vapic® gmbh
vacuum and pressure industrial cleaner

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“My tailor is the only person acting sensibly.
Each time we meet he newly takes measure while everyone else
applies the old standards, assuming they still apply today.”

Quote: George Bernard Shaw

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WHITE TUBE. CLEANED BY VAPIC.

CONTENT

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VAPIC. KONSEQUENT SAUBER.

Specialists for industrial parts cleaning

Learning and Understanding

“Knowledge is not something that grows on its own” is an often heard saying of Reiner Wolf. And he is usually one of the first to ask detailed questions.

That hasn’t changed. Not when he was technical director. Not when he was his own boss in the service sector. Not when the previously European patent was granted. And not since his company vapic continuously has full order books because of innovation and quality. Parts cleaning requires a holistic understanding of both the subject of parts cleaning itself as well as an understanding of each particular manufacturing chain of a customer.

It pays off to have a partner you can rely on, who never lost his desire for learning, not in spite of but because of his “Know-how”. You will find this attitude in the entire vapic team, where hierarchies are kept flat and thinking on your own feet is a big subject. This is why you will often find almost the entire staff on a Monday at the vapic training, although participation is voluntary with a free lunch for compensation.

THE WORKFLOW

Each vapic cleaning solution is a cleaning system that has been specifically tailored to your needs.
We will analyse the specific requirements on parts cleaning in detail with you.
We will create the optimum cleaning process from the various options available. The vapic Workflow.

01 Surveying the quantity of parts, geometry and cleanliness requirements

02 Analysis of process steps before and after cleaning

03 Examination of auxiliary manufacturing materials (machining oils, emulsions, slide grinding compounds, polishes, etc.)

04 Selection of cleaning chemicals (special formulations as required)

05 Laboratory tests

06 Tests on a similar plant

07 Tender preparation

08 Order

09 Planning and construction of the plant

10 Test run under similar operating conditions at vapic

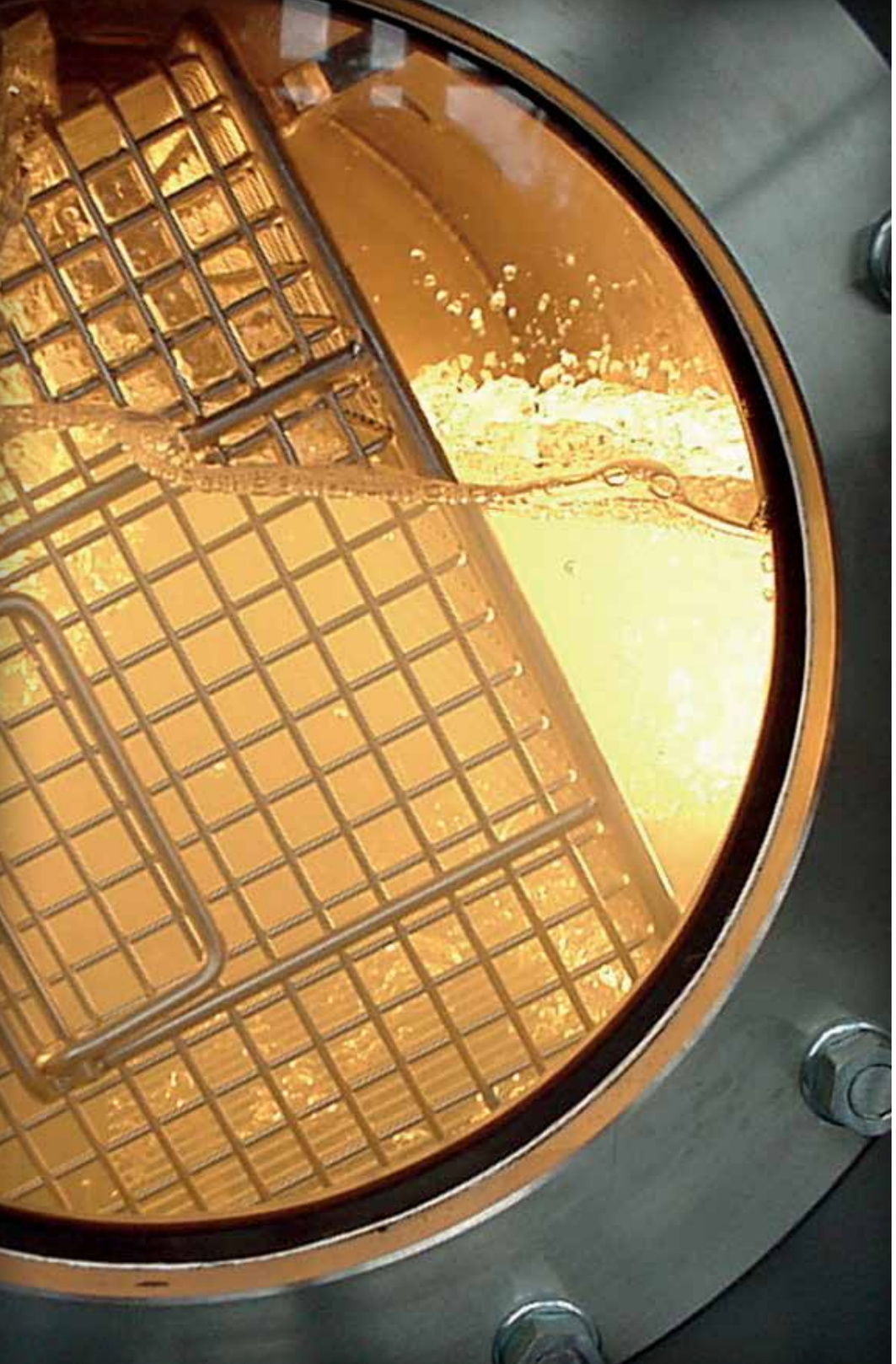
11 Preliminary acceptance

12 Delivery, installation & commissioning

13 Determining the optimal cleaning process for your applications

14 Training of your employees

15 Support using Internet remote maintenance, including video transmission



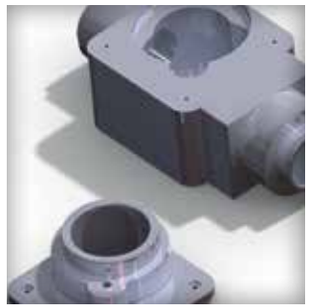
MATERIALS

Brass

Stainless steel

Aluminium

Copper



Synthetic materials

Steel parts

Optimum cleaning for demanding parts

Intelligent and trendsetting. Vacuum and pressure - the intelligent interaction of these two variables explains the outstanding efficiency of the vapic cleaning process. A technique so innovative and forward-looking that its development was sponsored by the federal state of Baden-Württemberg. The vapic process is the first industrial parts cleaning process that perfectly cleans difficult geometries with a minimal use of energy.

SUCCESSFUL

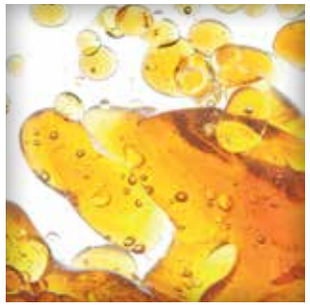
for your parts

TYPES OF CONTAMINATION

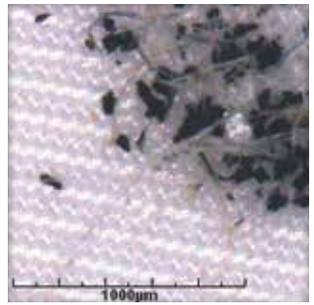
Emulsion

Shavings

Grease



Oil



Dust

Solder residues

FOCUS

on your production

We understand your clean components as the result of the entire manufacturing and despatch chain. We frequently can alleviate a problem by making a few minor adjustments. And we are getting better and better at it because we maintain a lively exchange of information with each customer. Knowledge of pollution, materials and production steps ensures the best predictable results.

