Electroplated Diamond Wheels for Ductile and Gray Iron Grinding
CASE STUDY

ENGIS ® SINGLE-PASS PROCESS
ELECTROPLATED WHEELS BOOST
PRODUCTIVITY IN GRINDING TASKS

APPLICATION:
Robotic grinding cells in foundry cleaning rooms at Grede Foundries, Inc.

OBJECTIVE:
Reduce costs and improve operator safety.

SOLUTION:
Replace conventional bonded wheels with Engis Dia-ForZ® Electroplated grinding wheels.

BENEFITS:
• Wheels can be operated safely at higher running speeds.
• The chip load on each diamond abrasive grain is reduced, less wear occurs extending the life of the wheel.
• Electroplated wheels do not need to be dressed or reconditioned increasing uptime.
• The robot does not need to compensate for changes in wheel size.
• Eliminates the cost of disposing used wheel hubs. Electroplated diamond wheel blanks can be replated with new abrasives multiple times.

BENEFITS OF USING ENGIS DIA-FORZ® ELECTROPLATED DIAMOND WHEELS

For many years, foundries have used conventional Zirconia Alumina and Aluminum Oxide grinding wheels for removing parting lines, risers, and cleanup of gray and ductile iron castings. These operations were performed manually, which was labor intensive and potentially hazardous work, as conventional grinding wheels sometimes failed catastrophically during operations leading to severe injuries to the operator.

The benefits of the Engis Dia-ForZ product range over traditional resin bonded wheels include:
• Increased safety, solid wheel body will not break or come apart due to rough handling or over speeding.
• Increased cutting action results in better ergonomics and less operator fatigue.
• Longer wheel life resulting in higher productivity and lower costs.
• No loss of wheel diameter or peripheral wheel speed due to wheel wear.
• No dressing required.
• Virtually no measurable airborne particles released.

Engis is a leader in the manufacture of plated diamond wheels for Robotic Grinding Cells, including Barinder, Vulcan and Maus systems.

Engis introduced Engis Dia-ForZ diamond wheels and grinding products to the foundry industry in 2010, and with over 40 years’ experience in the plated tool business, Engis is capable of manufacturing electroplated wheels to almost any shape and design to meet your most demanding applications.
ENGIS DIA-FORZ® DIAMOND BURRS
FOR HAND GRINDING OPERATIONS

Dia-ForZ diamond plated burrs offer significant advantages over standard solid carbide burrs for foundry applications.

- As diamond is the hardest material known to man, Engis Dia-ForZ diamond plated burrs provide up to five times longer life than carbide burrs.
- Diamond cuts faster than carbide.
- Excellent to remove burnt-on sand.
- Customized shapes are available.
- Better ergonomics result in less fatigue for your operator.
- Coarse, medium and fine grit diamond sizes allow selection of the best specification suited for your removal rates and finish requirements.

Engis Dia-ForZ burrs can be replated with new, fresh diamond abrasive, making it an environmentally friendly “green” product, as there is less if any, waste to dispose.

Engis Dia-ForZ® product range includes:
- Portable Type 1, Type 6 and Type 27 versions
- Stand Grinding Wheels
- Cut-off Wheels
- Burrs
- Wheels for Robotic Cells

MAKING CLEANING ROOM SAFER AND MORE PRODUCTIVE

APPLICATION:
Hand grinding castings at Waupaca Foundry

OBJECTIVE:
Maintaining operator safety when hand grinding parts in its cleaning rooms. Remove risk of bonded abrasive breakage. Current throughput needs improvement.

SOLUTION:
Remove risk of bonded wheel breakage using Engis Dia-ForZ wheels.

RESULTS:
- Tests at Waupaca Foundry cleaning room demonstrated that Engis Dia-ForZ wheels lasted at least 15 times longer than the standard aluminum oxide resin bond wheels.
- Eliminated the risk of grinding wheel breakage.
- Longer wheel life resulted in less wheel change out time per operator and when multiplied across all operators a significant gain was achieved.
- Greater operator comfort and reduced fatigue due to reduced wheel vibration.
- Diamond plated wheels produce substantially less airborne particles as they wear improving overall worker health and productivity.
Did You Know

ENGIS DIA-FORZ® Wheels Can:

- Reduce Vibration, Reduce Operator Fatigue
- Reduce Airborne Particles
- Recyclable, Reduce Disposal Cost
- Consistent wheel speed and wear rates provide greater stability.

ADVANCING PROCESS. DEVELOPING NEW PRODUCTS.

Our team of product engineers continuously works on new Dia-ForZ products to complete our product offering for you. We are also looking at casting materials beyond gray and malleable iron such as carbon steel, stainless steel, brass, high-nickel alloys, and aluminum.

All our products and engineered, designed and manufactured in the USA at our family-owned company in Wheeling, Illinois.
DIAMOND EXPERTISE

At Engis, our teams have extensive expertise in the fundamental science and use of diamond and related superabrasives. This knowledge, coupled with our process development labs, permits us to develop leading-edge products of superior quality such as diamond slurries, engineered diamond compound, and electroplated grinding wheels and honing tools.

We have a global presence that offers full support to our customer base. Our technical support and sales outlets can be found throughout Europe, Canada, Mexico, India and Asia. It is through the professionalism and motivation of our global staff that we realize this goal, resulting in the development of a mutually beneficial business relationship with you.

At Engis we work together to design grinding products for even the most demanding applications. It includes the grinding of gray iron parting lines, threading of fiberglass oil field pipe, precision grinding of high nickel alloy jet engine components, or the final pass on surgical needles. Engis has been certified to ISO 9001:2015 Quality Standards.

Engis can also refurbish and replate existing wheels regardless of the source of the blank, offering significant cost savings over the purchase of new wheels and tools.

Contact your Engis Regional Sales Manager or local distributor to discuss how we can provide solutions for your challenging applications.

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