tbody>
</table>

Grit size: D301, D426
Bond: BZ 387.1, G825
Concentration: C135, S33
Order No.: 66260100343, 60157644198

Application:
For dressing vitrified CBN grinding wheels.

**Dressing spindles ‘Revolution 33 ae’**

This system is for dressing vitrified CBN grinding wheels in internal grinding applications. It controls dressing by evaluating the acoustic signal emitted.

**Shape:**

6A9/5
Order No.: 1011375

Dimensions: 15 x 13 x 7 mm

**Shape:**

11V2/5
Order No.: 128360 Z

Dimensions: 18 x 20 x 7 mm
Dressing parameters can heavily influence the grinding characteristics of a wheel. The dressing of grinding wheels using a contour-controlled dressing tool enables a quick and flexible solution. It allows the roughness and geometric form of the grinding wheel and consequently the surface quality, profile accuracy and grinding forces to be influenced.

The results of dressing are influenced by the radial dressing amount $a_d$ and the axial dressing feed rate $f_{ad}$.

The dressing feed rate is closely linked to the diamond grit size, an important factor for the dressing result.

The active dressing contact width $b_d$ and the associated overlap factor $U_d$, influence the roughness $R_t$ of the grinding wheel.

The dressing results from a rotary CNC dresser are additionally influenced by the dressing speed ratio $q_d$ and the rotation direction [uni direction (GL) or counter direction (GGL).] Note also the importance of the correct coolant volume and direction and the associated coolant filtration system.

### Characteristics of the conditioning process

<table>
<thead>
<tr>
<th>Control parameters:</th>
<th>Process parameters:</th>
<th>Target parameters:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specification of grinding wheel</td>
<td>Dressing forces</td>
<td>Grinding wheel profile</td>
</tr>
<tr>
<td>Specification of dressing tool</td>
<td>Acoustic emission signals</td>
<td>Runout of the grinding wheel</td>
</tr>
<tr>
<td>Conditions of cooling</td>
<td>Power of the grinding and dressing spindles</td>
<td>Active roughness of grinding wheel</td>
</tr>
<tr>
<td>Dressing parameters:</td>
<td></td>
<td>Dressing wear ratio</td>
</tr>
<tr>
<td>- overlap factor $U_d$</td>
<td></td>
<td>Component quality</td>
</tr>
<tr>
<td>- dressing speed ratio $q_d$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- wheel peripheral speed $v_s$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- infeed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The dressing speed ratio \(q_d\) between the grinding wheel and rotary dresser has a high influence on the topography of the grinding wheel and consequently the dressing and grinding result.

\[
q_d = \frac{v_r}{v_{sd}}
\]

### Speed ratio \(q_d\):
- **Uni directional**: \(+0,5 \ldots +0,85\)
- **Counter directional**: \(-0,5 \ldots -0,85\)

Vitrified CBN grinding wheels should always be dressed using uni directional dressing.

The different dressing forces are explained by the different paths (cycloids) of the grinding wheel relative to the rotary CNC dresser:

**Dressing at uni directional (GL):**
Dressing in uni directional gives a diamond trace with a shorter path (epicycloids), generating a high aggressive roughness \(R_{ts}\) on the grinding wheel.

- Higher influence on the topography of grinding wheel
- Higher dressing forces
- Higher stresses on the rotary dresser

**Dressing at counter directional (GGL):**
Dressing in counter directional gives a diamond trace with a longer path (hypocycloids) generating a lower roughness \(R_{ts}\) on the grinding wheel.

- Lower influence on the topography of grinding wheel
- Lower dressing forces
- Lower stress on the rotary dresser

**If possible, dress at grinding speed**

- Preventing dynamic unbalance
- Rotary dresser illustration on the grinding wheel
- Patterns on the component surface

**Not a whole-numbered ratio \(n_s : n_D\)**

\[
q_d = \frac{v_r}{v_{sd}}
\]
In addition to the geometric accuracy of the grinding wheel, it also plays a prominent role in influencing the active roughness $R_{ts}$ of the grinding wheel. The active roughness defines the surface quality ground on the component. Rotary and stationary dressers are controlled by an axial feed rate $f_{ad}$ over the dressed area of the grinding wheel. Contour-controlled dressing has the additional advantages of allowing different feed rates within one dressed profile. Straight faces within a profile should be dressed with a smaller overlap factor $U_d$ to eliminate burning.

The overlap $U_d$ is defined as the number of revolutions a grinding wheel moves until the actual contact width $a_{pd}$ ($dk$) of the dressing tool is shifted exactly once in the direction of the feed.

$$U_d = \frac{a_{pd}}{f_{ad}}$$

**Principles:**
- Grit size of the dressing tool should be 2-3 times the grit size of the grinding wheel.
- Overlap factor $U_d$:
  - Roughing = 2 - 4
  - Semi-finishing = 4 - 8
  - Finishing = 8 - 20
Dressing infeed ($a_{ed}$)

Is defined as the infeed per revolution of the wheel in the direction of the grinding wheel.

