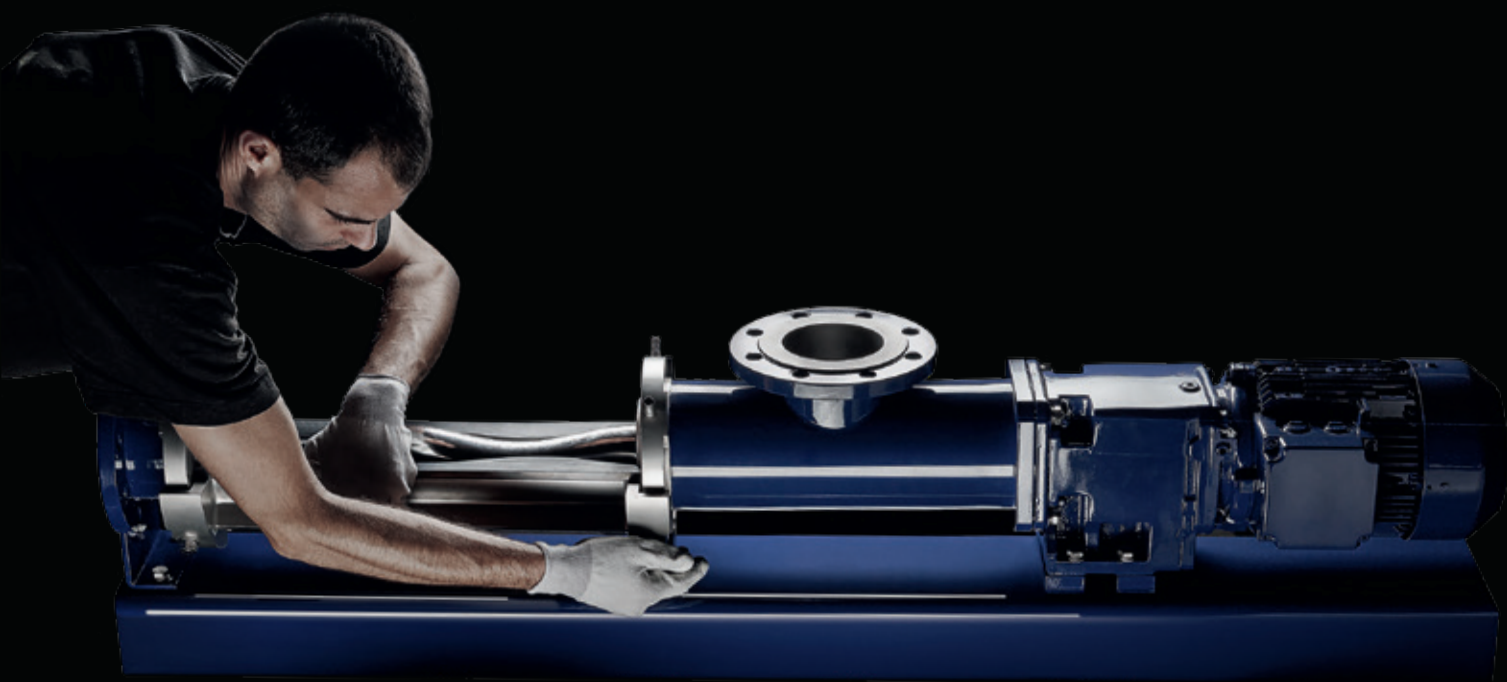




AMCAL
INDUSTRIAL PUMP SOLUTIONS

SEEPEX.
DATA BOOKLET

MAINTENANCE SOLUTIONS **EASY. INNOVATIVE. FAST.**



MAINTENANCE IS A SUCCESS FACTOR.

When technical equipment works continuously in a reliable and efficient manner, the impact on the overall productivity for the customer is powerful. Without proper maintenance, machines and equipment are not as productive as possible, which has a direct impact on productivity and operating costs.

Operation and maintenance personnel have to keep equipment and production running efficiently. They have to ensure the maximum availability of equipment and processes. They aim to predict when maintenance is required so they can implement forward planned maintenance and minimize downtime. Service work has to be carried out quickly to minimize downtime.

THE BASIS. PRODUCT NETWORKING.

