

Economic grinding on automatic grinding machines

with Diamond Tools



Economic grinding of castings

In co-operation with



1 year test phase at
Fonderie del Montello



Product line
launched in 2003



Requirements for automatic fettling

- High life time
- Short grinding time
- No or minimal workpiece heating
- Reduced or no dressing cycles and edge stability
- High safety against wheel breakage
- No rework after fettling

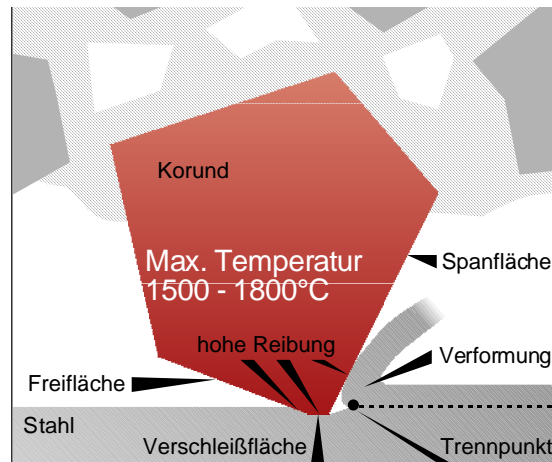


Grinding with diamond tools

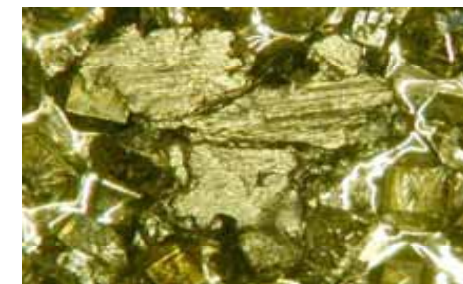
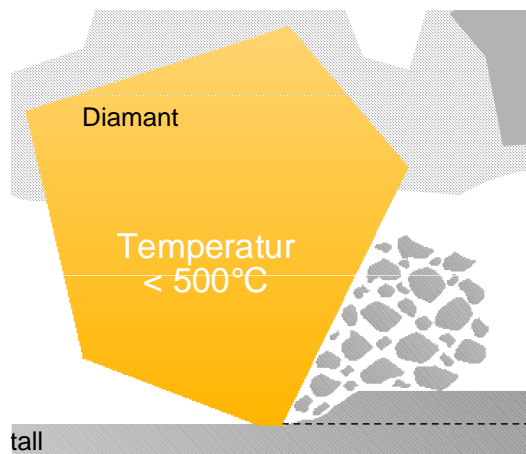
Temperature must be kept low !!!

Only short chipping material (GG)

Conventional tools



Diamond tools

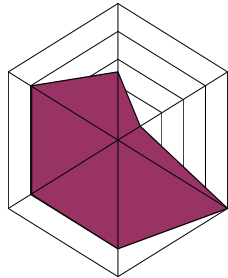


Otherwise: clogging of material, followed by blue surface and destroying of the grinding layer

