



PILLER

HighTech Cleaning Solutions

Clean Perfection



Deburring with high pressure

Intelligent, energy-optimised, forward-looking; that's the basis of the technology used for part cleaning in Piller deburring technology.

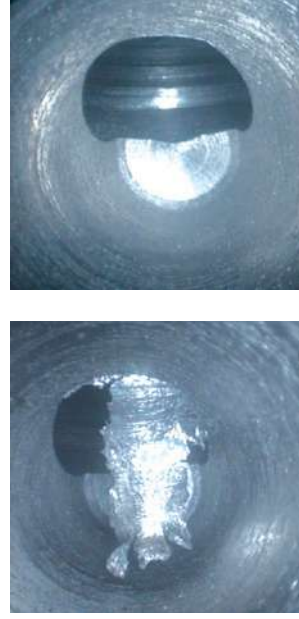
Since its founding in 1995, Piller Entgrattechnik GmbH has been a leading provider in the field of industrial high-pressure jet cleaning using water, cutting oil and coolant, with state-of-the-art machinery solutions that are optimally tuned to the respective customers' needs. With pressure levels up to 1100 bar (high pressure), patented procedures enable the water or cutting oil jet to be precisely aimed at the workpiece being machined, to remove burrs, chips and other contaminations. From the company headquarters in Ditzingen/Baden-Württemberg in Germany, we deliver our machines for industrial part cleaning all around the world to a broad range of industries – such as the automobile, and hydraulic industries, and pneumatic or medical technologies.

Creating new technological innovations, redefining the boundaries of feasibility in industrial cleaning technology, and reaching beyond them; that's our daily inspiration. With a continually expanding team, we develop efficient solutions for our customers and also for the demands and requirements of the future.



With patented high-pressure jet techniques, our systems achieve the best results on process-safe cleanliness and meet the most demanding requirements for residual contamination removal.

Our full service includes consultation and planning assistance provided by our expert engineers and project managers. With a solid foundation of knowledge about the industry and process, customised processing strategies are created based on specific demands. We use this knowledge to adapt one of our standard machines or we construct and produce a customer-specific system. Our service spectrum includes installation and complete Life-Cycle-Management with maintenance and repair service. Adaptations and expansions of existing systems are possible at all times.



before

after

With a comprehensive range of standard machines and virtually unlimited production possibilities for customer-specific systems, we cover a broad range of the most diverse and demanding industrial cleaning requirements in the technical industry. The most complex component shapes, smallest possible undercut boreholes/inlets and highly inaccessible regions are achievable for our deburring procedures.

We establish not only sub-processes such as deburring and cleaning, but can also efficiently map out the entire process including controlling and handling the component, covering the span from pre-cleaning, deburring, fine cleaning, to drying or cooling. We design the fixtures and water tools ourselves – because this way we can implement the individual processing strategies and achieve the best results in reproducible quality. So even the strict residual contamination requirements in VDA (Association of the German Automotive Industry) norm 19 for the automotive industry and suppliers are achievable with our innovative cleaning systems, even with short cycle times.



No chance for chips and burrs

- Highly innovative high-pressure jet cleaning with water, cutting oil and cooling lubricant
- Patented, unique high-pressure water jet techniques
- For all levels of impurities and highly complex shapes
- Flexibly applicable system concepts
- Specific and variable nozzle equipment
- For parts ranging from small to large, heavy components
- For manual or automated loading
- For moderate to high production quantities and broad product ranges
- For very fast loading processes in parallel to process time
- Adaptable to any space requirements
- Optimised solutions in terms of operational costs and process



JetBooster

- Minimum space required due to integrated design
- Complete with safety features including leakage collecting tray
- Variable arrangement with work unit
- Long service life due to slow-running pumps



Double chamber

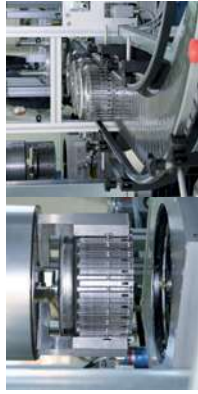
- Alternating operation between the loading and machining chambers
- Optimum utilisation of high-pressure pump
- Robust machine, well matched to fixture and nozzles optimised to suit individual components
- Automatic process selection due to integrated coding in the assembly



