BvL
Oberflächentechnik

DYNAMIC TECHNOLOGY NEEDS FUTURE-PROOF CLEANING SOLUTIONS

Your specialist for cleaning processes in vehicle maintenance

A solid foundation for three strong pillars

BvL Oberflächentechnik GmbH is one of the leading suppliers of industrial cleaning systems. With its foundation in 1989, the company laid the cornerstones for what is now a quarter of a century of integrated products and services: from compact cleaning systems through filtration and automation solutions to complex large projects. Three strong pillars have emerged from this solid basis:

1. **Special system concepts for high efficiency**
2. **System components – customised for your requirements**
3. **Service – Personal. Flexible. Competent.**

Pure technology.

Bogies

PacificTA
GeyserC

Wheelsets

PacificER
GeyserC/P

Wheel bearings

OceanRW
YukonDA

Motors

OceanRW

Components

OceanRW
YukonDA
PacificTA

Consulting

Options
System components
Service

The brand in the field of parts cleaning for over 25 years

BvL Oberflächentechnik GmbH has in-depth specialist knowledge in system design for extreme applications. As specialists for cleaning processes in rail transport companies, we can draw on our multifaceted project experience from of a large number of national and international application solutions over the last two decades. Our systems are specifically tailored to the needs of maintenance personnel and guarantee many years of cleaning efficiency and therefore an effective maintenance process. The large number of satisfied customers stand for the trust placed in BvL.

Know-how provides quality

We supply innovative technologies for high cleanliness requirements. The core competences of our company and our employees' know-how provide reliability in all project phases. Certifications confirm our high standard of quality.
Knowledge breeds quality – proven testing processes guarantee it.

Trust

Trust is not given freely. It has to be earned.
As an owner-managed company we personally ensure compliance with our basic values. This includes a high level of commitment and the unconditional will to provide best possible results for the customer. This is the only way for us to achieve the constantly high quality of our products and services, creating trust and lasting partnerships.

Sustainability

Our cleaning systems feature a high level of energy efficiency.
Measures such as insulations and a special exhaust air management allow demonstrable energy savings. The systems in our production are heated with environmentally friendly solar power for test cleaning and pre-acceptance runs.

"TO US, RESPONSIBILITY MEANS CREATING HARMONY BETWEEN PEOPLE, MACHINES AND THE ENVIRONMENT."

Bernhard Sievering, General Manager / Owner

Special system concepts – high efficiency

High quality stainless steel systems for water based cleaning. Different cleaning processes and system technologies are ideally adapted to the individual requirements of the rail traffic companies. The very good cleaning result is achieved through temperature, high spraying pressure and volumetric flow as well as special nozzle systems in combination with ideally composed cleaning chemicals. Thorough cleaning is the only way to allow all further work such as maintenance, servicing, painting or quality and crack testing.

- Very good cleaning results
- No thermal or mechanical strain on the surface
- High level of automation creates easy handling and efficiency
- Easy maintenance
- Option of adapting the cleaning nozzles and nozzle frames to the cleaned components
- Individual adaptation of permitted loads and dimensions
- Use of a separate nozzle frame for each tank
- Environmentally friendly

System components – customized

We adapt the equipment of our systems to your individual requirements. The right options and system components are the ideal supplement for making the system a key element in your value chain. In this, the users define which focus they require and select from the BvL modules:

- Programming and control
- Smart cleaning with BvL apps
- Communication with higher level Manufacturing Execution System (MES)
- Remote diagnostics for prevention of downtimes
- Handling and automation
- Measures for extending bath life
- Efficient drying systems
- Consulting on and optimisation of energy consumption

Service – Personal. Flexible. Competent.

Our well trained employees provide lasting help: we are here to help – before, during and after your order. Maintenance personnel have a variety of cleaning tasks. During an in-depth consultation on site, BvL engineers analyse your specific requirements together with you.

- Test cleaning and analyses at the Technical Centre
- Consultation on site
- Installation of the system
- Maintenance and spare parts
- Repairs and training
- Modernisation and retrofitting

Bogies

Large heavyweights

Efficient testing, maintenance and servicing of bogies requires previous cleaning, as longer operating times and increased mileage of the trains leave massive soiling on the bogies.

