

# WORLDWIDE EXPERTS IN WATER TREATMENT

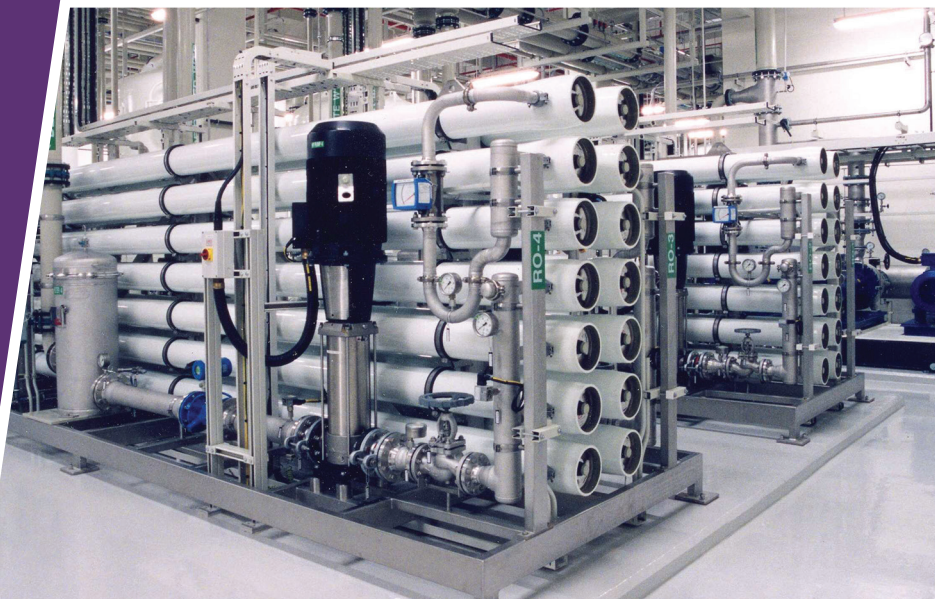
Electronics and semiconductor industry

Metal processing and galvanizing

Surface treatment

Automotive industry & Suppliers

Energy generation



# OVIVO DEUTSCHLAND GMBH

## ABOUT US

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Ovivo Deutschland GmbH was founded in 1955 as Goema GmbH. With our head office in Stuttgart Weilimdorf, Ovivo Deutschland GmbH is a leading manufacturer of installations for preparation and treatment of water, waste-water and process water.

Ovivo Deutschland GmbH supplies system solutions for supply and disposal installations as well as closed-loop circulation of process solutions and process waters - from the individual components up to the customer-specific turn-key installation. As a competent partner with comprehensive knowledge of processes, we incorporate our Ovivo technology in the respective customer-specific production.

Ovivo Deutschland GmbH operates worldwide in connection with the Ovivo group as well as with partners.

### OVIVO CONCENTRATES GLOBAL EXPERIENCE

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The Ovivo group is the global water expert and collects worldwide experience in the field of water preparation for the uses of our customers. It can refer to over 200 years of collected experience, process know-how and tried-and-true technology. With a presence in fifteen countries in the world and with over 800 motivated employees, we are a worldwide leading company in the field of implementation of solutions for water preparation.

Throughout the decades of growth and further development, it was always our goal to offer an optimal solution to our customers.

We are also your competent on-site counsellors. Our processes and technologies are tried-and-true and guarantee high quality and reliability.







## OUR COMPETENCE - YOUR ADVANTAGE

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With our comprehensive service, maintenance and training measures, we offer all necessary services to our customers, even during running installation operation. Our own laboratory and technical installations for research and development allow us to continuously increase the benefit to our customers in terms of efficiency, quality and investment security. Ovivo Deutschland has successfully implemented branch-specific user solutions in many industrial branches and disposes of specific know-how in the following domains:

- Development of new process technologies
- Production-integrated wastewater reduction processes
- Energy efficient solutions
- Water reclaim technologies
- Modular „plug-and-play“ process water treatment systems
- State-of-the-art turn-key plants
- Zero-liquid-discharge treatment solutions
- Service
- Consumables and spare parts



## COMPLETE SOLUTIONS FOR PROFITABLE CONCEPTS

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- **Circuit board technology**
- **Electrical & electronics industry**
- **Photovoltaic industry**
- **Automotive industry**
- **Galvanic industry**
- **Aluminium industry**
- **Steel industry**
- **Energy industry**
- **Waste disposal & recycling industry**
- **Food industry**
- **Chemical industry**
- **Textile industry**

A modular component system allows the individual configuration of supply and disposal installations in order to satisfy the highest requirements in terms of profitability and environmental protection.

With comprehensive measures for planning, assembly, commissioning, maintenance as well as training, we take the load off our customers in each project phase through a highly qualified project management so that they may deal with "the most important" - their production!