Where broken or worn out parts used to be repaired after failure of the equipment, new tools now allow not only proactive but also predictive maintenance. Additionally, they enable simplified maintenance and more flexible planning of maintenance staff.

Proactive maintenance is cost efficient in the long run as this approach looks to control and prevent problems before they occur, avoiding breakdown of equipment which could cause delays in production. With our control systems we ensure that spare parts are replaced only when necessary.

The Internet of Things facilitates the detection of the exact status of the equipment. And with digital solutions incorporating sensors and multifunctional controllers, this information can be obtained quickly and cost-effectively. In addition, pumps can be controlled and monitored to optimize processes while data on equipment is collected and analyzed. The basis for this is product networking.

But not every product or spare part is digitally networked. Traditionally, repair or maintenance of these products has to take place after the break and fix model. Not always avoidable but very costly in the long run. We offer you our best solutions for simplified maintenance.





SIMPLIFIED. RELIABLE. SERVICE FRIENDLY.

Whether our customers require solutions for simplified or proactive maintenance or seek reliable genuine spare parts with world-class support – SEEPEX always offers the perfect solution to meet their requirements.

We show you how to

- Minimize downtime
- Extend equipment life
- Reduce maintenance costs
- Simplify maintenance
- Boost productivity

Our offer:

- The masterpiece for reduced downtime, less spare parts and lower life cycle costs
 - Smart Conveying Technology
- Smart equipment
 - Smart Seal Housing
 - Drive Joint Access
 - Rotor Joint Access
- Customized or standardized Monitoring and Control Solutions
- Innovative Digital Solutions
 - Pump Monitoring
 - Pump Management
 - SEEPEX Service Apps
- Original Spare Parts for the best fit
 - SEEPEX Service Point
 - SEEPEX Shop
- Reliable and professional
 - 24-Hour-Helpline
 - SEEPEX Service Network

Explore more on the era of easy and innovative maintenance solutions.

THE MASTERPIECE. SMART CONVEYING TECHNOLOGY.

Smart Conveying Technology (SCT) is a success story that has its beginning in 2008. SCT means faster maintenance, reduced downtime and lower life cycle costs. This unique product has already received several awards and is internationally patented.

SMART STATOR

Two, comparatively light, stator halves.

SMART ROTOR

With detachable rotor head connection for fast assembly/disassembly, while leaving the universal joint intact.



KINETIC RING

For positioning and axially sealing the stator halves, adjusting the stator clamping and retensioning the stator halves.

DESIGN PRINCIPLE

The design principle of this technology: The Smart Stator consists of two halves. Maintenance can be carried out easily by one person without having to remove suction or discharge pipework. This allows the rotor and stator to be inspected for wear and blockages, which can be easily cleared without having to remove the pipework, rotor or stator.

DETACHABLE ROTOR

The detachable smart rotor enables quick and easy replacement of the rotor without having to remove the joint or needing special assembly tools, which in turn saves time and money. The result: Maintenance in a very short time, reducing downtime and increasing productivity.

ONE-PIECE ROTATING UNIT

The double plug and play design of the rotating unit makes it quick and easy to replace the wearing parts, saving time and money.

- Quick and easy maintenance
- Reduced downtime due to pre-assembled rotating unit
- Constructed to the original pump specifications to ensure compatibility with pumped media

INTEGRATED RETENSIONING DEVICE

For optimal uptime, the integrated retensioning device allows the clamping between the rotor and stator to be adjusted due to wear. Readjustment takes place within minutes bringing the pump capacity back to the required level without having to replace any components. This extends the life of the rotor and stator significantly and reduces the need for spare parts. The life cycle costs of SEEPEX pumps are greatly reduced.

SCT AUTOADJUST

SCT AutoAdjust is a further development of the award-winning SCT. It is a progressive cavity pump that allows remote automated adjustment of the stator segments to restore the pump performance to the optimal operating point with just one click of a button. Routine site visits to restore pump performance are eliminated as adjustments can be made remotely from any location.