Challenges

- Handling of large parts with high weight
- Complex bogie geometries with deep, angled recesses

Our cleaning solutions

Depending on customer requirements, two different technologies can be used: The ***PacificTA*** or the ***GeyserC*** system.

Pacific

Geyser

PacificTA **– Strong and huge**

Pacific Geyser

The ***PacificTA*** is a large capacity spray cleaning system. Cleaning is provided by an oscillating special nozzle system in a washing chamber. Bogies are moved in and out of the cleaning system at floor level.
This system concept allows additional cleaning of small parts on a loading trolley which can run on the same rail system.

Cleaning technology
- Multiple surrounding nozzle frames oscillate along the component
- Special nozzle arrangement allows cleaning also on front and rear side
- Separate nozzle system for each tank
- Placement of the large tanks underneath the treatment chamber in a pit structure
- Installation of high tanks optionally possible

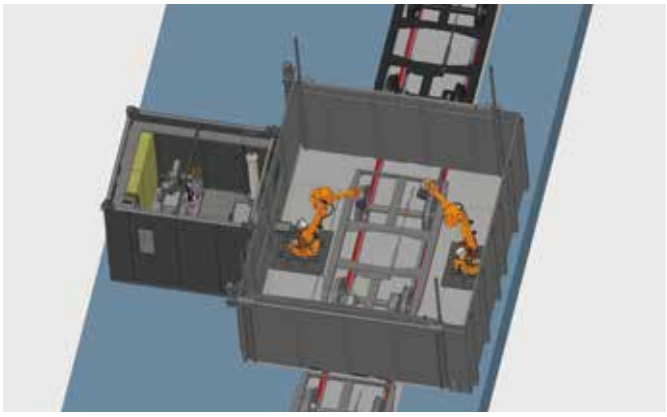
Advantages
- Floor level loading
- Loading from two sides or continuously
- Individual adaptation of nozzles and nozzle frames to the bogie
- Circulating bath maintenance (belt filter, grease discharge conveyor, etc.)

The ***GeyserC*** uses the force of the high pressure water jet for cleaning. Depending on level of soiling and cleanliness requirements, the pressure range varies from 1,450 to 43,511 PSI (100 to 3,000 bar). We use extensive tests at our Technical Centre to de-termine the optimum parameters for each customer.
Powerful, highly flexible r obots a llow e fficient and tar geted cleaning of the complex bogies.

Cleaning technology
- Cleaning chamber with integrated water-protected robot system and separately accessible unit chamber
- Variable pressure range of the pump system
- Water tools equipped with rotating multiple nozzles
- Optionally changeable tools, lances and nozzles

Advantages
- No thermal or mechanical strain on the surface
- Robot technology allows maximum flexibility and precision
- Reduced cycle times through optional use of several robots
- Improved working conditions
- Partial cleaning also possible

PacificTA
Large component system with surrounding oscillating nozzle frames



GeyserC
High pressure cleaning with unit chamber and cleaning chamber

Wheelsets

Stubborn layers

After years of intensive use of the trains, the bogies end up with massive soiling such as hard encrustations, grease, brake dust, etc. It is often also necessary to remove old paint layers to allow crack testing or repainting.

Challenges

- Handling of large parts with high weight
- Additional stripping of old paint, in some cases several layers
- Different requirements for handling running wheelsets and driving wheelsets

Our cleaning solutions

Depending on customer requirements, two different technologies can be used:
The ***PacificER*** or the ***GeyserC/P system.***

Pacific

Geyser

PacificER **– Strong and huge**

Pacific Geyser

The ***PacificER*** is a large capacity spray cleaning system. Wheelsets are cleaned with nozzle systems adapted to the contour. The wheelset revolves around its own axis. The wheelsets are fed into the cleaning system by automated transport at floor level.