## THE WIDE SPECTRUM OF OVIVO INSTALLATIONS

WE OFFER ALL APPROPRIATE SYSTEM COMPONENTS AND PROCESS TECHNOLOGIES FOR THE STATED DOMAINS, SUCH AS FOR EXAMPLE:

### ION-EXCHANGER TECHNOLOGY OVIVO®-IONEX

#### a) Fresh water preparation

When supplying sensitive processes with water, e.g. preparation of process baths or rinsing steps, faults may occur due to materials contained within the freshwater.

Installations for softening freshwater use cation-exchangers to remove hardness sources in exchange with sodium ions. The soft water thereby generated loses its potential for lime precipitation.

#### Desalination

For many processes, it is necessary to remove all salts from the freshwater. For this, ion exchanger technologies may also be used. In a sequence of cation and anion exchangers, almost all halogens are removed from aqueous solutions. If a higher quality is strived for, the cation and anion exchanger is followed by a so-called mixed-bed exchanger.

#### b) Recycling processes

Circuit installations for rinsing water (Surface technology)

Multi-step rinsing technologies are planned for processes with high requirements towards surface purity of parts. An example for minimization of waste-water volumes is the combination of low through-flow circuit pre-rinsing with a high through-flow circuit rinser that is cleaned of collected salts in circulation via an ion-exchange installation. We use various recycling technologies to prolong the service life of process solutions and to remove disturbing elements from processes. Examples for recycling applications with ion exchangers:

- Removal of metals from acid bating
- Removal of Iron/Chrome-III from electrolytes during chrome-coating
- Aluminium removal from anodising baths via retardation plants
- Removal of aluminium from phosphoric acid and process solutions containing phosphoric acid
- Regeneration of passivations



## STATE OF THE ART PROCESS TECHNOLOGY ENSURES CUSTOMER BENEFIT



### MEMBRANE TECHNOLOGY OVIVO®-SEP

#### a) Fresh water

Membrane technologies are increasingly used as a complement or alternative to conventional methods for water preparation:

- Ultra-/Micro-filtration installations for removal of particles from surface waters
- Reverse osmosis for desalination, with subsequent electrode ionisation depending on the quality requirement.

#### b) Recycling

OVIVO®-SEP-Membrane installations are already widely used by our customers in the domain of recycling processes:

- Ultra-/Micro-filtration installations for separation of cooling lubricants or recuperation of degreasing solutions containing surfactants
- Reverse osmosis installations for recycling of rinsing waters
- Water recycling in WAFER-technology

#### c) Waste-water

There are several possibilities for the use of membrane installations in the waste-water sector:

- Separation of solids through micro-filtration e.g. using a highly efficient, robust SiC-membranes
- Reserving of biomass in MBR processes
- Separation of organic components for protection of reverse osmosis installations in waste-water free installations

### THERMAL SEPARATION TECHNOLOGY OVIVO®-THERM

Concentration processes find increasing applications in recycling and waste-water technology. Be it to reduce the waste-water volume for disposal or to concentrate cleaned rinsing water back into process bath concentrations.

#### a) Recycling technology

Special vacuum evaporator installations are used as a sparing concentration process for sensitive fluids. For example for:

- Concentration of chromic acid rinsing waters after cleaning and returning to the process bath (up to 300 g/l CrO<sub>3</sub>)
- Concentration of alkaline, even cyanidic electrolytes
- Concentration after ion exchangers for waste-water cleaning and recuperation of precious metals in case of external regeneration

#### b) Waste-water

After detailed laboratory or technical centre tests, customer-specific applications are developed e.g. for:

- Waste-water evaporation for volume reduction in case of requirement of an external waste-water disposal
- Evaporation of concentrates from ultra-filtration of oil-water-mixtures into usable material flows
- In combination with other processes for waste-water free requirements (ZLD) for minimization of the disposal costs of the concentrates



## STATE OF THE ART PROCESS TECHNOLOGY ENSURES CUSTOMER BENEFIT



### INNOVATIVE OVIVO TECHNOLOGIES

#### a) Physical-chemical waste-water treatment

We supply fully automated installations for detoxification, neutralisation and flocculation of rinsing waters, used process solutions, regenerates from ion exchangers or concentrates from membrane processes incl. sludge treatment and limit value assurance.

- Stand- or batch-treatment
- Continuous detoxification
- Sludge de-watering
- End-filtration and end-cleaning installations

#### b) Reusable materials- Recycling

Electrolysis cells are used in order to retrieve reusable materials from metal-ion-containing solutions, e.g. for gold, silver, copper and nickel.

#### c) Waste-water treatment through oxidation

The anodic or UV-oxidation of waste-water contents (e.g. cyanide or complexing agents) simplifies or allows the treatment.