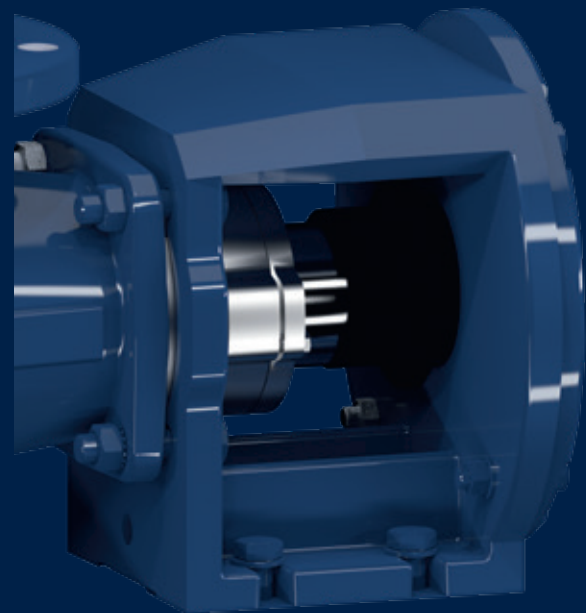
SEGMENT RETAINER RINGS

For positioning and radially sealing the stator halves and locating the adjusting segments.

SMART SEAL HOUSING

Sectioned seal housing for quick replacement of the mechanical seal and access to the drive-side joint.

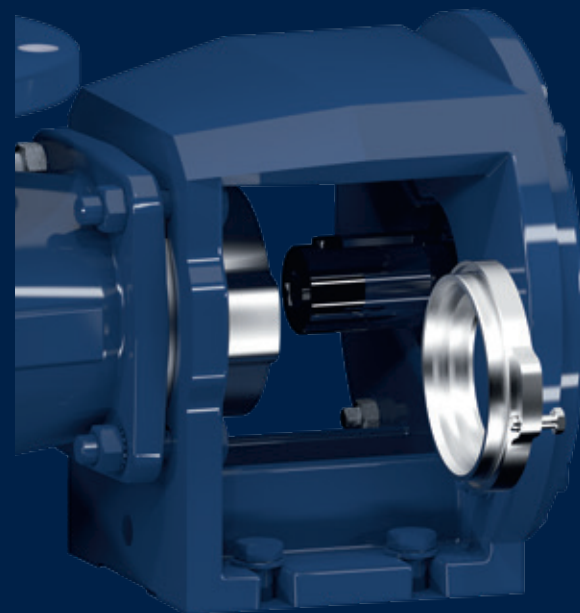




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A SMART ADDITION. SMART SEAL HOUSING.

Smart Seal Housing allows mechanical seals to be maintained quicker and more easily than ever before.

Smart Seal Housing (SSH) is a technical addition to pumps with Smart Conveying Technology (SCT). SSH allows both the rotating and stationary seal components to be replaced and also gives access to the drive-side joint without time-consuming dismantling of the suction casing and pipework and without damaging the mechanical seals. This is possible thanks to a new development: the two-part seal housing.

Maintenance work is thus reduced to just a few minutes, resulting in significantly shorter downtime.

FEATURES AND BENEFITS

- Sectioned seal housing
- Quick maintenance and easy replacement of the mechanical seal
- Easy access to the drive-side joint
- No damage to the mechanical seal during drive-side work
- No dismantling of suction casing and pipework necessary
- The split mechanical seal housing enables the stationary component to be removed via the lantern
- Reduced maintenance times and costs

Smart Seal Housing is optionally available for pumps with Smart Conveying Technology and is patent pending. Our experts will be happy to answer your questions regarding options and benefits.

BIG PUMPS. EASY SERVICING. MAINTENANCE WITH A WRENCH.

Just a wrench is needed for the maintenance of big standard pumps. Rotor Joint Access (RJA) and Drive Joint Access (DJA) allow easy access to both: rotor and drive-side joints. Time-consuming disassembly or even complete removal for maintenance is now a part of the past.

BENEFITS

- **Maintain-In-Place**
No removal of pipework or the entire pump
- **Significant reduction in maintenance costs**
Easy access to wear parts without dismantling the entire pump
- **Increased uptime and plant availability**
Fast maintenance of rotor- and drive-side components for trouble-free operation

Due to the size of larger pumps, inspection and maintenance can be challenging requiring special tools, pipework dismantling, and in some cases even the pump to be moved out of place.

Designed specifically for large and multi-stage pumps of the pump range BNM, this easy maintenance solution is based on the well established RJA and DJA principle for open hopper pumps.