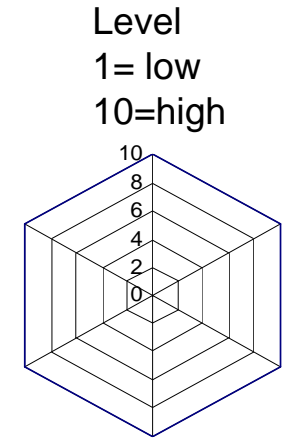
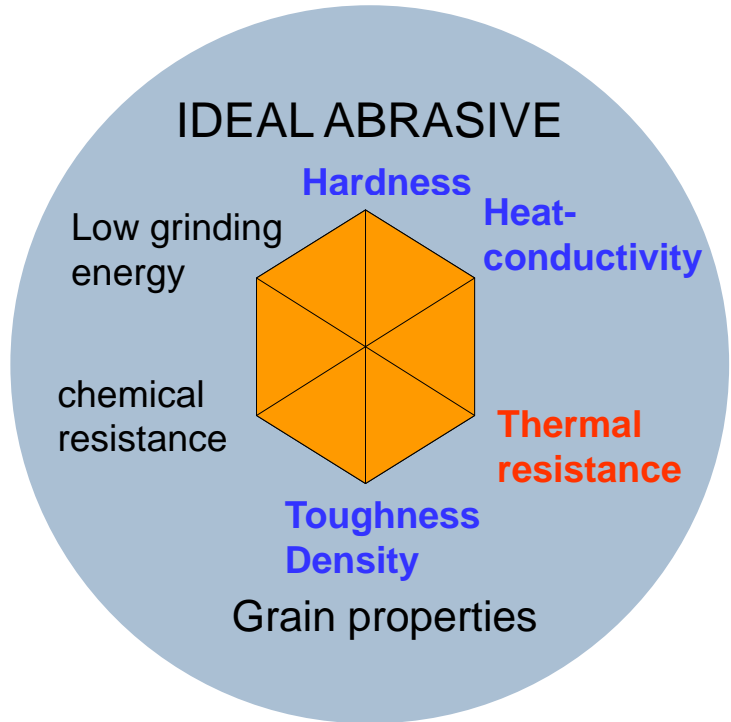
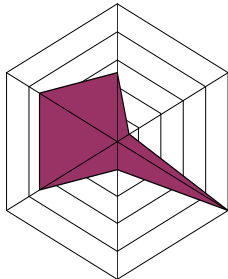
➡ **Find the right grinding parameters**

Why the use of diamond tools?

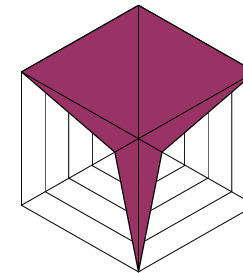
Zirconia Corundum



fused corundum



Diamond



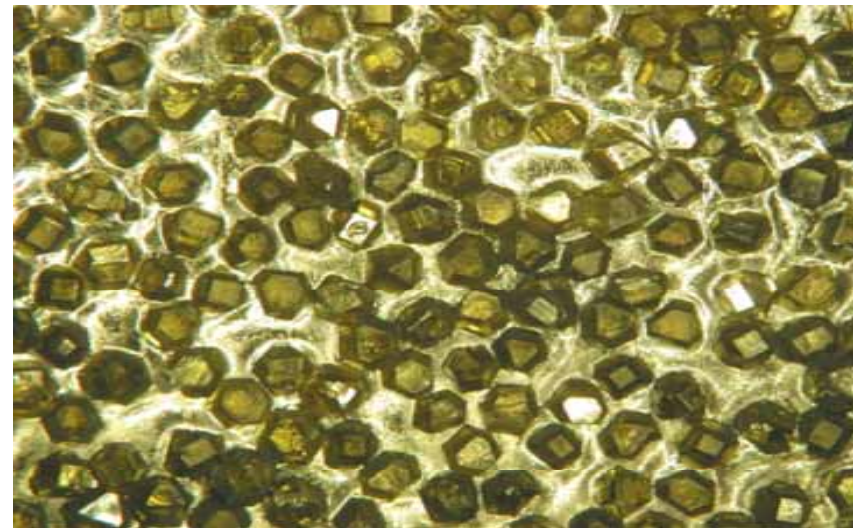
Construction of diamond tools

- Steel body
- Diamond monolayer bonded by an electroplated nickel layer or other bonding technology



tool optimization

- Diamond quality and grid size
- nickel quality and embedding height
- geometry of the tool surface, e.g. slots