Cleaning technology

- Rotation of the wheelsets
- Nozzle systems adapted to the contour of the wheelset
- Placement of the large tanks underneath the treatment chamber in a pit structure
- Automatic feeding and discharge
- Bath maintenance options: centrifuges, plate phase separators, belt filters, grease removal conveyors

Advantages

- Continuous feeding
- Circulating bath maintenance (belt filter, grease discharge conveyor, etc.)
- Individual adaptation of the nozzles and nozzle frames to the wheelset
- System can be adapted to running wheelsets and driving wheelsets

The ***Geyser C/P*** uses the power of the high pressure water jet for cleaning and paint stripping. Depending on level of soiling, cleanliness requirements and paint layers, the pressure range varies from 1,450 to 43,511 PSI (100 to 3,000 bar). We use extensive tests at our Technical Centre to determine the optimum parameters for each customer. Powerful, highly flexible robots allow efficient cleaning and stripping of the wheelsets.

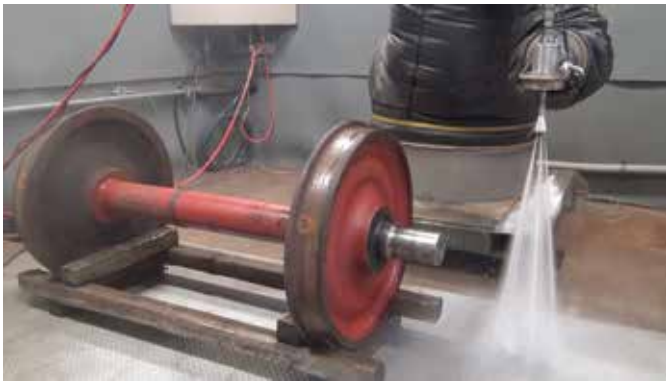
Cleaning technology

- Cleaning chamber with integrated water-protected robot system and separately accessible unit chamber
- Variable pressure range of the pump system
- Water tools equipped with rotating multiple nozzles
- Optionally changeable tools, lances and nozzles

Advantages

- No thermal or mechanical strain on the surface
- Robot technology allows maximum flexibility and precision
- Improved working conditions
- Flexible handling of the water tools, individually adapted depending on of level of soiling and required paint stripping
- Reduced cycle times through use of several robots

PacificER
Large component system with rotation of the wheelset



GeyserC/P
High pressure cleaning and paint stripping

Wheel bearings

Complex geometries

Long operating times and high mileage of the trains on the rails can damage the wheel bearings. Oil and grease have to be removed for subsequent crack testing.

Challenges

- Complex geometries
- Different types of bearings
- Difficult internal cleaning of the bearings
- Immense grease residue

Our cleaning solutions

Depending on customer requirements, two different technologies can be used: ***OceanRW*** or ***YukonDA***.

Ocean ***Yukon***

YukonDA **– Speedy and individual**

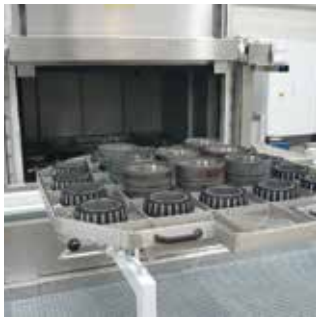
Ocean Yukon

The ***OceanRW*** is a universal spray cleaning system with automatic lifting gate. All process steps take place in a cleaning chamber into which the wheel bearings are fed on a parts carrier. The rotation of the parts carrier around the special U-shaped nozzle system ensures thorough cleaning all around.
A lance system can be optionally used: in this case the parts carrier rotates around an internal lance, allowing thorough internal cleaning of the wheelbearings.

Cleaning technology
- The parts carrier revolves around the vertical axis
- U-shaped special nozzle system in star-shaped design for high circulation and intensive cleaning all around
- Optional lance system for intensive internal cleaning
- Optional roller conveyor systems with automated feed and discharge

Advantages
- Optimised handling and reduced operating times
- The components can be placed directly on the loading trolley or workpiece holder
- Cleaning of different bearing types (cylindrical/self-aligning roller bearings, etc.) possible

OceanRW
With internal lance



OceanRW
With parts carrier

The ***YukonDA*** is a spray cleaning system for continuous material flow which makes it ideal for high throughput. The wheel bearings run through the treatment zones sequentially in a time based cycle: washing, rinsing, drying. During washing, the individual wheel bearings are cleaned with high spraying pressure.
Depending on the type of bearings, different technologies are integrated into these systems for massive internal cleaning.