A sliding housing element (RJA) allows quick access to the rotor-side joint area. The rotor and stator can be removed and maintained as a single unit after separation of the rotating unit.

The short design of the BN pump and the supported suction casing allow access to the drive-side joint (DJA). Removing the drive makes maintenance of the shaft seal quick and easy and allows access to the plug-in shaft joint.



RJA and DJA make maintenance immensely easier. With a simple wrench, the rotating unit can be removed, while the flanges and joints remain in place. This can save up to 80% of the maintenance time.

The patented solution facilitates maintenance work for quick and easy servicing and allows for Maintain-In-Place. It reduces downtime, saves costs, and increases operational reliability as well as the service life of the pump.

ROTOR JOINT ACCESS.

The Rotor Joint Access maintenance concept provides quick and easy access to the rotor-side joint on large standard pumps (pump range BNM).



DRIVE JOINT ACCESS.

On large standard pumps, the complete drive and coupling rod assembly can be easily removed from the back of the suction casing to service the mechanical seal or joints. Removing the pipework or dismantling the rotor and stator are not required either.



IN MOTION. EASY ACCESS TO JOINT PARTS.

Drive Joint Access and Rotor Joint Access offer quick and easy access to joint parts and other components, greatly reducing your costs and saving time.

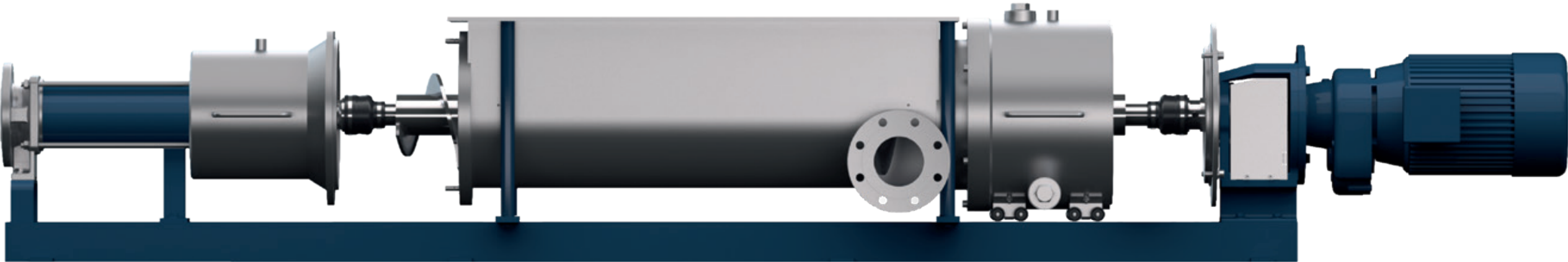
FEATURES AND BENEFITS

- **In-place maintenance**
No removal of pipework, hopper or the entire pump
- **Significantly reduced costs**
No dismantling of the rotor/ stator, hopper or auger
- **Preventive maintenance**
Quick, frequent inspection of joint and mechanical seal enables early detection
- **Removal of residue**
Residue can be removed before opening the pump via the flushing holes in the intermediate element

Open hopper pumps transport highly viscous non flowable products with a high dry solids content. Large open hopper pumps are typically difficult to maintain. Removal of the complete pump is often necessary and can be time-consuming, especially with intermediate hoppers and the associated pipework.

Drive Joint Access (DJA) and Rotor Joint Access (RJA) solve these problems in large hopper pumps and greatly simplify maintenance. On one hand, Rotor Joint Access – a casing part that slides over the stator – allows quick and effortless access to the rotor-side joint for easy maintenance without dismantling the pressure branch or stator. On the other hand, the patented Drive Joint Access solution allows easy access to the drive-side joint via a sliding joint casing mounted on rollers.

By simply moving the intermediate casing parts, the drive-side or rotor-side joint can be accessed for easy assembly or disassembly without needing special tools.

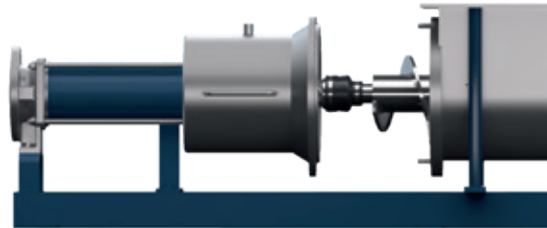


ROTOR JOINT ACCESS.