Machine parameters / risks

Adaptation of machine parameters

- Avoid too long contact time

Risks when grinding big cross sections

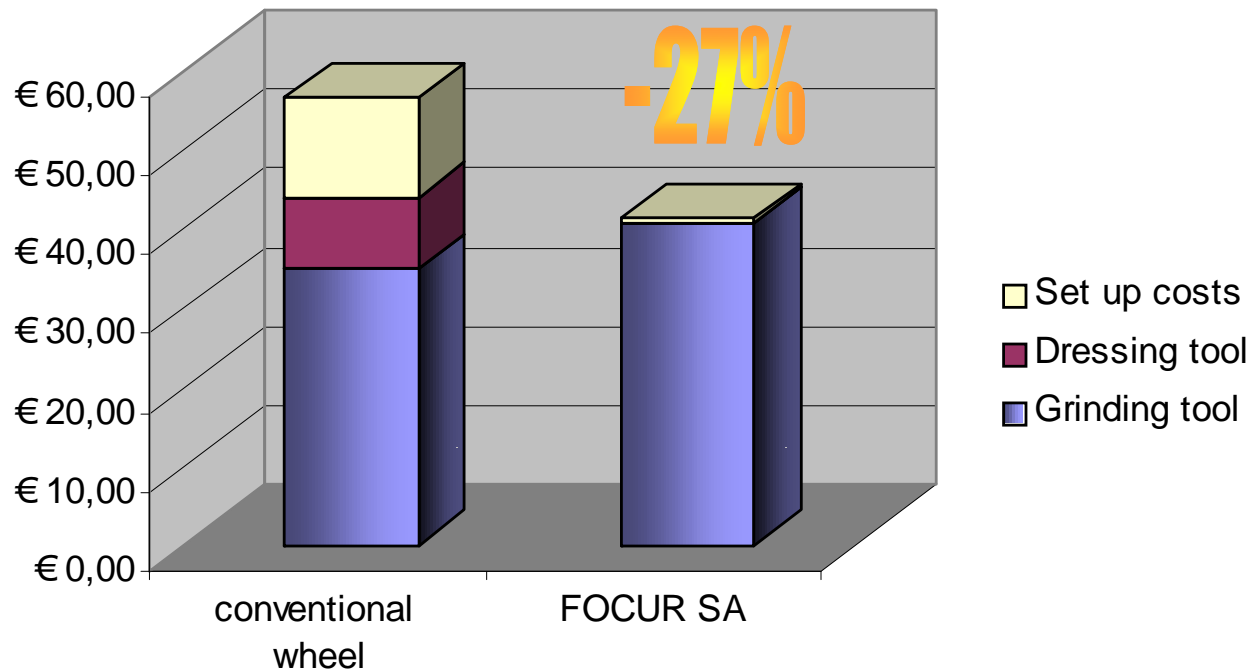
- Discoloration
- Wheel clogging



We support you with application engineers to optimize your grinding process

Application example – cost savings through FOCUR SA used on a MAUS machine

German foundry – producing parts for the automotive industry



Application example – VIDEO FOCUR SA used on a MAUS machine

foundry – producing parts for the industry



Advantages of tools with super abrasives on MAUS machines

- Longer wheel life time
- More accurate conditioning
- Faster grinding times
- Lower set up costs
- Longer grinding intervals – no dressing necessary
- Easier machine construction
- No disposal costs
- Smaller stock necessary
- No wheel breakage possible



Product improvements through several years cooperation with MAUS

- Continuous improvement of the wheel construction
- More free cutting ability discontinued grinding surface (slots)
- Optimized diamond qualities
- Improved bonding behaviour
- Reduced wheel weight
- Adapted application parameters

Diamond cut off wheels – limits (in the past)

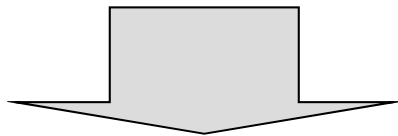
- Just small cross sections
- Destroy Diamond because of shock strain
- Wheel clogging
- Flaking of Nickel layer & Diamond
- Low stability



- Break down happened immediately (No warning signal)

Diamond cut off wheels – solutions

- Core adaptation for more stability
- Diamond quality improvement
- Parameter optimization



- Big cross sections possible
- Use for mass produce at some customers already
- Special advantage, when touching the work piece on a radius

Did we reach the limit already? NO !!!

- Just started with cut off grinding and motor block grinding
- Still room for improvements (machine, wheel & parameters)
- Data collection for more experience is just possible in a **teamwork** with machine builder, grinding wheel supplier and customer

System solutions – made by



and