MultiJet

- Machining centre based on rotary transfer principle
- Fastest cycle times for smaller parts
- Highly specific adaptation of the jet process based on part shape results in efficient overall process
- Small space requirements





RoboJet

- Complete machining centre with integrated handling system with lightweight construction
- Hermetically closed jet chamber adapted to part with fixed nozzle design
- Integral part of the chain



RoboJet Twin

- Optimal use of the HP-process time ideal for radial symmetric parts due to mirrored configuration of two handling systems and two deburring chambers
- Loading of second process chamber during primary process time
- Integral part of the chain



VectorJet II

- Highly flexible for small and moderate product ranges
- Compact design requires minimum space
- Six-sided machining feasible
- Short cycle times due to customer-specific quick-change systems and manual workpiece loading



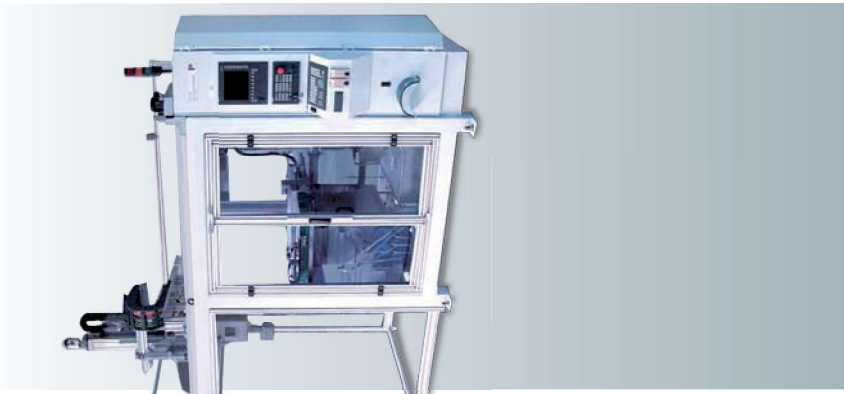
VectorJet III

- Loading in parallel to process time
- Six-sided machining for workpiece up to 250 kg
- Large machining area
- Simple automation possible (portal, robot or other handling systems)



VectorJet IV

- Highly flexible, horizontal NC water jet centre with swivel table and two rotary tables
- Very quick setup times, minimum space requirements
- HP pump unit and machining centre integrated in one frame construction



Spray cleaning systems

6

Our washing stations are developed based on the separate medium supply concept. This minimises media carry-over. Each process stage is comprised of a chamber with integrated container station and filtration. The short cycle times are forward looking thanks to state-of-the-art „full flow filtration“ in the media supply and return as well as the use of selected parts such as component-specific nozzles and rails. The design is modular.

The design is modular – e. g., the following components can be used:

- Chamber 1 = cleaning
- Chamber 2 = spray rinsing
- Chamber 3 = fine spray or conservation

Optional additional stations

- Blowoff station
- Vacuum drying
- Temperature adjustment (cooling)

Your benefits:

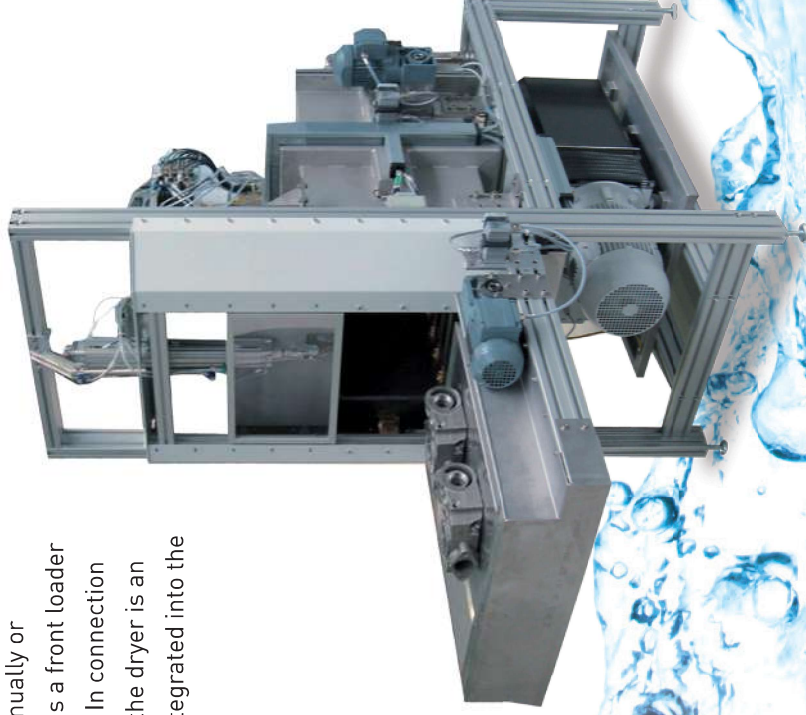
- Modular system design
- Can be expanded or reduced depending on changing demands
- Adjustable spray pressure and volume
- Various drying systems, blowoff and/or vacuum drying for perfect drying results, even with short cycle times and complex component shapes
- Can be linked with transfer systems (i. e., roller tracks, chain conveyors, etc.)
- Low operation costs, quick return on investment