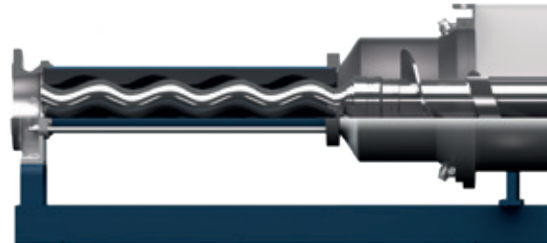
The clever maintenance concept, Rotor Joint Access, allows quick and easy access to the rotor-side joint of selected open hopper pumps.

The sliding housing section mounted on rollers enables quick and easy access to the rotor-side joint. This means that the stator can be easily removed without having to dismantle the pressure branches or pipework. This simplifies service work and drastically reduces the pump downtime due to maintenance.

RJA FOR PUMP RANGE BTVE



RJA FOR PUMP RANGE BTHE (CROSS SECTION)

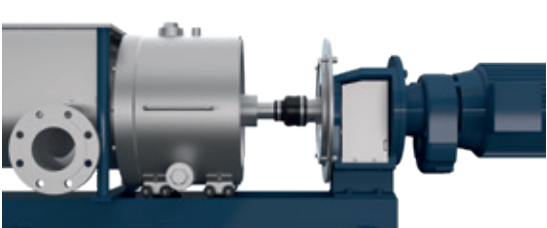


DRIVE JOINT ACCESS.

Drive Joint Access (DJA) is a clever maintenance concept for open hopper pumps of the series BTVE (with auger feed screw) and BTHE (with a concentrically rotating ribbon screw and a full screw in the compression casing).

The drive joint access casing is fitted on rollers and allows quick access to the joint on the drive side. The plug-in shaft and drive can therefore be installed or removed within a few minutes without having to remove the pipework, the intake hopper or the screw conveyor.

DJA FOR PUMP RANGE BTVE



DJA FOR PUMP RANGE BTHE





EVERYTHING UNDER CONTROL. MONITORING AND CONTROL SYSTEMS.

Do you want to protect your pumps from damage and thus avoid production downtime? Do you strive for maximum accuracy in dosing technology because you value the best product quality for your pumped medium? Are you looking for control systems that can be adapted to pumped media and conveying capacities, because your project is individual?

Then SEEPEX offers solutions

- to monitor the operating conditions of the pump
- to protect the pump components
- to control the conveying process

CONTROL YOUR APPLICATION.

SEEPEX is your partner from consultation to commissioning. Our solutions provide reliable control and safe monitoring of your applications with standardized or customized control modules and package units - from single components to complex systems with visualization of the process.

DISCOVER WHAT'S INSIDE YOUR PUMP. DIGITAL SOLUTIONS.

SEEPEX presents the next digital evolutionary step for your pumps, changing the way we deal with pumps and technology. With our solutions, we offer a clear overview of how the individual progressive cavity pump can be turned into a networked system of smart products, services and processes whose status and performance you can fully monitor in real time, from any location and at any time.

INDISPENSABLE. NETWORKED PUMPS.

SEEPEX DIGITAL SOLUTIONS FOR EVERY USER:

- For all users of digitalized pumps that are to be monitored and optimized.
- For all users of our control system solutions.
- For all users of a conventional SEEPEX pump.

We adapt our digital solutions and services to meet your needs and support you in optimizing the regular pump operation and conveying process, reducing unpredictable downtimes and process failures to a minimum, planning and carrying out necessary service and maintenance work more efficiently and simplifying logistics processes.

Use our Digital Solutions to

- increase plant availability and avoid unplanned downtime through continuous automated monitoring
- optimize service and maintenance intervals through predictive maintenance and thereby reduce maintenance costs
- optimize the use of your pump - in terms of energy efficiency, throughput and service life and spare parts requirements
- analyze and improve demanding pumping tasks through the intelligent networking of your pumps
- retrieve all operationally relevant documents and maintenance plans for your pump online as a digital twin with the click of a mouse
- reach your contact person simply, quickly and directly for just-in-time ordering processes and service inquiries

SEEPEX will help you to act in time instead of just reacting - with all relevant pump information always and everywhere in sight - with protection against unforeseeable failures.