VAPIC PRODUCT RANGE

Parts cleaning systems

- Tailor fit plants
- Systems based on best practice
- Basic parts cleaners
- Modernization / maintaining your current systems
- Adaptation of existing plants

Cleaning Center

- Contract cleaning
- Cleanliness analysis VDA19 / ISO16232
- Laboratory
- Washing tests
- Resale of working processes

Cleaning chemicals

- Optimization of bath life
- Solvents
- Aqueous cleaning agents
- Additives: Gear oil, tracer, etc.

Service

- Maintenance / repairs / modifications
- Remote maintenance
- Process optimisation
- Consulting / Training
- Retrofits
- Spare parts, for older systems too

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EXPERIENCE, FOR YOUR BENEFIT

KNOW-HOW FOR EVERY INDUSTRY

Perfect cleaning results are our standard. The ways to achieve this high level of quality are manifold:
We are strong in custom solutions and use imagination and competence in tailoring cleaning processes for your special needs.
A multitude of industries values that much individuality and flexibility.

Automotive

Just in sequence deliveries, cost pressure, high availability - these requirements are the order of the day in the automotive industry. A broad customer base relies on vapic cleaning solutions to meet these demands: OEM's, Tier 1 suppliers, Tier 2 suppliers. Our partners include major manufacturers as well as a wide variety of suppliers.

Electrical engineering and electronics

Our expertise is in demand wherever the highest cleanliness standards apply. Vapic cleaning processes reliably clean even the most difficult electronic components, such as contacts, sensors and soldering residues on printed circuit boards.

Consumer goods

Be it glasses or a clock, razor blades or cooking pots, a vacuum cleaner or a washing machine... our range of solutions for the parts cleaning of consumer goods is almost as diverse as life itself.

Medical engineering

Medical engineering demands the highest levels of process safety and cleanliness. After all we are talking about the cleanliness of parts that are used very close to the body or, in a surgery, even inside the body. For example, we remove chlorinated paraffin deposits on pipes used in microsurgery.

Metal-processing industry

A wide variety of materials, auxiliary manufacturing materials, difficult part geometries and machining processes - this is our widest field of activity that continuously provides new and challenging tasks. And we find the right solution for each one of them.

Aerospace engineering

There is hardly other industry, where the parts are as valuable as in aerospace engineering. The demands on their service life are equally high. A long service life of up to 15 years is unthinkable without perfect cleaning as provided by vapic.

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THE INNOVATION ENGINE

never stops

- vapic process
- Infrared drying for solvent
- Low pressure plasma and wet cleaning in one working chamber
- Parts cleaning with atmospheric plasma
- Cleaning system with aqueous and solvent-based cleaning without intermediate drying
- Exhaust air cleaning system with integrated solvent recovery and neutralization of low-boiling acids
- Process chamber lift
- Induction dryer integrated in the production cycle
- Condensation drying with highly efficient energy recovery
- Three-dimensional spray behaviour planning of spray units
- Constant particle measurement
- Chemical concentration level monitoring
- Parts movement in continuously operating systems
- Maintenance-free vacuum adsorber systems
- Energy-saving evaporator
- Cleaning with VOC-free solvents
- Aqueous systems without changing the bath
- Hot air combination drying for temperature-sensitive components

THE VAPIC COMPANY PREMISES COMPRISE ABOUT 15,000 SQM AS OF MAY 2015

Successful:

VAPIC GROWS

After having spent a mere 4 years in our new spacious building, we have **doubled our production area in 2013.**

June 18, 2014 - vapic **wins the sponsorship:**
"Spitze auf dem Land – Technologieführer für Baden-Württemberg"
(Top of the State - Technology Leader for Baden-Württemberg"

This grant and the subsidized financing guarantees **the expansion of vapic** in 2015.
We will expand the space for contract cleaning and machine construction by ca. 1400 sqm
and invest in a fully automated contract cleaning system.

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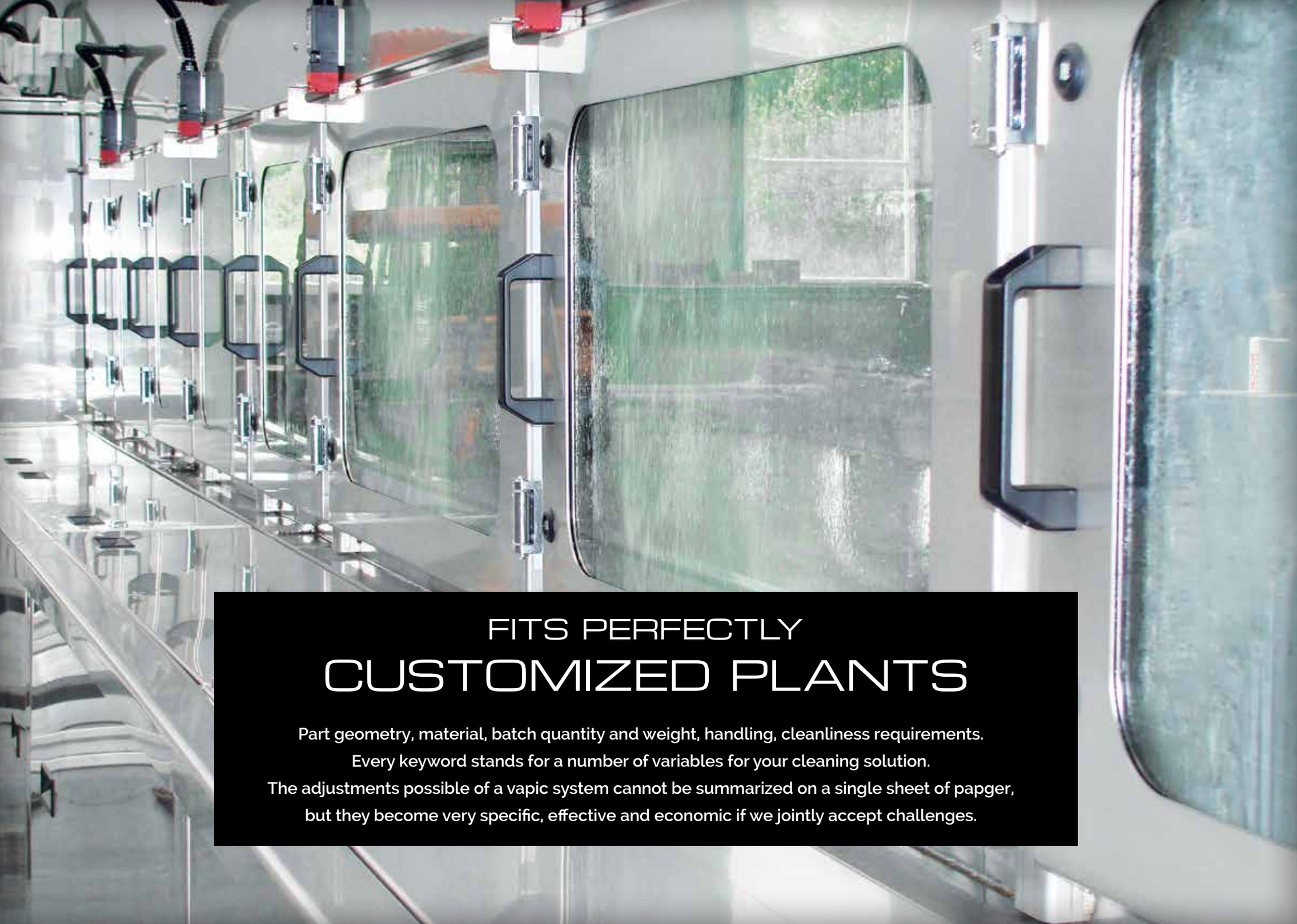
PARTS CLEANING SYSTEMS

Diversified for the benefit of our customers

The question: "What do our customers need?" is the top priority at vapic.
We closely work with you to provide you with the best cleaning system tailored to your specific needs.