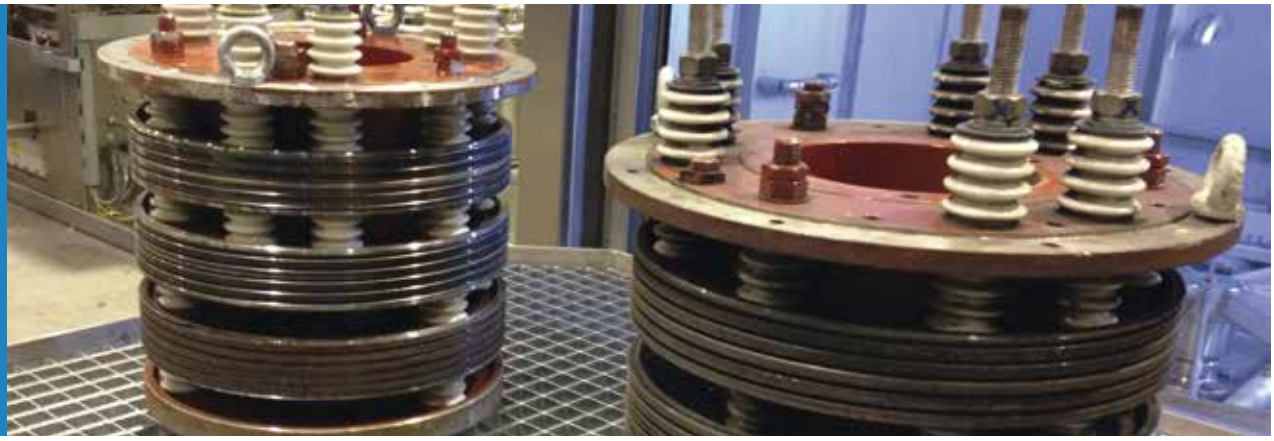
Cleaning technology
- Continuous nozzle frame for vertical transport of the bearings
- Offset nozzle arrangement allows cleaning from all sides
- Lance system for intensive internal cleaning with horizontal transport of the bearings
- Bath maintenance options: centrifuges, plate phase separators, belt filters, grease removal conveyors
- Drying systems: Blow-off device, circulating air drying

Advantages
- Very good cleaning results
- High throughput
- Extremely low handling effort
- Different conveyor options
- Cleaning of different bearing types (cylindrical/self-aligning roller bearings, etc.) possible

YukonDA
Continuous system
with lance system
for horizontal transport

YukonDA
Continuous system
with vertical transport
of the bearings

Motors



Stators and rotors

Before the testing of drive motors, not only massive soiling has to be removed but also grease, oil and carbon dust.

Challenges

- Complex geometries, hard-to-reach spaces
- High quality rinsing required
- 100 % drying necessary

Our cleaning solution

The spray cleaning system ***OceanRW*** is used for this requirement.

Ocean

OceanRW **– Big and strong**

Ocean

The ***OceanRW*** is a universal spray cleaning system with automatic lifting gate. All process steps take place in a cleaning chamber into which the motors are fed on a parts carrier. The rotation of the parts carrier around the special U-shaped nozzle system ensures thorough cleaning all around.
A lance system can be optionally used: in this case the parts carrier rotates around an internal lance, allowing thorough internal cleaning of the stators.

Cleaning technology

- The parts carrier revolves around the vertical axis
- All-round component cleaning through special U-shaped nozzle system
- Optional lance system allows thorough internal cleaning of the stators
- The components can be placed directly on the loading trolley or workpiece holder

Advantages

- Optional roller conveyor with automated feed and discharge to optimise handling and reduce operating times
- Rotors fixed on the loading trolley for vertical cleaning

Gas heated tanks with work platform

Hydraulic carry in with stationary table with cross moving

Lance system for internal cleaning of the stators

Components

Various shapes

Components with a great variety of types and geometries have to be cleaned to remove massive soiling such as hard encrustations and lubricants to allow quality testing.