Vacuum drying

The vacuum dryer is also available as an stand-alone component. Equipped with state-of-the-art vacuum pumps, it gives consistent optimal drying results for your components.

It can be loaded and unloaded manually or automatically. It is also available as a front loader and as a continuous feed system. In connection with our spray cleaning systems, the dryer is an important building block and is integrated into the machine set up.



Piller CleanCheck: Cleanliness requirements under control

In the last few years, the requirements for parts cleanliness have become increasingly tough and they will continue to become more demanding in the future. Today, the residual contamination analysis is a process separate from the production process.

The tested parts with „not OK“ results require time and cost intensive post processing – or in the worst case – recall programs. Now, with the Piller Clean-Check, there is an early warning system available that integrates a residual contamination analysis into the production process for the protection of process requirements.

Deviations could be recognised early on, and their causes are identified and eliminated. That means: higher quality, less waste, lower costs!

Complete solutions for complex requirements

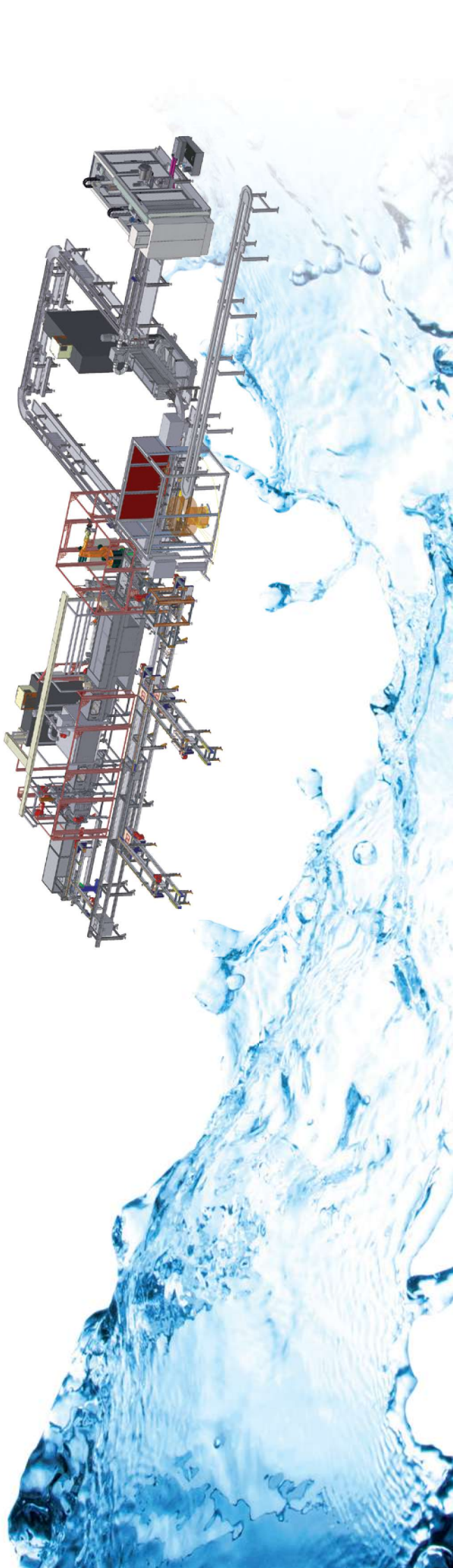
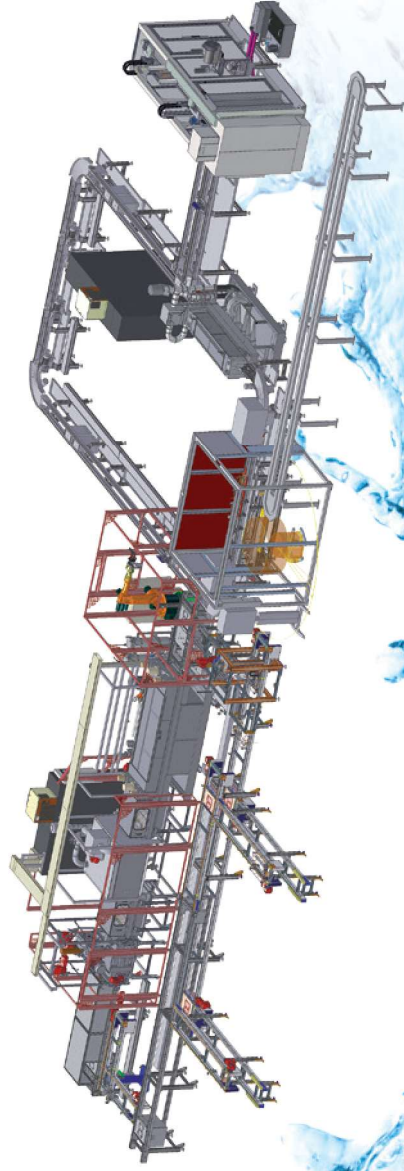
Do you need space-saving and energy-optimised systems, we develop with wide knowledge and long experience, systems and machinery, customised to your demands, or we integrate and adapt our standard modules into already existing systems. For flow production concepts or dimensioning of processing stations we work closely and trustily with other machine manufactures.