We examine your production process, learn from your experiences and jointly define an objective.
The solution to your cleaning task is confirmed by trials and validated once more by suitable tests.
Tests are performed in our own clean room or in laboratory of your choice. We draw on any resources available,
because we offer an extremely wide range of cleaning procedures from small ultrasoinic cleaners
to vast chamber systems with fully automated feeding systems to newly developed individual solutions.
If possible, we assume responsibility for the entire process with our vapic cleaning media.



FITS PERFECTLY
CUSTOMIZED PLANTS

Part geometry, material, batch quantity and weight, handling, cleanliness requirements.
Every keyword stands for a number of variables for your cleaning solution.
The adjustments possible of a vapic system cannot be summarized on a single sheet of papger,
but they become very specific, effective and economic if we jointly accept challenges.

THINKING IN FUTURES.
ENERGY EFFICIENCY.

Energy efficiency starts with simple logical steps, such as covering steaming cleaning baths. Other possibilities of saving energy are isolating pipes and containers and closing energy cycles. The production line is part of the holistic approach. We like to use the waste heat from other machines in the production environment to heat our baths. This effort pays off for your company and for our environment.

EVEN THE BEST SYSTEM REQUIRES EXCELLENT SERVICE TO PERFORM AT ITS PEAK LEVEL.

If …
the boss and the Construction Management have more than 30 years of experience in maintenance service, …
the Technical Director personally takes care of remote maintenance, …
the Commercial Director plans washing tests in the parts cleaning center,
the Salesman has previously built systems himself, …
and the entire Production Team regularly installs system, …
you can be assured:

In addition to a maintenance-friendly system you also get great service.

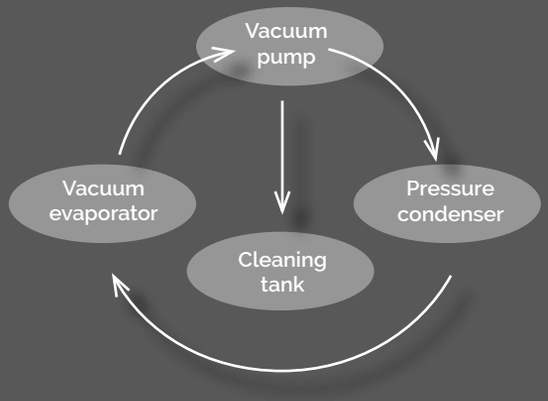
CHAMBER SYSTEMS

vapic chamber systems are available in almost any size and can be designed for aqueous cleaners, solvents or a combination of both cleaning media.

We provide high quality, effective and extremely cost-effective part cleaning systems.

Konsequent sauber

Dry running vacuum pumps are the heart of the vapic energy cycle. The compression and condensation energy used is not "wasted" but intelligently circulated and reused in the process. This results in an enormous energy saving of up to 50%. Our process technology enables unique processes to ensure you get the best cleaning results even for the most difficult parts.



Energy cycle

A high standard

vapic was the first company in the industry to use screw vacuum pumps. We have gained extensive experience and developed oils that effectively protect the pumps. These pumps significantly reduce maintenance costs.

The part geometry is complex and unique and so is the solution: "alternating pressure process". Changing pressure conditions in the working chamber alternately boil and condense the cleaning medium. This demonstrably improves the flushing action, especially in blind holes and narrow gaps.

Clear and simple

We use large touch screens and not only demand that the operation is as intuitive as possible. It must also help to understand the processes. That's why you see pipes switch positions and sensor values.

The comprehensive process representation on the display is our universal tool for very effective remote maintenance.

Just sit back

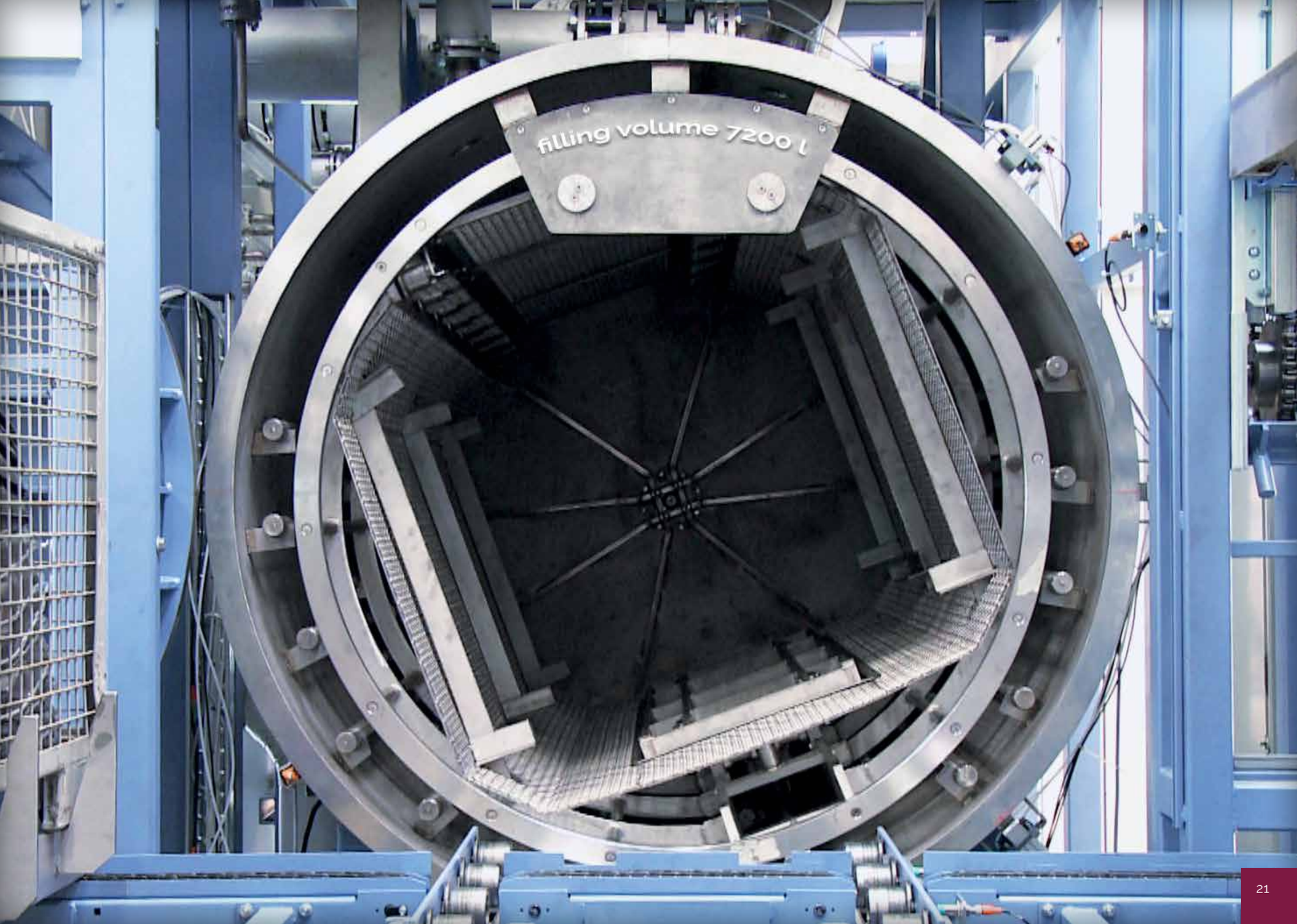
The tilting process chamber

For complex part geometries we build process chambers that can be hydraulically lifted at the front. This also applies to XXL working chambers that process more than two-ton batches. Tilting process chambers add another dimension to basket movement. It reduces carry-over and improves drying.

Always up to date:

Our chamber systems are designed for you in great detail.

