A PARADIGM SHIFT IN BOND TECHNOLOGY

- COOL CUTTING
- LONG WHEEL LIFE
- EASY TO DRESS
PARADIGM: SHIFTING THE LIMITS OF PRECISION GRINDING

This revolutionary bond platform features an exclusive chemistry that delivers an entirely new grain adhesion science, resulting in improved product versatility across a wide range of precision grinding applications.

REVOLUTIONARY BOND TECHNOLOGY

Through Saint-Gobain’s research and development programme comes a ground-breaking porous metal bond platform featuring exclusive diamond adhesion science.

FEATURES & BENEFITS

1. COOL CUTTING: HIGHLY POROUS METAL BOND

- Less friction and significantly reduced burn
- Lower residual stress
- Increased cutting efficiency and material removal rate
- Improved coolant flow, reducing heat build-up and wheel loading
- Improved chip clearance
- Reduction of spindle power consumption of up to 50%

Paradigm’s high porosity inside the metal bond allows cool cutting due to reduced bond-to-work piece interaction. This reduces friction and therefore heat generation, improving part quality and providing higher productivity.

2. LONG PRODUCT LIFE: EXCLUSIVE DIAMOND ADHESION SCIENCE

- Excellent grit retention
- Free cutting action
- Extended wheel life
- Higher profile stability
- Increased wear resistance
- Higher material removal rates – up to 60%

UP TO 46% POROSITY EXCLUSIVE DIAMOND TO BOND ADHESION PROCESS; DIAMOND AND BOND FUSED TOGETHER

= GREATER EXPOSURE OF DIAMOND PARTICLES

= LOWER CUTTING ENERGY WITH HIGHEST QUALITY PART EDGES AND FINISH
3. EASY TO PROFILE: ONLINE TRUING AND DRESSING

- Profile the wheel on the machine, saves time
- Improved geometric accuracy
- Dress complex profiles
- Reduced machine downtime
- Reduction of dressing forces by up to 90%

Paradigm combines the wear resistance of a metal bonded wheel together with the ease of profiling a vitrified bonded wheel, to provide the ultimate precision grinding tool for maximum productivity.

The diagrams below show the positioning of Paradigm versus traditional diamond grinding wheels.

THANKS TO THE POROUS BOND, PARADIGM WHEELS CAN BE DRESSED EASILY ON THE MACHINE FOR HIGH GEOMETRIC ACCURACY, EXCELLENT RUNNING SMOOTHNESS AND ULTIMATELY, HIGHER THROUGHPUT.
**FLAT PROFILE GRINDING**

**MARKETS**
- Composites/Ceramics
- General Engineering
- Electronics
- Tool Manufacturers
- Optics

**APPLICATION CHARACTERISTICS**
- Medium to large contact area
- Complex profiles required
- Creepfeed conditions

**MATERIALS**
- Ceramics
- Technical and Optical Glass
- Ferrites
- Tungsten carbide

**BENEFITS OF PARADIGM IN FLAT PROFILE GRINDING**
- Loss friction between the wheel and the work piece resulting in less heat generation
- Excellent coolant access to the grinding zone for cooler grinding
- Easy to dress and profile whilst the wheel is on the machine

**FACE / SIDE GRINDING**

**MARKETS**
- Composites/Ceramics
- General Engineering
- Electronics
- Tool Manufacturers
- Optics

**APPLICATION CHARACTERISTICS**
- Large contact area
- Low grit load
- High friction

**MATERIALS**
- Ceramics
- Technical and Optical Glass
- Ferrites
- Tungsten carbide

**BENEFITS OF PARADIGM IN FACE / SIDE GRINDING**
- High porosity
- Less heat generation, reducing risk of burn
- Versatile bond platform, bond characteristics can be adapted
- Low grinding forces

**CASE STUDY**

**FLAT GRINDING**

**Machine:** Blohm Profimat
**Grinding Wheel Dimension:** 1A1-350-15-5 127
**Specifications**
- Paradigm: MBEP320 D176 P100 C
- Resin Bond: D54 K+ 1414 N C75
- Material: Aluminium Oxide
  - Dimensions: L = 250,6 mm, B = 26 mm
  - Parameters:
    - \( v_c = 20 \text{ m/s} \)
    - \( v_f = 300 \text{ mm/min} \)
    - \( a_e = 3 \text{ mm} \)
    - \( Q_w' = 15 \text{ mm}^3/\text{mm} \)

**RESULTS**
- Grinding Forces Reduced by 60%

**FACE / SIDE GRINDING**

**FIXED OR**

**MATERIALS**
- Ceramics
- Technical and Optical Glass
- Ferrites
- Tungsten carbide

**MARKETS**
- Composites/Ceramics
- General Engineering
- Electronics
- Optics

**APPLICATION CHARACTERISTICS**
- Large contact area
- Low grit load
- High friction

**MATERIALS**
- Ceramics
- Technical and Optical Glass
- Ferrites
- Tungsten carbide

**BENEFITS OF PARADIGM IN FACE / SIDE GRINDING**
- High porosity
- Less heat generation, reducing risk of burn
- Versatile bond platform, bond characteristics can be adapted
- Low grinding forces

**CASE STUDY**

**FLAT GRINDING**

**Machine:** Blohm Profimat
**Grinding Wheel Dimension:** 1A1-350-15-5 127
**Specifications**
- Paradigm: MBEP320 D176 P100 C
- Metal Bond: D54 DMC C75
- Material: Tungsten Carbide KXF
  - Dimensions: L = 80 mm, B = 7 mm
  - Parameters:
    - \( v_c = 15 \text{ m/s} \)
    - \( v_f = 350 \text{ mm/min} \)
    - \( a_e = 3 \text{ mm} \)
    - \( Q_w' = 17,5 \text{ mm}^3/\text{mm} \)

**RESULTS**
- Grinding Forces Reduced by 20%