All our systems are equipped with state of the art safety features and can be integrated into with robots, robot-loading cells, portals, transfer units with conveyer belts.

Examples for integrated system solutions – step-by-step process overviews:

Fully automated solution for gear unit parts

- Initial positioning of the mechanically processed parts
- Transport by robot into the high-pressure circuit
- Pre-cleaning of the parts
- Beginning of the high-pressure water jet deburring in standard system RoboJet Twin – modular expansion in high-pressure circulation is possible
- Loading of the parts into baskets into the cleaning circulation by robot
- Fine cleaning
- Rinsing
- Blow-off
- Vacuum drying
- Continued indexing of the cleaned parts to the points of use



Flexible system for cleaning of various crankshafts

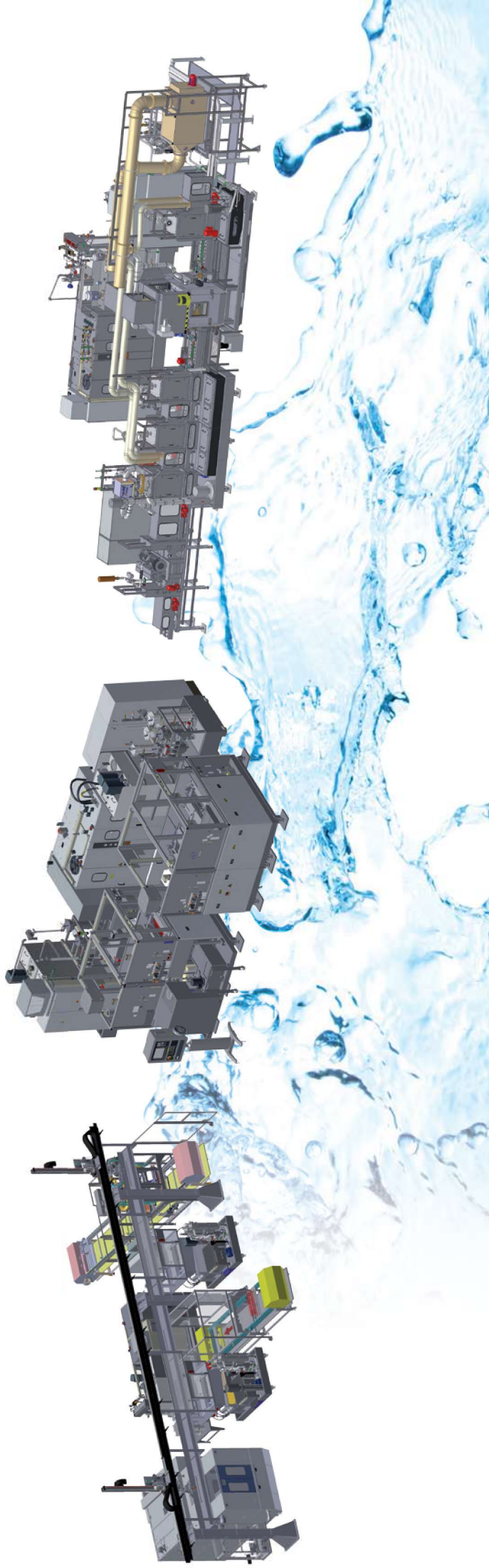
- ⇨ Delivery of the workpieces over a prism belt
- ⇨ Transportation of the crankshafts to the next stations by portal
- ⇨ Pre-cleaning of the crankshafts
- ⇨ Beginning of the high-pressure water jet deburring in standard system VectorJet III
- ⇨ Fine cleaning of the crankshafts
- ⇨ Depositing on the prism belt into the stations
- ⇨ Blow-off
- ⇨ Vacuum drying