That is why we constantly develop further innovations. These demonstrate their value in plants that can assume any dimension in terms of size and features.


filling volume 7200 l

CHAMBER SYSTEMS FOR SOLVENTS

for CHC, HC, modified alcohols, VOC-free solvents

Working with vapic means you won't miss anything. Naturally, we provide proven methods such as pre-wash circuits, spray and immersion cleaning, ultrasonic cleaning with vacuum degassing or pressure flooding, but actually like to offer some more.

- **Alternating pressure process**
  Changing pressure conditions in the process chamber alternately boil and condense the cleaning medium. This demonstrably improves the flushing action, especially in blind holes and narrow gaps.
- **Pressure condensate spraying**
  The vapic process produces ultra-clean distillate. This distillate is even hotter than the still vapour and is sprayed across the components after wet cleaning.
- **Chamber floor heating - the better way of vapour degreasing**
  The option "Heat chamber" heats up the distillate used during "pressure condensate spraying" in the chamber. This achieves yet another "condensate flushing action". The steam used in this process is much cleaner than usual still vapour.
- **Vacuum infrared drying in solvent systems**
  Our method is the first to enable the use of
  vacuum infrared drying known from aqueous cleaning systems in solvent-based systems. This technology also enables the drying of low-mass parts. It often accomplishes an additional thermal post-cleaning effect.
- **Plasma cleaning**
  Low pressure plasma and wet cleaning in a working chamber.
  Part cleaning with atmospheric plasma.

ADVANTAGES

- **Easy operation: No need of maintenance is the best maintenance**
  We think about serviceability when integrating maintenance racks for removing heavy units in the scope of supply or when mounting as simple a thing as a bow to a venting ball valve to protect your workers. However, we prefer to develop maintenance-free closed loops. For instance, our vacuum adsorber in our solvent-based systems is a fully automated system, which regenerates the activated carbon during operation. It not only saves maintenance, activated carbon and machine downtime but also solvents and energy.

- **Good for the working atmosphere: Clean air**
  Strong-smelling compounds are often released into the air by system operated with hydrocarbons or modified alcohol. We have developed an "air washer" that keeps the working environment odourless. This method effectively saves solvents and on top is a secure system for protecting your system and components from low-boiling acids.

- **Confirmed safety: Protection by process engineering**
  We have obtained an expert statement on our process description from the IBEXU Institute and a testing laboratory recognized by the EU, because solvent mixtures are flammable. This demonstrates that our process is explosion-proof.

OPTIONS

- Multi-level cleaning-conservation cycles as specified
- Additional process chambers
- Prewash circuit
- Chamber floor heating
- Double-active carbon adsorber with vacuum desorbtion
- Air washer
- Various distillation plants
- Fully automated oil discharge
- All filter systems
- Cycle time reduction with roots blowers
- Measuring computer with data acquisition
- Drying: Vacuum, infrared, hot air, inductive
- Basket tensioning unit
- Product carrier according to requirements
- Aqueous prewash
- All types of conveyance
- Link to existing inventory
- Use of process heat of other systems

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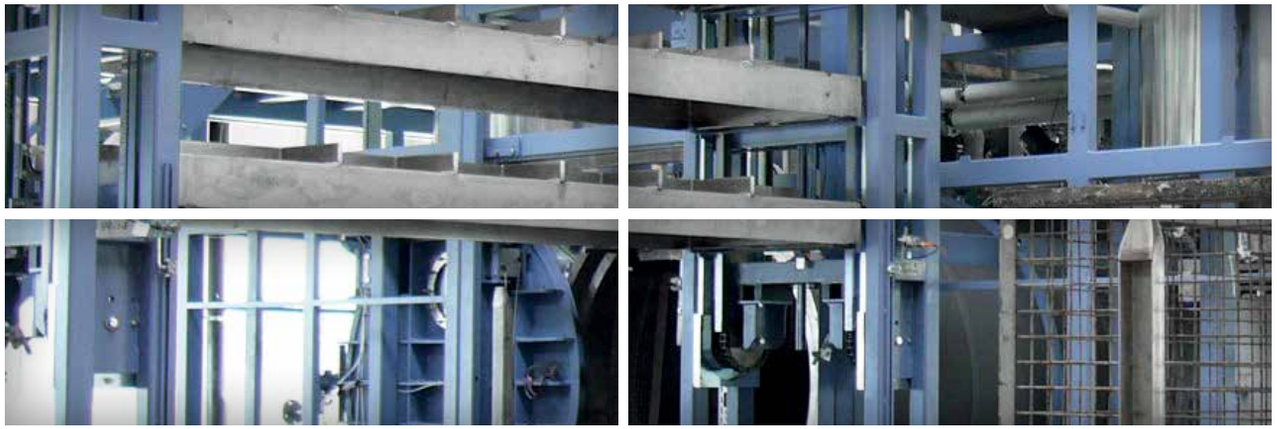


CHAMBER SYSTEMS FOR WATER-BASED CLEANING CHEMICALS

Energy-efficient and eco-friendly cleaning

Energy-efficient, eco-friendly œaning

Highest cleaning quality with an incredibly low consumption of energy and water are typical for vapic chamber cleaning systems for aqueous cleaning media, as they also benefit from the vapic cycle.

The vapic system achieves an enormous cost advantage over the entire investment period when compared to conventional technology. We keep innovating to minimize maintenance and bath change. See more information in the chapters “Bath treatment in aqueous systems” and “Cleaning chemicals”.

ADVANTAGES

- **Automated Quality Assurance**
  We use automatic measuring systems to measure the concentration levels of conservation and cleaning agents. Conductivity sensors enable the drawing of conclusions about the cleanliness of media. Sensors for the measurement of particulate matter have been successfully installed in plants as well. We also use process refractometers, pH or density meters, if required. These techniques simplify and increase process reliability. This enables inspection intervals to be extended for the cleanliness lab.

- **Expenses reduced / Money saved / Environment spared**
  No more bath changes! We have achieved a very ambitious goal. The key to success is a very careful tuning of chemistry, bath treatment and targeted automation. The chemistry is adjusted to the contamination. Additional dosages of solution are added to the cleaning circuit on a batch-by-batch basis. Bath treatment is a combination of an energy-saving evaporator and carefully selected material separation systems. How well we do in coordinating these factors shows an example of a customer: We have build the system six years ago. Every twelve minutes it cleans 2 tons of parts in three shifts. We didn't have a single bath change yet!

- **Right on target: Precision injection nozzles**
  We leave nothing to chance when it comes to highly complex cleanliness requirements. We build product carriers that position the component for best flow properties. We build spray nozzles and assess the spraying behaviour in 3D simulations. They are milled from solid material and can be controlled individually.

OPTIONS

- Cleaning, rinsing and conservation circles according to requirement
- Additional process chambers
- Various ultrasonic cleaning systems
- Infrared drying
- Hot air drying with superfine filter
- Process chamber heater
- All types of conveyance
- Link to existing inventory
- Basket tensioning unit
- Use of process heat of other systems
- Product carrier according to requirements
- Bath treatment systems for aqueous systems

THE INLINE SYSTEM MODULAR

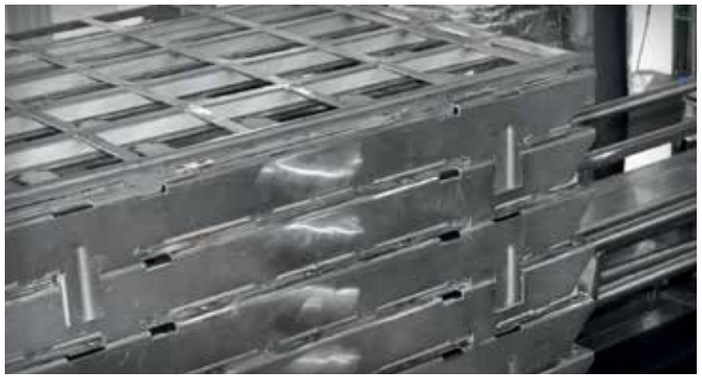
Superfine cleaning with enormous throughput rate

The inline system Modular, a vapic development, has left proven trolley-based immersion cleaning systems far behind in terms of performance and efficiency, thus setting new standards in parts cleaning. We have gained a lot of experience in recent years with this highly innovative system design and confidently met numerous requirements.