SEEPEX will be happy to discuss how you can utilize the full potential of our intelligent, networked pumps to the benefit of your applications.



PUMP MONITORING.

Operating data is continuously available to show early detection of wear, tear and prevention of process failures before they occur – regardless of whether the pump is located in a remote location or in a hard to reach area. This allows our customers to make consistent decisions in rapidly changing process environments. **SEEPEx Pump Monitoring impresses with its 100% reliability.**

Receive information at an early stage before critical situations occur in your pump or the surrounding process. Monitor your pump and detect possible wear, joint damage, cavitation, pipe blockages, drop in performance and flow rate or unplanned changes in process conditions such as temperature or pressure fluctuations in advance.

In short: Operate your pump at the optimal operating point, optimize service and maintenance work and noticeably increase system availability.

THE PUMP MONITOR. THE INTELLIGENCE OF YOUR PUMP.

The SEEPEx Pump Monitor turns the progressive cavity pump into an intelligent field device that constantly monitors its own operating status and performance and immediately reports the results of this self-diagnosis to the user. With the utmost precision and reliability, it measures and records individually defined process data such as pressure, flow rate, temperature and vibration – 24 hours a day, 365 days a year. From this information KPIs can be developed to monitor factors such as cavitation or wear.

The Pump Monitor's intelligence, which is tailored to your application, guarantees the best possible use of your pump and also allows you to optionally activate a protective shutdown to protect your pump from overpressure and excessive temperature. Stay informed and use the Pump Monitor via a display screen, Bluetooth or integrated into your control system.



PUMP MONITORING AND ANALYTICS. THE COMPREHENSIVE SOLUTION IN THE CLOUD.

SEEPEx cloud-based Connected Services provide online remote monitoring and management of your pumps and process. Data collection and advanced analytics along with our application expertise deliver process optimization, improved equipment and plant efficiency, creating previously unimagined potential for your productivity.

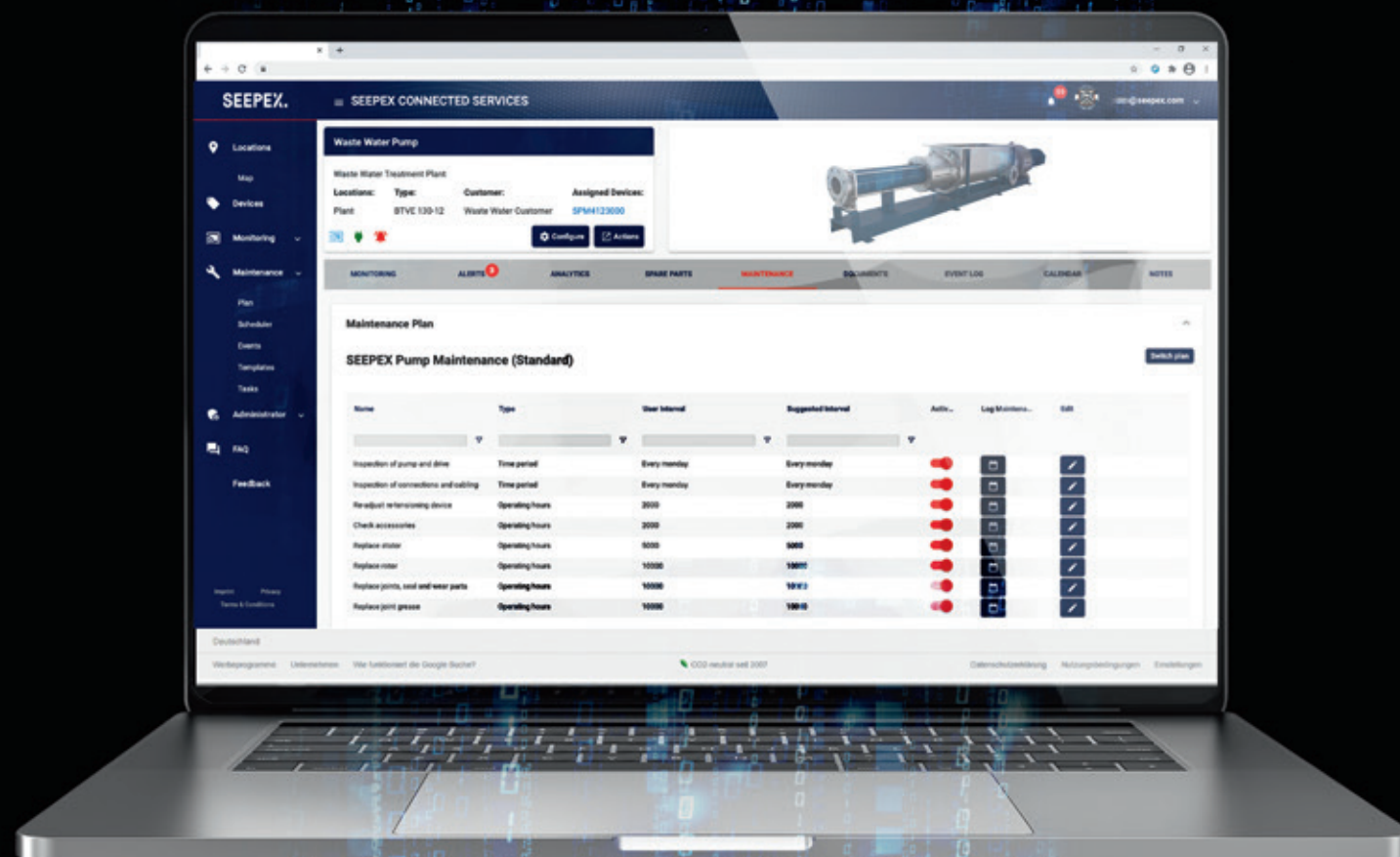
Integration into your existing process control systems is simple. Start-up, connection to the Pump Monitor and cloud connection can also be carried out by a SEEPEx specialist on request. One thing is certain, you decide on your data and authorizations: locally offline or securely in our cloud.