#### d) Energy recuperation from waste-water

With the background of sinking product prices due to market globalisation and simultaneously rising costs for raw materials and energy, it is necessary to find and implement cost-saving potentials. A contribution towards this is the optimal use of energy. Thus, significant savings may be achieved e.g. through heat recuperation from hot process baths through combination of heat exchangers and heat pumps. Ovivo has successfully planned and delivered such systems for years.

## INNOVATIVE OVIVO TECHNOLOGY

### BIOLOGICAL PROCESSES OVIVO®-BIO

Biological processes can find applications in waste-water treatment as well as independent cleaning processes or as a partial components of a multi-step installation concept. Biological processes are a significant advantage with the increase of pollution, dirt and waste-water, and the heterogeneity of waste-water with respect to other waste-water cleaning processes.

We offer the following process technical solutions:

- Fixed-bed processes
- Conventional activated sludge processes
- Batch processes as SBR (Sequence Batch Reactor)
- MBR (Membrane bio-reactors)
- Carbon dioxide- (or CSB-) decomposition (aerobic or anaerobic), also with bio-gas recuperation
- Nitrification
- Denitrification

### PROCESS COMBINATIONS

All stated processes can be combined in a customer-specific manner in order to solve complex problems thanks to our special know-how. Here, there are several implemented installation combinations that can be adjusted to the customer requirements under consideration of the legal directives, space requirements, energy and water costs.

Examples:

- Physical-chemical treatment combined with biological post-treatment for compliance with limit values for inorganic and organic harmful substances.
- Ultra-filtration for separation of mineral oils in combination with an evaporation of the UF concentrates in order to minimize residual materials.
- Materials closed-loop circulation combined with physical-chemical treatment and a biological post-treatment for ecological and economical process water preparation.
- For waste-water-free process

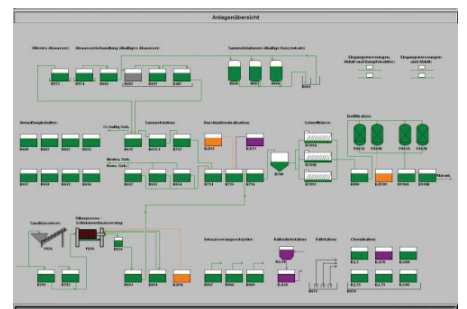
technology (ZLD = Zero Liquid Discharge), customer- and location-specific combinations such as intelligent physical-chemical pre-treatment, desalination through reverse osmosis and evaporation of the concentrates can be offered.

### MEASUREMENT AND CONTROL TECHNOLOGY

We supply our installations with the most modern switching installations and operator interfaces for automation and monitoring. These fulfil the high requirements towards operational security, reliability as well as operating comfort and data security.

These include:

- Process visualization
- PLC programming
- Software service
- Switching systems





# YOUR ADVANTAGE: THE OVIVO ELECTRONIC & METAL DIVISION FOR TECHNOLOGY AND DEVELOPMENT INNOVATION CENTRE

## YOUR ADVANTAGE - OUR INNOVATION CENTRE FOR TECHNOLOGY AND DEVELOPMENT

For more than 30 years, we have helped our customers in solving the problems of tomorrow today, thanks to significant development and optimization of new processes with innovative environment technologies. We also develop and optimize processes and installations for your application scenario in the scope of customer-specific laboratory and technical centre studies. Use the comprehensive know-how of our development department in combination with our testing and pilot installations. We can develop the optimal solution for your process thanks to our wide spectrum.

For example:

- Membrane installations with organic and ceramic membranes
- Evaporation installations
- Ion-exchanger installations!
- Bio-reactors
- Electrolysis cells
- Innovative filtration installations
- UV- Oxidation installations
- Installations for testing of physical-chemical treatments in combination with membrane / or biological processes on site.
- Mobile laboratory and pilot installations in containers for planning studies



We also analyze your ion exchange resins as well as your water and wastewater.