Best cleaning quality with short cycle times.

Numbers talk:

- Cleaning basket "Schäfer 1" (660 x 480 x 300 mm, custom sizes available)
- 150 kg batch weight
- Cycle time 5 minutes
- Reflecting particles reliably smaller than 200 µm



ADVANTAGES

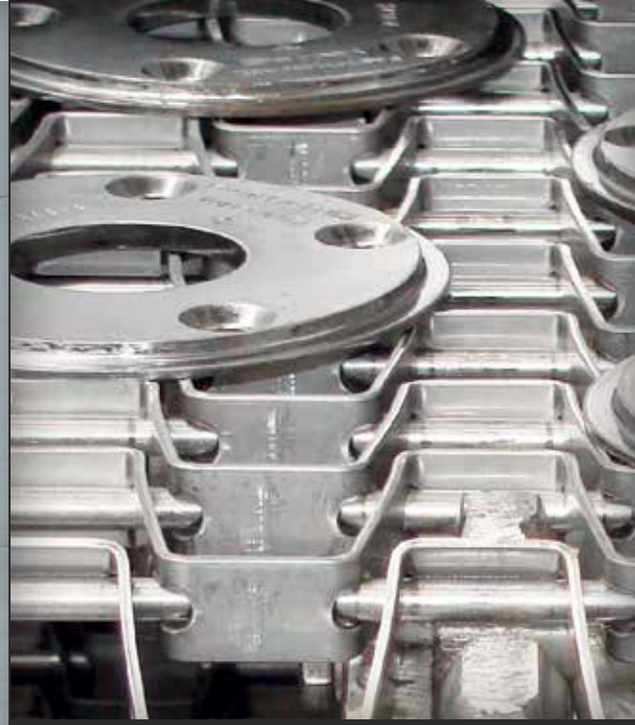
- Chamber and tub processes
- Energy savings because of closed baths
- Hardly any bath carry-over as only the basket is transported
- All options listed in the chapter "Bath treatment in aqueous systems"
- Less susceptible to malfunction as the tubs are not contacted
- Highest flexibility
- The clean part of the plant can be designed as a clean room

FULLY MODULAR

Our modules are equipped with their own control cabinet, basket holder, handler and conveying technology. They can be arbitrarily combined with each other and thus optimally adapted to meet various or increased cleaning requirements. Extending the linear system is quickly and inexpensive.

Available are

- Loading and unloading modules
- Tub modules with ultrasound
- Chamber modules with several tanks
- Drying modules
  - Hot air
  - Vacuum
  - Infrared



Continuous cleaning systems can be easily integrated in manufacturing chains. This often requires very specific dimensions and an uncomplicated connection with the upstream and downstream process step.
Continuous cleaning systems from vapic are individually designed for each cleaning task. The design depends on workpiece size, required throughput quantity and quality requirements. We have developed systems for various handling modes, such as robot-loaded single-piece loading stations, chain conveyors or equipment for cleaning baskets.

CONTINUOUSLY OPERATING CLEANING SYSTEMS

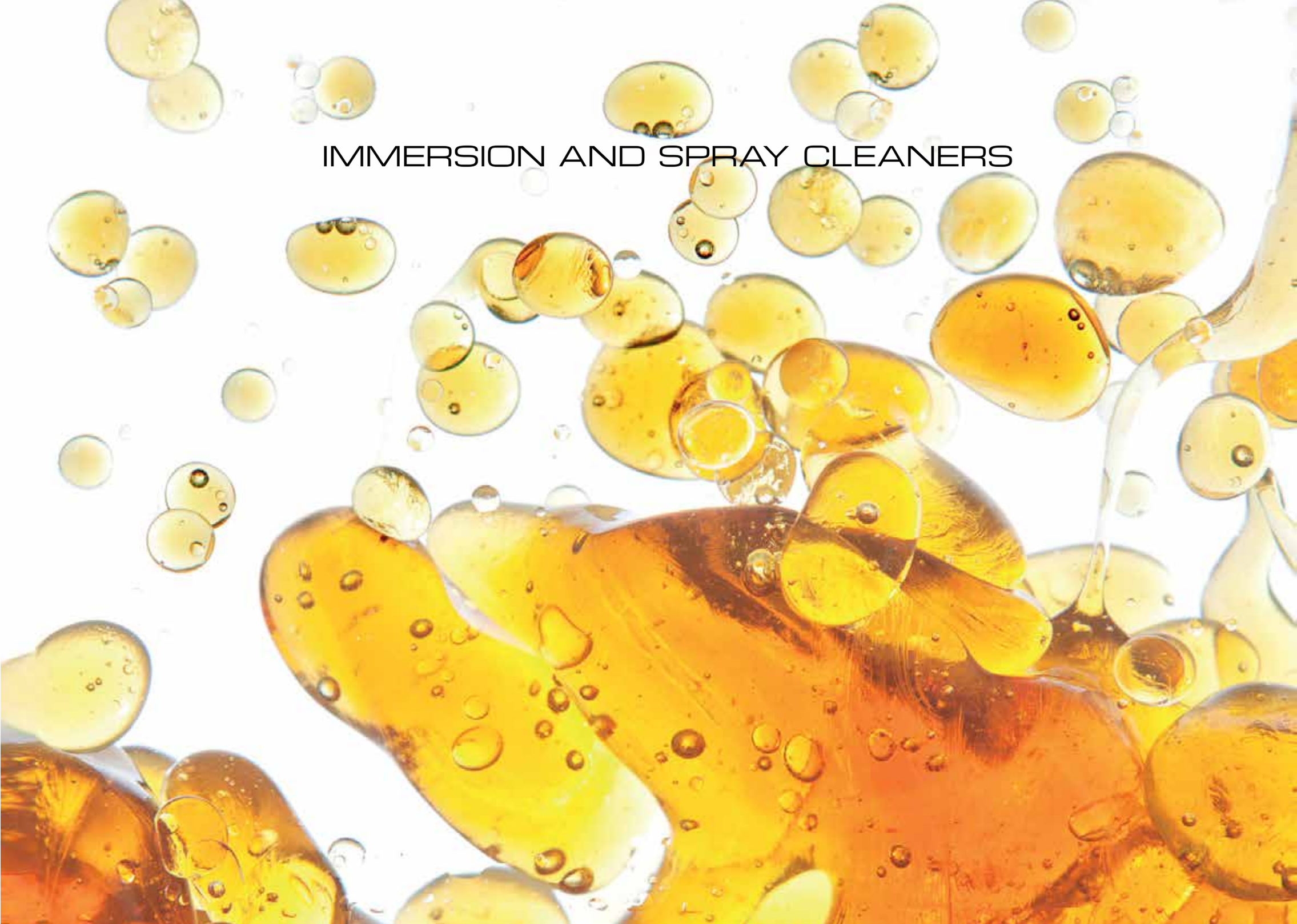
Parts movement for continuous cleaning systems

The movement of parts is an essential component to improve cleanliness. We therefore attempt to develop a system that does not fix your components in the continuously operating system. We have several very successful solutions for rotationally symmetric parts as well as a pivoting movement for plants operated with baskets. We will be as creative and successful for your parts too.

Cost-effective and environmentally friendly

The open design of conventional continuously operation systems requires a lot of energy, a fact which vapic rejects almost instinctively. The use of condensation and a special drying process enable significant energy savings for this type of installation now as well.

IMMERSION AND SPRAY CLEANERS



Our cleaners are competitively priced, easy to use and versatile in their applications. This is not uncommon for these relatively simple devices but only our products are backed by the vapic expertise. Working with us means exploiting the full potential as we examine your tasks against the workflows we know from major projects. We will perform cleaning tests with your parts and develop a working process. And the standards remain flexible. A spray nozzle is quickly adapted to meet your specific needs and it doesn't take long to integrate an oil separator. Working with a special equipment manufacturer raises the standard too.