Visit seepex.com for more information.



SEEPEX PUMP MANAGEMENT. MANAGE YOUR PUMP CONVENIENTLY AND ELECTRONICALLY.

All the important technical information at your fingertips. Data sheets, manuals, 3D models and drawings. Spare parts list with link to the shop, management of documents, notes on the equipment and digital maintenance planning. We offer a complete digital twin to your pump.



SEEPEX Pump Management gives you a comprehensive and convenient overview of your entire pump fleet:

- Access operating instructions, downloads for all available data sheets, dimensional and sectional drawings as well as 3D data for the respective pump.
- Create your own document file, save notes and images of the pump.
- The maintenance plan recommended by SEEPEX will be set up and adapted for you in no time. In future, you will be conveniently reminded of upcoming inspections via email.
- Keep track of your activities in the digital maintenance log. Have a full overview of the maintenance history of your pumps at all times.
- Anything else? Discuss your specific maintenance requirements with us. We can offer you advice and work with you to draw up an inspection plan according to your specifications.

SEEPEX SERVICE POINT. PUMP MANAGEMENT ON THE GO.

The key to efficient Pump Management is the QR code on the equipment's name plate which allows it to be easily identified in your plant without logging into Connected Services. You can also obtain documentation and basic manufacturer information for the exact equipment, or contact us directly for service or spare parts.

SEEPEX VR AND REMOTE SERVICE. MAINTENANCE BECOMES INTERACTIVE.

From practical experience for practical application: Detailed information on the pump, animated step-by-step instructions and interactive 3D animations are available with our mobile maintenance app SEEPEX VR. This makes maintenance uncomplicated and safe.

And with our Remote Assistance Service, we can provide you with live maintenance advice via video chat using augmented reality - whether on your smartphone or with smart glasses.

In the blink of an eye, a SEEPEX expert will be with you virtually and provide you with assistance.



ORIGINAL SPARE PARTS. ALWAYS THE BEST FIT.

It's often the small things that are hard to beat and that separates the wheat from the chaff, or in other words a high quality product from an average product. The best choice for safe operations, continuous efficiency and best performance for your pumps is using original spare parts.

SEEPEx original parts ensure the long-term value of the pump and its sustainable quality by greatly reducing the measurable costs of downtime, energy consumption, maintenance and service. SEEPEx holds an exceptionally large inventory of spare parts: over 10,000 items are in stock at our strategic stocking centers, ready to be deployed to our customers worldwide.