The total dressed amount $a_{ed\ total}$ is for the complete truing cycle which includes both roughing and finishing:

Dressing infeed for corundum grinding wheels:
- Grinding wheels with corundum:
  - Total dressing amount $a_{ed\ total}$: 20 µm - 40 µm, according to the grit size of grinding wheel
- Grinding wheels with special corundum:
  - Total dressing amount $a_{ed\ total}$: 10 µm - 20 µm, according to the grit size of grinding wheel

Dressing infeed vitrified CBN grinding wheels:
- The maximum dressing amount $a_{ed\ total}$ per dressing cycle is 10% of the average grit diameter of the grinding wheel
- Dressing amount per dressing feed rate $a_{ed}$: 1 µm – 3 µm

Example:
A wheel containing B126 grit has an average grit diameter of 126µm, therefore the infeed $a_{ed\ total}$ = 126 µm

General details:
- Never dress without infeed $a_{ed}$
- To improve cost effectiveness it is advisable to have an acoustic dressing sensor
- Note the importance of the correct coolant volume and direction and the associated coolant filtration system.

There is a difference in the dressing infeed amount between conventional and vitrified CBN grinding wheels:

Grinding with conventional grinding wheels
- Dressed topography
- Grit protrusion high
- Active surface roughness high
- Grinding forces low
- Wear High
- Grit size High

Grinding with vitrified CBN grinding wheels
- Dressed topography
- Grit protrusion low
- Active surface roughness low
- Grinding forces high
- Washed Out
- CBN grit

General:
As dressing infeed increases, the active surface roughness of the grinding wheel increases.
When using diamond form dressers for dressing vitrified CBN or vitrified diamond wheels, a high precision dressing spindle is recommended.

The Acoustic emission device is positioned in the dresser / grinding wheel zone. The Sensor monitors and controls the complete dressing cycle.

The non-contact measuring and monitoring of the Acoustic Emission Signal ensures a low wheel wear and obtains the correct grit protrusion.

Minimal dressing amounts give optimised tool costs. This, combined with a continuous regulated dressing and grinding process, ensures a high process stability.

**Advantages of an Acoustic Emission Device:**

- Visualisation of a grinding process
- Optimisation of a grinding process
- Identification of “non productive” process time
- Process time reduction
- Increased tool life
- ‘Weak-point’ analysis
Process Analyser

It is important for every customer to understand and analyse his production processes. By doing this it is then possible to develop the optimal grinding process. By using our FIS and MDress equipment we are able to identify potential improvements in your grinding process. Conventional grinding wheels with white corundum or special corundum, as well as CBN or diamond grinding wheels, have to be dressed to achieve the tolerance limits for surface finish and profile accuracy.

FIS (Field Instrumentation System)
The Field Instrumentation System (FIS) from Saint-Gobain is a portable system for monitoring and measuring grinding processes. The FIS collects the critical data which contributes to the optimisation the grinding process. FIS can be used successfully in all dressing and grinding processes to reduce cycle time and wheel wear. Other applications are in machine and process studies as well as investigation and comparison exercises for benchmarking.

Instrumentation for process monitoring
- Easily transportable
- Modular design
- Connection to PC (laptop)

Measuring modules
- Spindle power
- Feed length and speed
- Acoustic Emission
- Up to 8 channels available

MDress – machine tuning for better grinding processes
Dressing of conventional and vitrified diamond and CBN wheels is now possible on production machines which are not equipped with dressing spindles and Acoustic Emission Systems.

With the mobile dressing unit “MDress” from Saint Gобain Diamantwerkzeuge, almost any conventional grinding machine can be can be re-tooled with a rotary dresser. “MDress” is used at the customer, in order to be able to advise on a more efficient method of dressing and the optimisation of the dressing parameters.

The dressing spindle is optimised in consideration of concentricity, dynamic rigidity, spindle power and AE. The main features of the precision dressing spindle are very low noise levels, excellent concentricity and running. The Acoustic Sensor is integrated with the dressing spindle.

“MDress” consists of:
- Acoustic Emission System M 5000, Fa. Dittel, Landsberg
- Dressing spindle AS 72 x 225 F/015, Fa. Steinmetz, Karlstein
- DDS- form roller Ø 120 mm, Saint-Gobain Diamantwerkzeuge, Norderstedt

Services required are:
1) An air pressure line (1 bar) for positive pressure. (to keep out contaminants)
2) 230 volt supply
# Checklist for contour-controlled dressing tools:

| Customer: |  
| Customer number.: |  
| Machine: |  
| machine type: |  
| maximum outer diameter of the roller dresser (mm): |  
| present dressing tool: |  
| Dressing device: |  
| diameter (mm): |  
| length dimension for mounting (mm): |  
| Workpiece: |  
| workpiece drawing: |  
| surface finish required: |  
| stock to be removed (mm / Ø): |  
| Grinding wheel: |  
| specification: |  
| dimensions: |  
| Application parameters: |  
| profile or straight grinding: |  
| Cutting speed (m/s) |  
| or Numbers of revolutions (RPM/min⁻¹): |  
| Dressing roller speed (m/s) |  
| or Number of revolutions (RPM/min⁻¹): |  
| Uni-directional (GL) / counter directional (GGL) |  
| Radial dressing infeed each pass (a_{ed}): |  
| Axial infeed speed (f_{ad}): |  

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