Challenges

- Many different types and sizes of components
- Variety of small parts
- Complex geometries
- Hard-to-reach spaces

Components

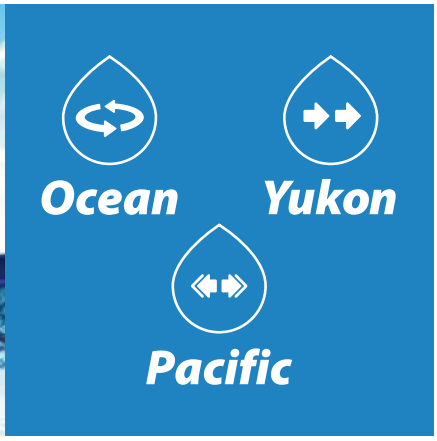
- Housings
- Trapezoidal springs
- Bearing caps
- Train protection bars
- Buffers
- and many more

Our cleaning solutions

The ***OceanRW***, ***YukonDA*** and ***PacificTA*** systems can be used for cleaning bogies, wheelsets, wheel bearings and motors as well as for cleaning individual components.

Ocean ***Yukon*** ***Pacific***

OceanRW **– Big and strong**



The ***OceanRW*** is a universal spray cleaning system with automatic lifting gate. All process steps take place in a cleaning chamber into which the components are fed on a parts carrier. The rotation of the parts carrier around the special U-shaped nozzle system ensures thorough cleaning all around.

Cleaning technology
- The parts carrier revolves around the vertical axis
- All-round component cleaning through special U-shaped nozzle system
- The components can be placed directly on the loading trolley or workpiece holder
- Bath maintenance options: centrifuges, plate phase separators, belt filters, removal of shavings and grease

Advantages
- Optional roller conveyor with automated feed and discharge to optimise handling and reduce operating times

The ***YukonDA*** is a spray cleaning system for continuous material flow which makes it ideal for high throughput. The components continuously run through the sequential treatment zones (washing and optionally rinsing as well as drying). Cleaning is carried out by guiding the component past the fixed nozzle systems.
If required, the components can also run through the treatment zones in a time based cycle.

Cleaning technology
- Surrounding, permanently installed nozzle frames
- Offset nozzle arrangement allows cleaning from all sides
- Bath maintenance options: centrifuges, plate phase separators, belt filters, removal of shavings and grease
- Conveyor systems adapted to the components
- Supplementary drying systems: blow-off device, circulating air drying

Advantages
- High throughput
- Extremely low handling effort
- Different conveyor options
- Integrated drying possible

PacificTA
Cleaning of train protection bars
(technical description of ***PacificTA*** on page 6)

YukonDA
Horizontal transport

Consulting

Options and system components

The right selection of system components – specially adapted to the customer application – allows economic and ecological optimisation of the cleaning process. Operating costs are reduced to a minimum. If, for example, train components have a high level of grease contamination, it is important to select the correct bath maintenance to extend bath life. Furthermore, the cleaning system is optimally integrated into the maintenance process using intelligent automation solutions. This greatly facilitates handling of the components. As part of an individual consultation, we select the best possible system components for each application:

Bath maintenance for extending bath life
- Belt filters, basket screen filters, bag filters
- Tank rinsing, centrifuges
- Grease and oil discharge conveyors
- Vacuum evaporator
- Bath monitoring (Libelle systems)

Bath heating options
- Electrical
- Gas (flue)
- Steam
- Hot water

Loading/automation
- Hydraulic
- Chain conveyor
- Pneumatic
- Customised automation solutions