IMMERSION CLEANING

for complex components

Immersion cleaning

Various immersion cleaning processes are used for components with complex geometries, such as blind hole bores. It is the chemical action of the cleaning medium that primarily removes adhering dirt. Ultrasound can further improve this process. A lifting, swivelling or rotary motion provides an additional cleaning effect.

The immersion cleaning systems of the

M-Dip series are modularly designed. This fact enables systems to be configured as single ultrasonic cleaners or a multi-stage, fully automatic cleaning system with various treatment steps. Dimensions and the variation of features are completely flexible.

Ultrasonic cleaners

vapic ultrasonic cleaners are built to your specific needs, no matter how extraordinary the requirements may be.

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SPRAY CLEANING

Spray cleaning processes are mainly used as a cost-effective cleaning method for large and flat components. An aqueous cleaning medium is sprayed through nozzles onto the surface to be cleaned at high velocity.

Impurities are removed by both the cleaning medium as well as swept away by the spray jet. The uniform cleaning of all component surfaces is achieved by a movement of the material to be cleaned (rotating basket & turntable spray system) or by a movement of the spray nozzles (rotary spray nozzle unit).

Spray cleaning units are available in several competitively priced standard sizes and can be adapted to the specific requirements through various options (such as filtration, oil separator, cleaning agent dosage, blow-down, hot air drying, vapour condensation, etc.). We realise individual special sizes at any time.

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BATH TREATMENT

for aqueous systems

A cleaning system's task is to remove the dirt from parts. There are many ways to separate dirt from water in aqueous systems. The objectives are always to extend the bath life as long as possible, to reduce maintenance and resource requirements and to achieve a very good cleanliness.




A Team

But only if everyone is fully integrated.
We get the support of the best specialists, but you buy a vapic system. This means that controls are fully integrated and the operation remains in a single system.

We use:

- Centrifugal tanks
- Drip and disc centrifuges
- Filters in all variations
- Various automatic filters
- Oil and sediment separators
- Automated chemical dosing

We offer energy-saving vacuum evaporators and evaporators with vapour compressor technology especially for the treatment of rinsing water.

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PARTS CLEANING CENTER

Cleanliness for your parts

You lack capacity to clean your parts? The geometry of the components to be cleaned is so special,
that you do not have the right system? Are the quantities so small that it is not profitable to purchase your own system?
Increased purity requirements cannot be met by your existing systems?

Whatever the case may be. vapic can help. We have the capacity, the expertise and the flexibility to guarantee qualified, reliable and prompt contract cleaning. Equipped with different cleaning methods, we can offer a cost-effective external solution for almost any cleaning task. Individual service - tailored to your needs - and a high flexibility are a matter of course for us. vapic individually tailors the process to the parts to be cleaned.

Ideal cleaning technology.
For all cases.

Various cleaning systems with aqueous cleaners and solvents are ready for the perfect cleaning of your parts.
Solvents are used when oil-based (homopolar) contamination needs to be removed, such as machining oils, fats and waxes.
Aqueous cleaners (neutral, alkaline and acidic media) are typically used for the removal of water-based (polar) impurities
such as cooling and grease emulsions, polishing agents, additives, salts etc.

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PLANT EQUIPMENT

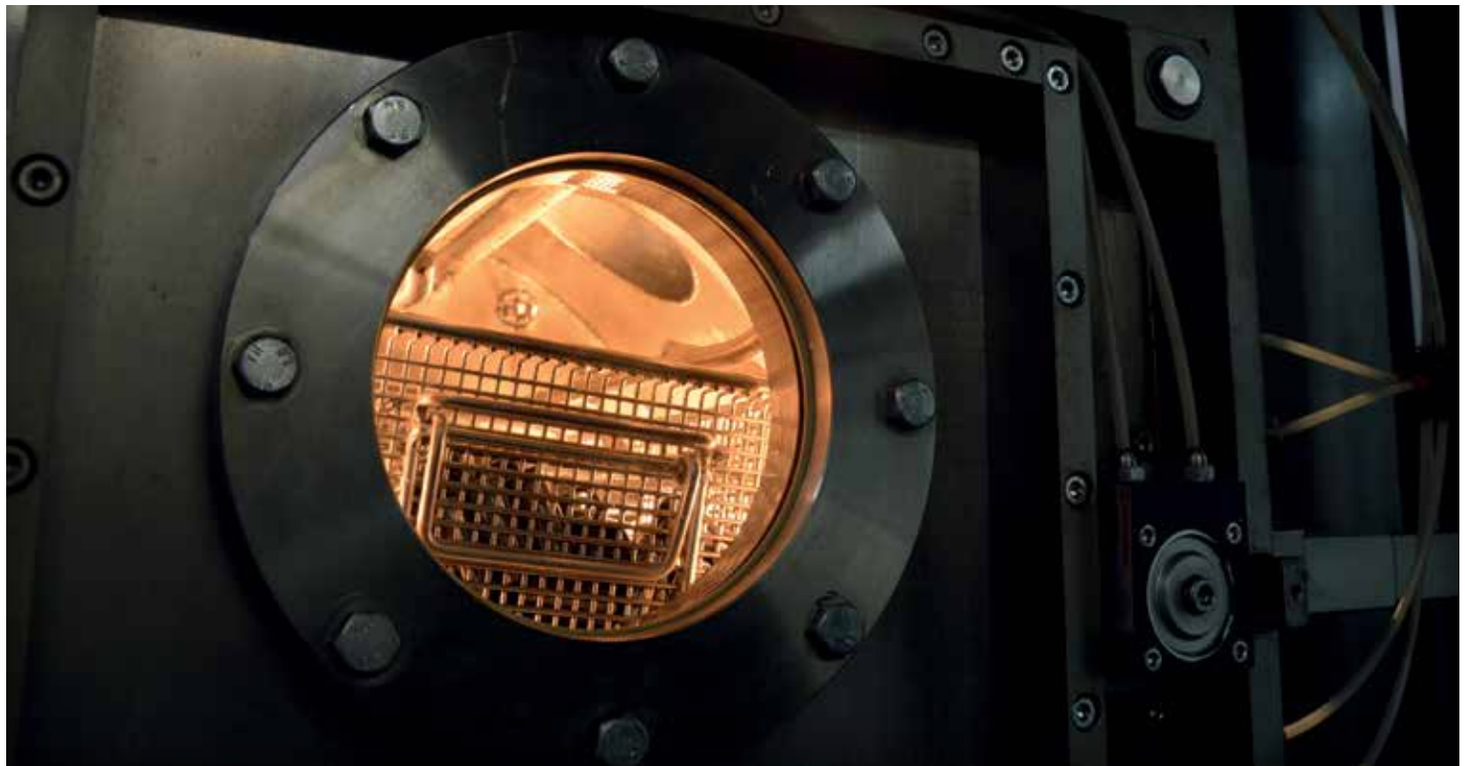
Solvent-based systems

Superfine cleaning. For demanding geometries.

Parts for fuel injection, hydraulics or medical engineering are often subject to the highest particle requirements. This is guaranteed by the innovative cleaning processes of vapic cleaning systems using modified alcohol. Even challenging part geometries such as tight laser cuts, superfine blind holes or tapped holes are perfectly cleaned by the microflows of the vapic alternating pressure process.
The parts are packed in the clean room immediately connected to the system. The batch size of the cleaning basket is 370 x 220 x 200 mm.

Process description

- Prewash
- Cleaning with / without ultrasound
- Alternating pressure process, pressure flooding, spray cleaning
- Pressure condensate spraying with chamber floor heating
- Vacuum drying
- Packaging in clean room



Power degreasing. Top surface energy.