Fully automated solution for crankshafts – Cleaning with oil

- ⇨ Initial positioning of the crankshafts
- ⇨ Transport by portal to the following stations
 - ⇨ Beginning of the high-pressure deburring in chamber 1 respectively chamber 2
 - ⇨ Fine cleaning
 - ⇨ Blow-off
- ⇨ Continued indexing of the cleaned crankshafts to the points of use

Pass-through system with integrated cleaning- and high-pressure water jet function

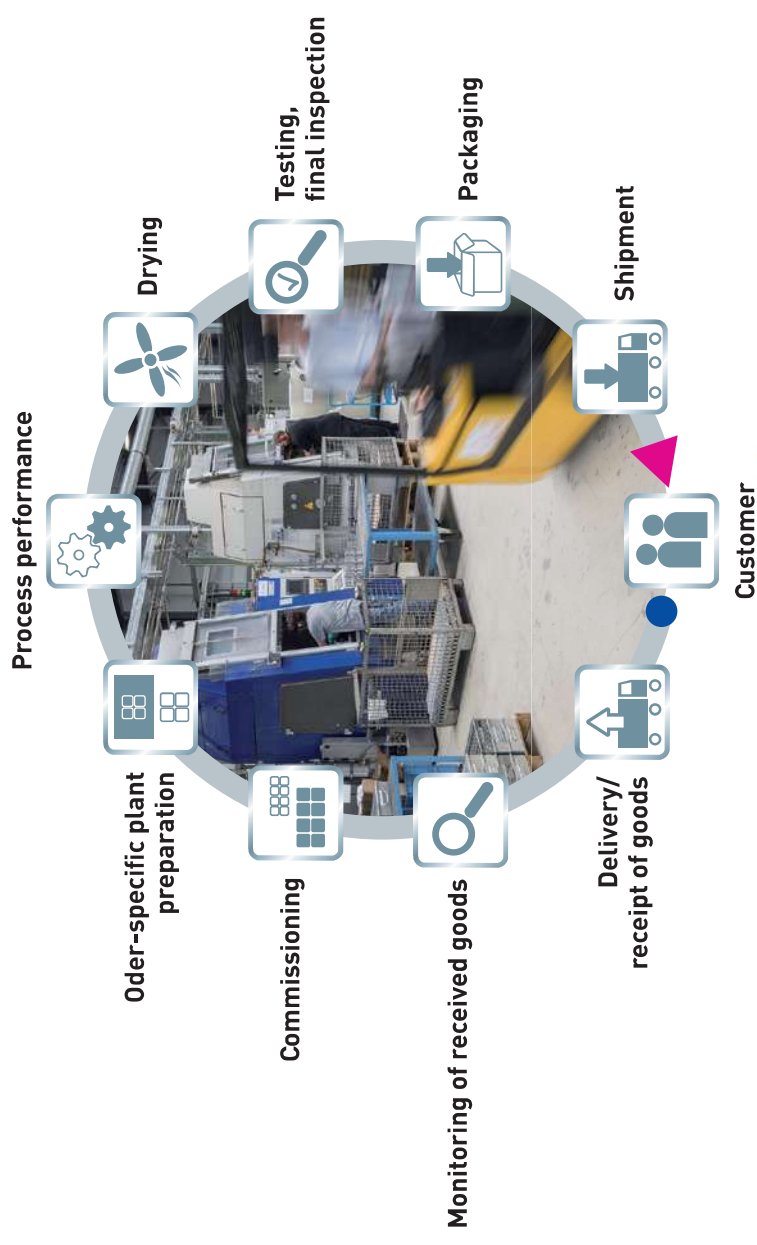
- ⇨ Initial positioning of the parts on the on site workpiece holder
- ⇨ Pre-cleaning of the parts
- ⇨ Beginning of the high-pressure water jet deburring
- ⇨ Cleaning of the deburred and chip-free parts
- ⇨ Transfer of the parts into the drying process
 - ⇨ Blow-off
 - ⇨ Vacuum drying
- ⇨ Process continuation to next point of use