Bath maintenance: Belt filter

Direct heating with gas

Hydraulic scissor lift table with pneumatic carry in and roller conveyor system

Drying
- Circulating air drying
- Vacuum drying

Energy saving
- Insulation (pipes and filters)
- Exhaust air management

Installation options
- Pit installation
- Installation above floor level

Vacuum drying

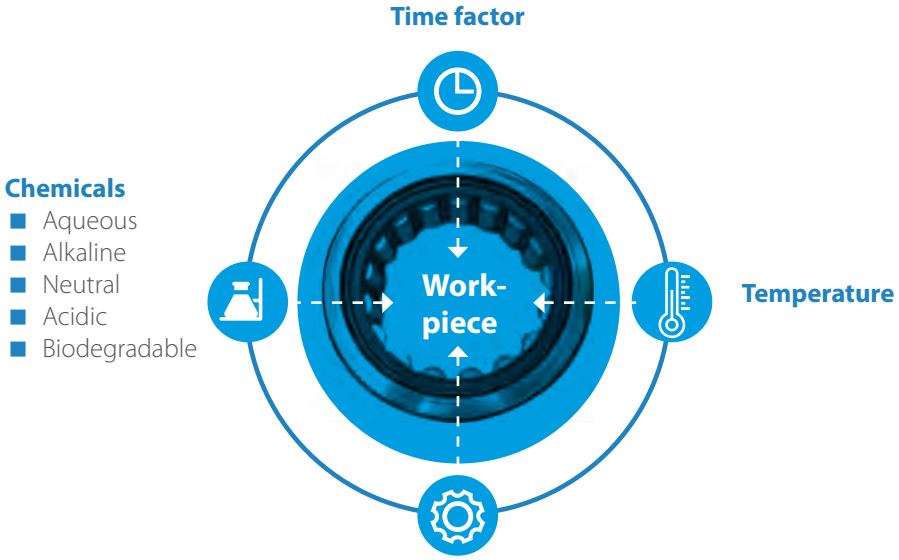
Insulation

Pit installation

Service

Cleaning factors

We advise our customers on the correct selection of system accessories as well as on the optimum setting of the four cleaning factors technology, processing time, chemicals and temperature. Best possible and economical cleaning results can only be achieved through the combination of these four cleaning factors. We determine the customer specific processing technology during extensive test cleaning and analyses at our in-house Technical Centre.
After start-up, we continue to guarantee the availability and sustainability of the cleaning system through our services such as training, maintenance, supply of spare parts as well as modernisation and retrofitting.