Our PCE system is ideally suited for stamping, turning, polishing or grinding parts heavily wetted with oil or grease. Several cleaning circuits and a powerful vapour degreasing ensure the best surface energy.

Batch size

- Schäfer 1 basket: 630 x 480 x 300 mm
- Schäfer 2 basket: 430 x 300 x 200 mm
- Wire-mesh cleaning crate: 1200 x 800 x 800 mm
- Long parts: up to max. 2600 mm

Process description

- Clean with / without ultrasound from tank 1
- Fine cleaning from tank 2
- Vapor degreasing
- Conservation from tank 3 (optional)
- Vacuum drying
- Chamber rinsing with clean air

PLANT EQUIPMENT

Aqueous systems

Superfine cleaning. Process reliability. Part by part.

The aqueous continuous spray cleaning system guarantees reliable precision cleaning at a high throughput.
Its innovative parts movement ensures parts with difficult geometry become perfectly clean. The parts are packed in the clean room immediately connected to the system.

Batch size

Cleaning basket: 530 x 320 x 200 mm

Process description

- 2x alkaline cleaning
- 2x alkaline rinsing
- 2x acidic cleaning
- 2x acidic rinsing
- Deionized water rinsing
- Hot air drying
- Packaging in clean room

Ultrasonic cleaning. Spotless parts.

Emulsion-coated parts, such as aluminium die-casting after machining or hydroformed parts, are washed in an ultrasonic chamber process with water-based cleaners.

Batch size

Cleaning basket: 630 x 480 x 300 mm

Process description

- Clean with / without ultrasound from tank 1
- Rinsing with / without ultrasound from tank 2
- Rinsing from tank 3
- Deionized water rinsing from tank 4
- Hot air drying
- Vacuum drying


DELL
Leica

CLEANLINESS ANALYSIS LABORATORY

Testing for technical cleanliness

Today, cleanliness tests for the assessment of the technical cleanliness are indispensible because of initial sampling and evaluation, output and input control, quality control, and process monitoring. The vapic cleanliness analysis laboratory analyses for you according to ISO 16232 / VDA 19 and various customer standards to the highest quality standards.

Services:

- Gravimetric analysis
- Particle size distribution from 5 µm by using a Leica DM 4000 M material microscope
- Decay curve measurements

Clean room class 5

Excellent blank values are a requirement for meaningful analyses. However, conventional spray booths do not achieve this. This is why the vapic cleanliness analysis laboratory was equipped with a custom-made spray tank and the laboratory was designed as a class 5 clean room.

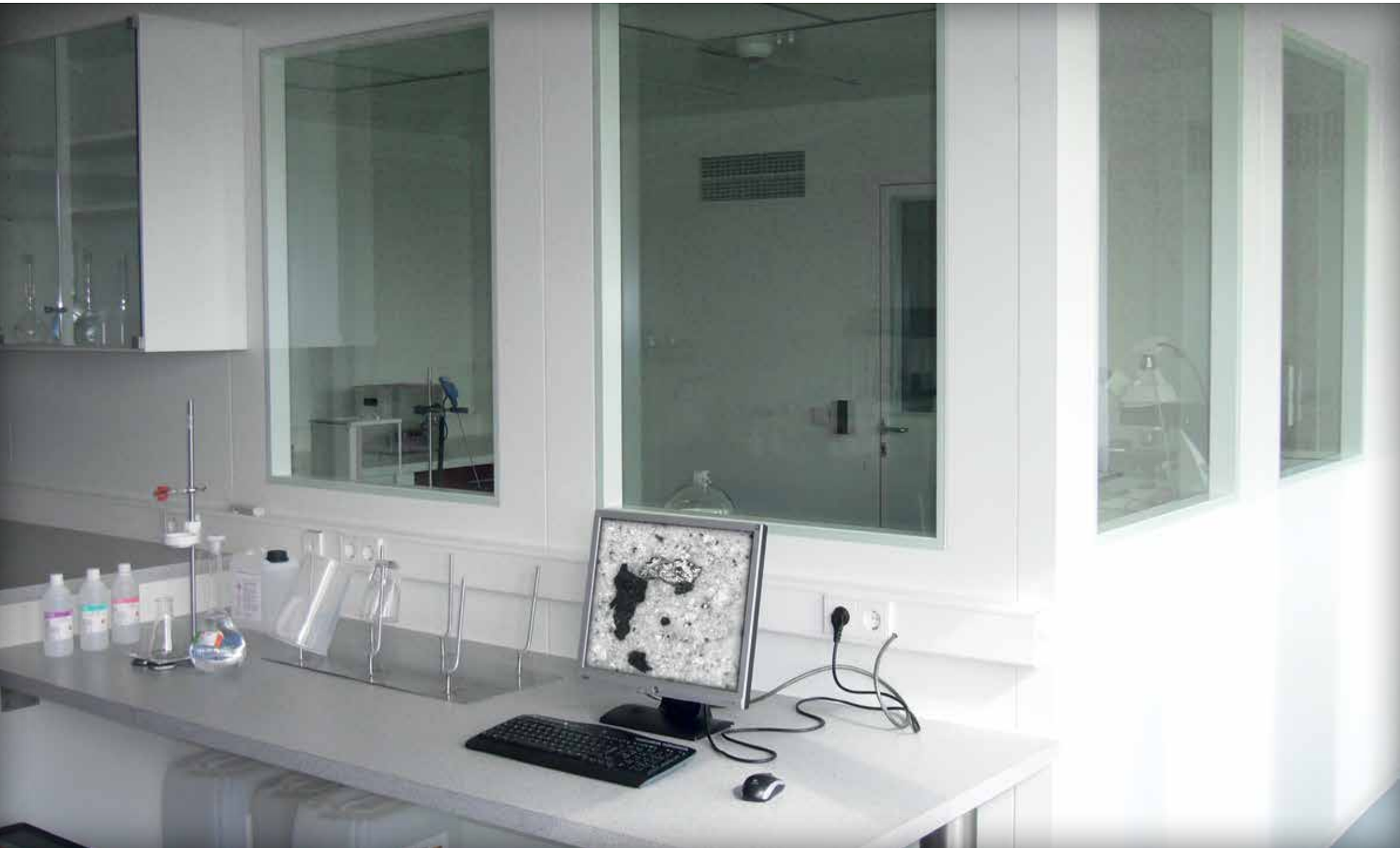
Extraction

We have a wide variety of extraction methods available to guide the particles onto analysis filter:

- Rinsing
- Splashing
- Shaking
- Ultrasound

vapic® gmbh
vacuum and pressure industrial cleaner

KONSEQUENT SAUBER.



Particle size distribution

A fully automated Leica DM 4000 material microscope automatically measures and counts particles from 5 µm. A distinction is made between reflective (metal) and non-reflective (non-metallic) particles and fibres. After a thorough manual examination, these are clearly displayed in written and pictorial form according to the following categories: all particles, reflective particles, non-reflecting particles, reflective fibres, non-reflective fibres. We also perform particle height measurements if required. The data will then be provided to the customer as a test report. We will provide general assistance concerning the testing of technical cleanliness, the evaluation of your analysis results or questions on the process chain in addition to delivering a meaningful analysis within the shortest possible time.

Decay characteristics

The extraction method is specified by us in close coordination with the customer, unless already predetermined. The decay characteristics must be examined to qualify this method. For this purpose, six consecutive analyses establish whether the remaining amount of particles is below 10 percent of the total amount of particles.

Gravimetric analysis

The analysis liquid is passed over a filter after the particle extraction. The total amount of dirt cleaned off is determined by micro scales (resolution 0.1 mg) after drying the filter.