Subcontracting deburring services for your parts: We will work at top speed!

For small quantities, tests for bridging delivery periods or low volume productions and in connection with ramp-ups, we are the service provider with expertise. We provide 100% precision deburring in 24 hours that will reliably comply with the standards from the automobile and hydraulic industries, pneumatic manufacturers and the field of medical technology. The extent of our services for this ranges from deburring and cleaning, testing, measurement assessment, to the documentation of the results.

The Pillar Performance Process



Your benefits:

- ISO-9001 certified
- Professional and inexpensive
- Maximum process safety
- Flexibility due to quick reaction times

Our Lab:

Everything under control. We not only claim to do perfect work, we can prove it through endoscopic and microscopic testing, surface roughness assessments and the corresponding documentation. See for yourself!



before



endoscopic

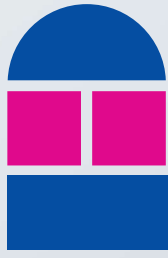


after



microscopic





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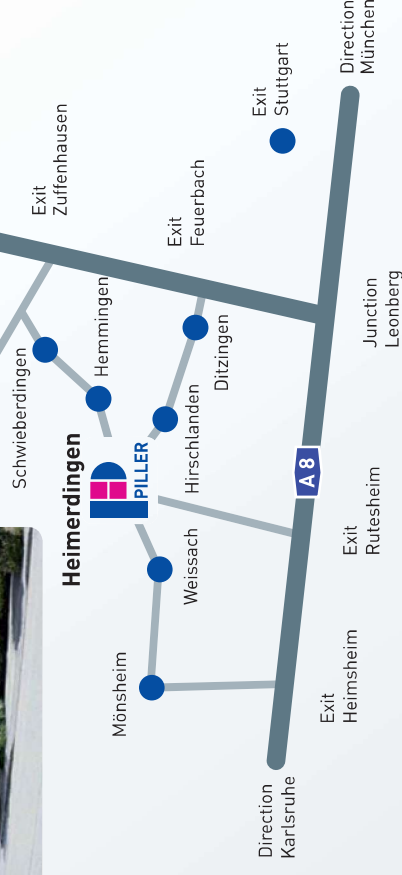
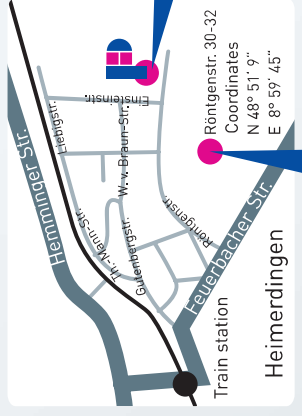
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Sustainably efficient

Our view is that efficiency and sustainability go hand in hand: With modern technology, we minimise operating costs – that applies not only to our machines, but also for the building. For the heating of our new production hall and office and conference rooms, we developed a system which uses process heat. If there is too much heat available, we store it below the base plate in the ground. This avoids additional costs for cooling the machines, or heating the work facilities and the office rooms.

A neat idea with a future!