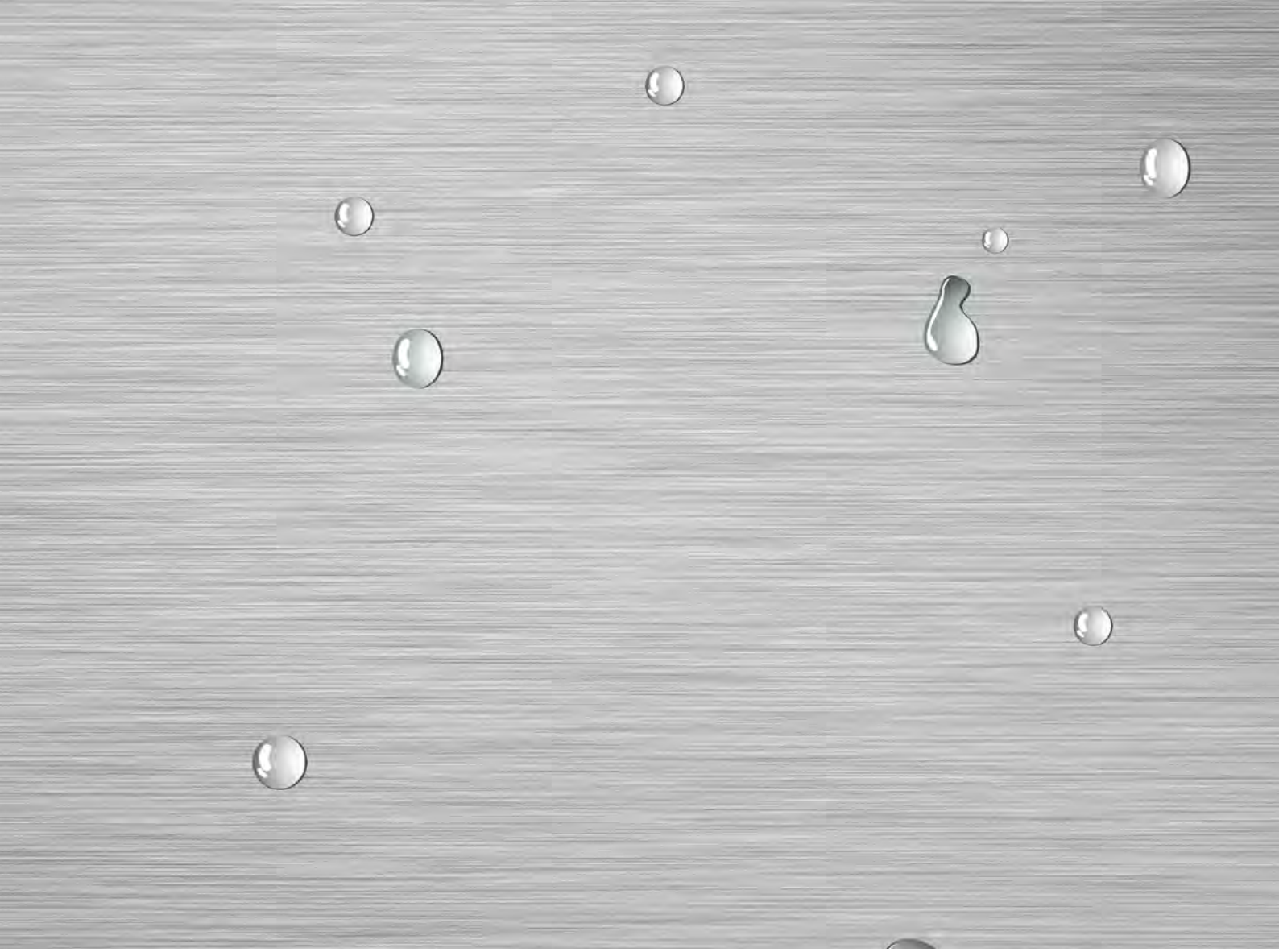


- Spray cleaning
- Injection flooding
- Vacuum flooding
- Ultrasound cleaning
- Circulation drying
- Hot air drying
- Vacuum drying
- Pneumatic pulse drying
- Parts carrier
- Automation
- Processing technology
- Bath maintenance and monitoring

BvL – Your competent partner. Everything from one source.

A high level of vertical integration provides our customers with a cleaning system designed and built by the same company. That saves time and ensures quality for parts cleaning. Certifications confirm the core competences of our company and our high quality standard: EN ISO 9001, EN ISO 14001, VDA 6.4, specialist firm in accordance with the German Water Management Act (WHG).

- Own production (made in Germany)
- Own design department (3D software)
- Own control cabinet manufacturing
- Own programming
- Spare parts stock
- Qualified consulting and planning
- Own maintenance / own service
- System modernisation



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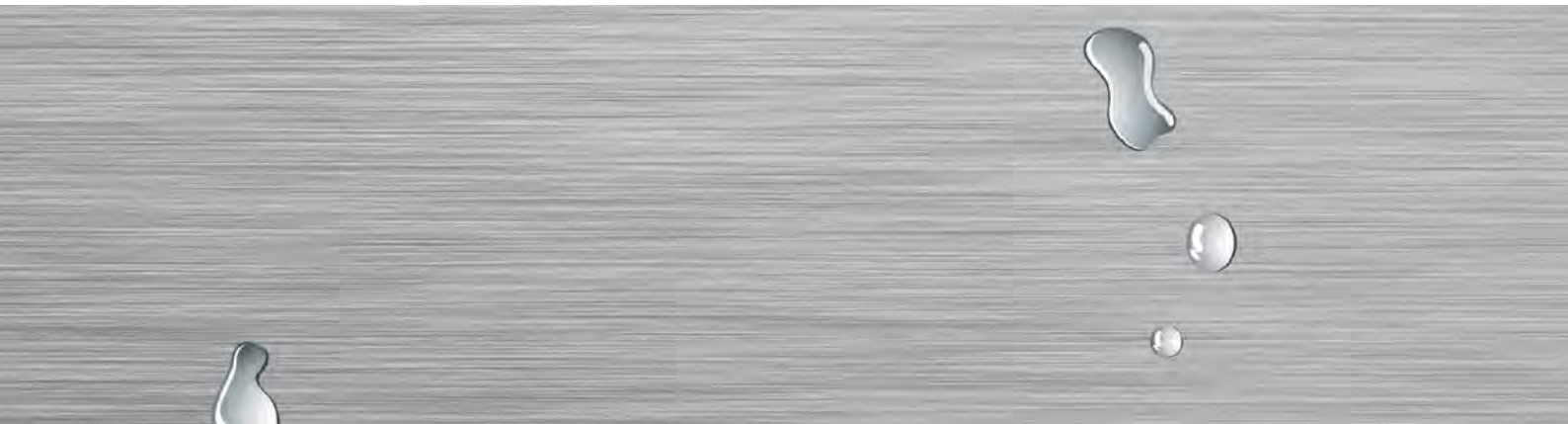
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