The impressive features of SEEPEx original parts are:

- Excellent quality
- Superior performance due to precise engineering
- Proven reliability
- High part durability
- Wear resistant materials
- Low abrasion



ORIGINAL SPARE PARTS. SHOPPING TOUR.

With our e-commerce solutions, you are in control of your orders at SEEPEX - from inquiry to delivery and beyond.

We provide you with optimal support. Whether it's a rotor, a stator, or a coupling rod: Ordering original SEEPEX parts has never been easier or more convenient.

- Access the processing and delivery status of your current pump and spare parts orders at any time - right down to the tracking link!
- Overview of your complete order history with SEEPEX including your quotations being prepared by SEEPEX.
- Request complete spare parts quotations in seconds and forward them to the responsible departments in your company (e. g. to the central purchasing department). Or alternatively place orders directly from the SEEPEX Shop.
- Integrate our complete spare parts catalog into your ERP system with the OCI interface to optimize your stock management and keep optimal control over your orders.





SEEPEX SERVICE POINT. THE SECURE SPARE PARTS INQUIRY WITHOUT HAVING TO LOG IN.

Detailed information on these topics can be found on our website in the Download section and in the Digital category:

- Service Point
Everything at a glance
- Easy Ordering
SEEPEX Shop

With the SEEPEX Service Point, spare parts requests can be generated conveniently even without logging in. Select from predefined packages for the most common maintenance scenarios or complete your inquiry from the items in the parts list. Scanning the unique QR code on the name plate of the pump will also ensure that the spare parts you inquire about are an exact fit. If necessary, contact us directly from the app via chat or email.



SEEPEX SHOP. A CONVENIENT OVERVIEW.

Our SEEPEX Shop is accessible from all platforms with a SEEPEX login - whether at your desk with a PC or in the field with a tablet or smartphone. Here you will find all spare parts for your progressive cavity pumps and important information such as parts lists, sectional drawings, prices and delivery times. No matter whether you order online, by phone or email: In the shop you will always have an overview of all your orders including delivery status.

24-HOUR-HELPLINE.

Do you have any questions, need more information about SEEPEX original parts or wish to place an order?

Call the SEEPEX 24-Hour Helpline. We are available around the clock for you with:

- Technical advice
- Parts shipment
- Certified service house-calls

Visit our website and use the contact and request form, chat with experts or send us a service request. SEEPEX is worldwide. Visit www.seepep.com and find the right contact in your country.

SEEPEX SERVICE NETWORK. SERVICE ON SITE.

SEEPEX pumps work reliably. We also provide various services to our customers that uphold the value of your pump over time, ensuring optimal operation and minimized life cycle costs.

You can rely on SEEPEX to maintain your pumps: Our service experts provide advice on pump and process operation, prepare reports on breakdowns or wear analysis and carry out all repairs. This happens most of the time on-site and exclusively with SEEPEX original parts.

By taking care of all the behind-the-scenes activities, we ensure smooth replacement of parts and give you the chance to focus on other activities.



WHERE ARE WE GOING? FORWARD INTO A SMARTER FUTURE.

SEEPEX is a global market leader in progressive cavity pumps, pump systems and related digital solutions and services. Our experts develop excellent, reliable, innovative and cost-effective solutions that optimize our customers' systems, increase their productivity and reduce their operating costs.

Our guarantee: By adapting the pumps to match the customer's application, we can achieve the best possible technical and economical results. Our technology enables our customers to promote a clean environment, product safety, quality and the sustainable use of resources.

With SEEPEX all things flow. Our pumps convey even the most challenging media – without limits and to the exact drop: whether it is sensitive foodstuff, chemically aggressive liquids or materials with a high solid or fiber content. As a leading digital pioneer in the progressive cavity pump market with the most advanced digital portfolio, we know what it takes to optimize the Total Cost of Ownership. Our research and innovation teams are based in Germany and the USA, while our production facilities are located in Germany, the USA and China.

By pooling our production expertise and market knowledge worldwide, we can react more quickly and respond individually to our customers' requirements. Our global sales and service network enable us to build and maintain close relationships with our customers and provide excellent service. How can we help your company flow?





SEEPEX GmbH
www.seepex.com