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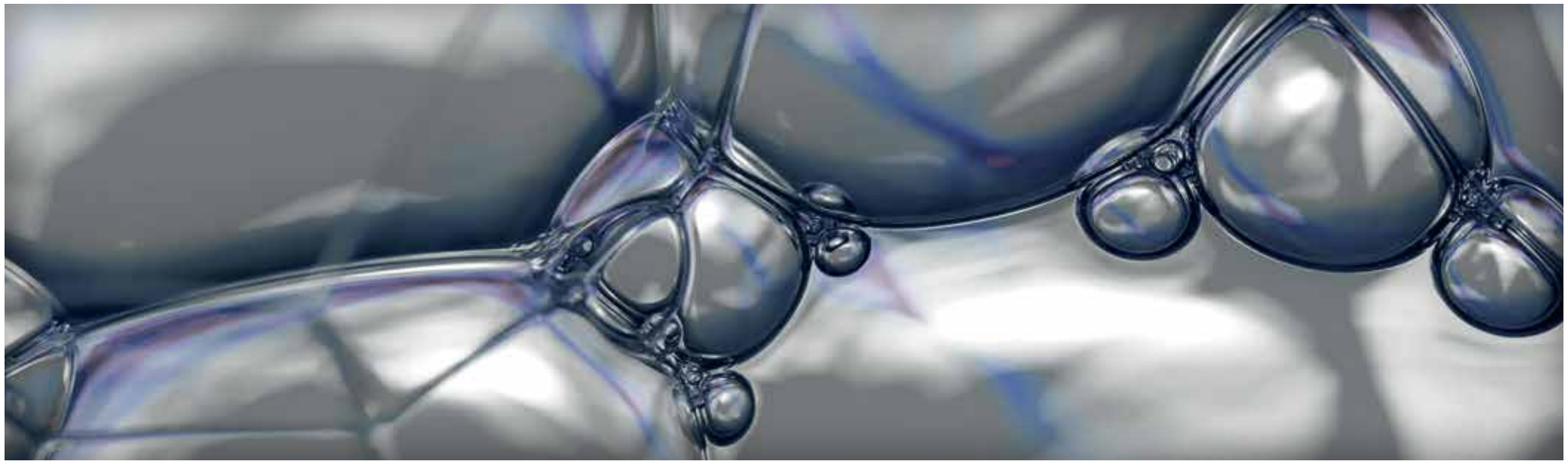
GREEN MOPED. CLEANED BY VAPIC.

CLEANING CHEMICALS
Contamination cleanly removed



vapic systems and cleaning agents are a well-practised team.
Long bath life, low solvent consumption, no unknown factors in the cleaning process - a perfect result, that's what you can expect from our chemicals.

- Solvent-based cleaning agents
- Aqueous cleaning agents
- Additives

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We will support you with detailed advice, preliminary cleaning at our technical center and laboratory services when selecting the perfect product for your cleaning task and the associated systems engineering.

We take product responsibility seriously. Already when we conceive our products, we assess possible basic materials as critical for any environmental impact and occupational safety as we asses them for their effectiveness and material compatibility. A long service life and recyclability are other important criteria for our product development. Waste-water free and waste-free production as well as the collection of used media is a natural part of it.

Product safety requires consistent quality control. Careful laboratory tests accompany each production step and ensure continuous process monitoring.

Naturally, we will remain your contact after the installation of our systems too. Qualified sample investigations are just an example of our service.

Cleani

Our products offer innovative solutions for all areas where quality and safety are important. We deliver the desired container size fast and competitively priced:

vapic FL, solvent-based cleaning agent:
A variety of formulations made of modified hydrocarbons and alcohols.
Example: vapic FL 820 modified hydrocarbon, flame resistant.

vapic FW, aqueous cleaning agent:
Neutral, alkaline and acidic cleaning concentrates for water-based parts cleaning.
Example: vapic FW 0709NS is a re-sharpening solution adapted to the contamination for an aqueous large-scale plant "without bath change".

vapic FO, oils:
We have the proper oils for our plant technology.
Example: vapic FO 444 is our fully synthetic oil for an optimum service life of your screw vacuum pumps.

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What our customers say:

Tony Wang
Project Engineer CEF

Hirschvogel Umformtechnik GmbH

"Our forming processes require a lot of strength and lubrication. The dirt must come off and even more importantly, it must be removed from the cleaning system. We have purchased two vapic special systems for our plants in Denklingen and China. We had the opportunity to add our internal requirements and experiences during project implementation. The results speak for themselves - our specialized departments are very happy".

Hirschvogel Automotive Group

Senior Staff

Boysen GmbH & Co. KG

"The emission control technology of Boysen is in demand worldwide. In only two years we have built seven new production facilities on four continents. Our experience with vapic XXL systems was very positive. Today, nine machines are used at Boysen locations in Germany, China and the United States. Plant engineering and chemistry have been perfectly adapted to our cleanliness requirements. For years we operate our systems in shifts without a bath change."

Gerhard Saur
Production Manager Engineering

WEBER-HYDRAULIK GMBH

"The cleanliness requirements for our hydraulic cylinders constantly increase. As a supplier for utility vehicles we face tough competition. Within a short period, vapic has produced three customized aqueous special systems for us. There is always a start-up phase with special equipment. The "teething problems" have been eliminated constructively, quickly and accommodatingly. The value for money is very reasonable - vapic is flexible and innovative."

WEBER-HYDRAULIK CORPORATE GROUP WEBSITE

Andrea Krause

Witzenmann GmbH

"I work at Witzmann - market leader for flexible metallic elements - and responsible for the cleanliness of technical components: Complex geometries, extremely ladling components, cost pressure, increasing cleanliness requirements - that's our daily challenge. In 2004, we have put the first vapic system with the process in operation. Further machines have been ordered and vapic also services the systems from other manufacturers at our factory. For several years we on and off have used the services of the vapic Parts Cleaning Center for components with high cleanliness requirements. vapic is competent, innovative, honest and reliable."

WITZENMANN
managing flexibility

Helmut Mühlberger

Rosenberger Hochfrequenztechnik GmbH & Co. KG

"Rosenberger produces highly complex parts made of brass. Our cleaning machines must be able to cope with an enormous entry of oil and chips and continuously deliver very clean components. Our two vapic systems can do just that! We need additional cleaning capacity because of our rapid growth - it will be provided by vapic, of course."

Rosenberger

Achim Mayenberger
Managing Director

Mayenberger GmbH

"We seriously considered our decision for a new cleaning system. Detailed specifications had to be met. In the end, our choice was clearly in favour of vapic. Cleanliness and efficient energy cost savings were definitely better than offered by competitors. That's what we had to achieve. And vapic helped us get there."

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REFERENCES

Unity - despite all diversity

Our customers operate in a variety of industries. Their requirements are as individual as diverse.
But one thing unites our customers: They are happy to work with vapic. Because of the excellent energy balance of our process.
Because of the competent service. Because we deliver on time…

The following is an excerpt from our reference list:

Turned and milled parts
Dietrich GmbH
Endress+Hauser
Kuhnke
Mann + Hummel
Mayenberger
OBE-Werk
Rosenberger
Wilhelm Drexelius GmbH & Co. KG
WST Präzisionstechnik

Fine blanking
Feinstanz CH

Extruded parts
Neumann Aluminium

Electroplating
Biacchessi

Hydraulic parts
Weber Hydraulik

Expansion joints
Boa
Witzenmann

Ball bearings
CW Bearing
GRW - Gebr. Reinfurt

Laser parts / Superfine cleaning
ROFIN-BAASEL Lasertech

Razor blades
Feintechnik

Pipes
König Metall
Vadeb-Witzenmann B

Other
Continental
Daimler AG
DT Swiss CH
Hörisch Präzision

Die-cut parts
Kaufmann
Prym Fashion

Deep-drawn parts
Stüken, Hubert

Mould parts
Friedrich Boysen
Hirschvogel

Zinc pressure casting
Rahrbach

Imprint

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Idea, Design + Implementation:

Inkom Media
Full Service Interactive Agency, Altensteig
www.inkom.de

Printed on recycled paper
www.druckhaus-goetz.de

Das Zeichen für
verantwortungsvolle
Waldwirtschaft

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