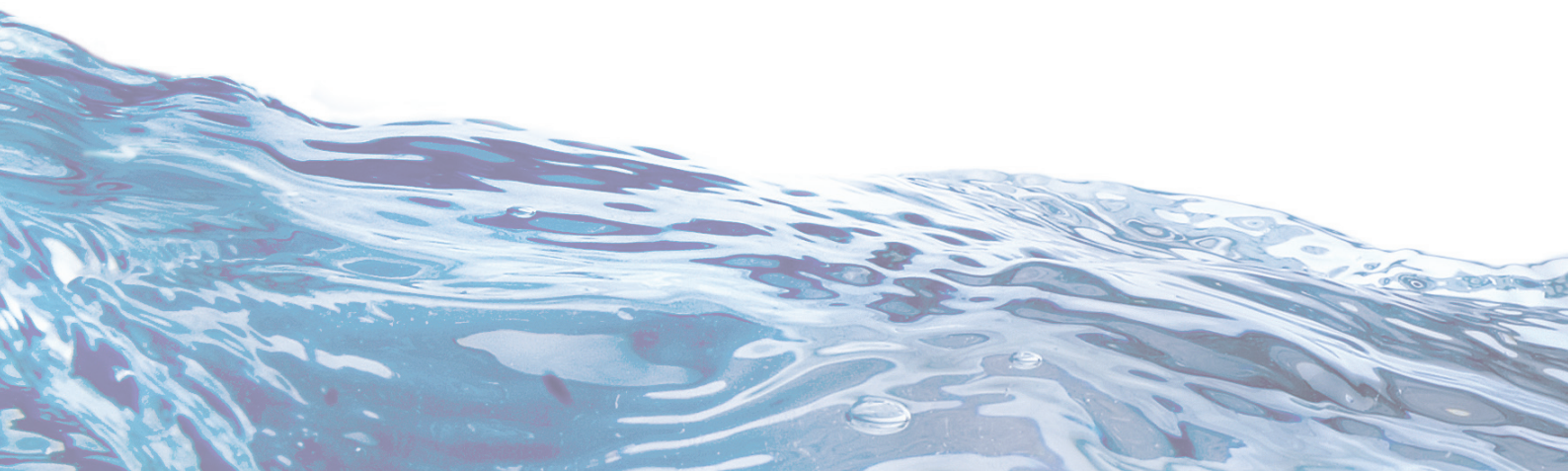
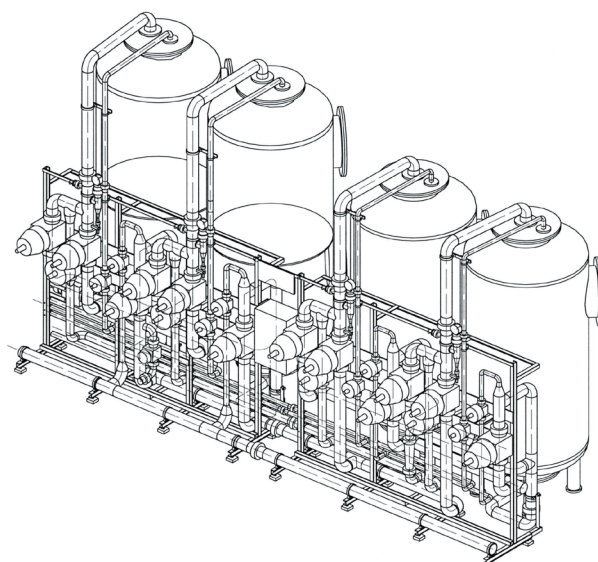


## SUCCESSFUL IN MANY BRANCHES THROUGH COMPETENCE & SERVICE

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Ovivo has a leading position as system partner for all installation and process solutions in the domain of water management through consistent customer-orientation. We offer all necessary services such as:

- Consulting
- Problem solving
- Planning
- Professional project management
- Technical and chemical service including laboratory testing
- In-house chemicals delivery program
- Value engineering





## OVIVO – SERVICE CENTER

WE OFFER:

### PLANNING AND IMPLEMENTATION

We support you during planning and implementation of refurbishment, installation extensions and new installation construction.

### CONSULTING AND SUPPORT

To fulfill your requirements we provide consulting based on more than 60 year experience in water treatment. We will support you each aspect of operation of your water preparation installation. It thereby does not matter whether this concerns

- Process steps or process improvements
- Installation maintenance
- Use of materials or
- Use of dosing chemicals.

### SPARE PARTS AND CONSUMER MATERIALS

You may source spare parts and consumer materials for your water preparation installation from us. We analyse the process and find appropriate materials which may be used for

- Vessels,
- Coatings,
- Piping or
- Fixtures, etc.

We also supply dosing chemicals, replacement and installation services.

Please contact us!

### COMMISSIONING AND INSTALLATION AUDITS

We support during commissioning of your water treatment plant. Also we audit your plant to evaluate your process and the condition of all installed components.

### OPERATION AND MAINTENANCE OF WATER PREPARATION INSTALLATIONS

We are able to operate and maintain your water preparation installation. For this, we offer short-, medium- and long-term maintenance and supervision agreements.

### CHEMICALS

- Flocculation materials and equipments,
- Dosing chemicals of all types
- Cleaning chemicals for all processes

### TROUBLESHOOTING

In case of disfunction or failure of a component, we immediately step in, allowing an emergency repair and interim operation.

### GUARANTEE AND WARRANTY

If however, a guarantee or warranty case still arises, we will handle it as fast as possible for you.

### DOCUMENTATION

We create and review your installation documentation, obviously in accordance with FDA and GMP standards. We also create and review all installation schematics in AutoCAD

### OUR DOMAIN OF EXPERTISE

We are there where your water-preparation installation is set up. You no longer need to worry about repairs, replacement parts, maintenance, qualification or documentation.





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