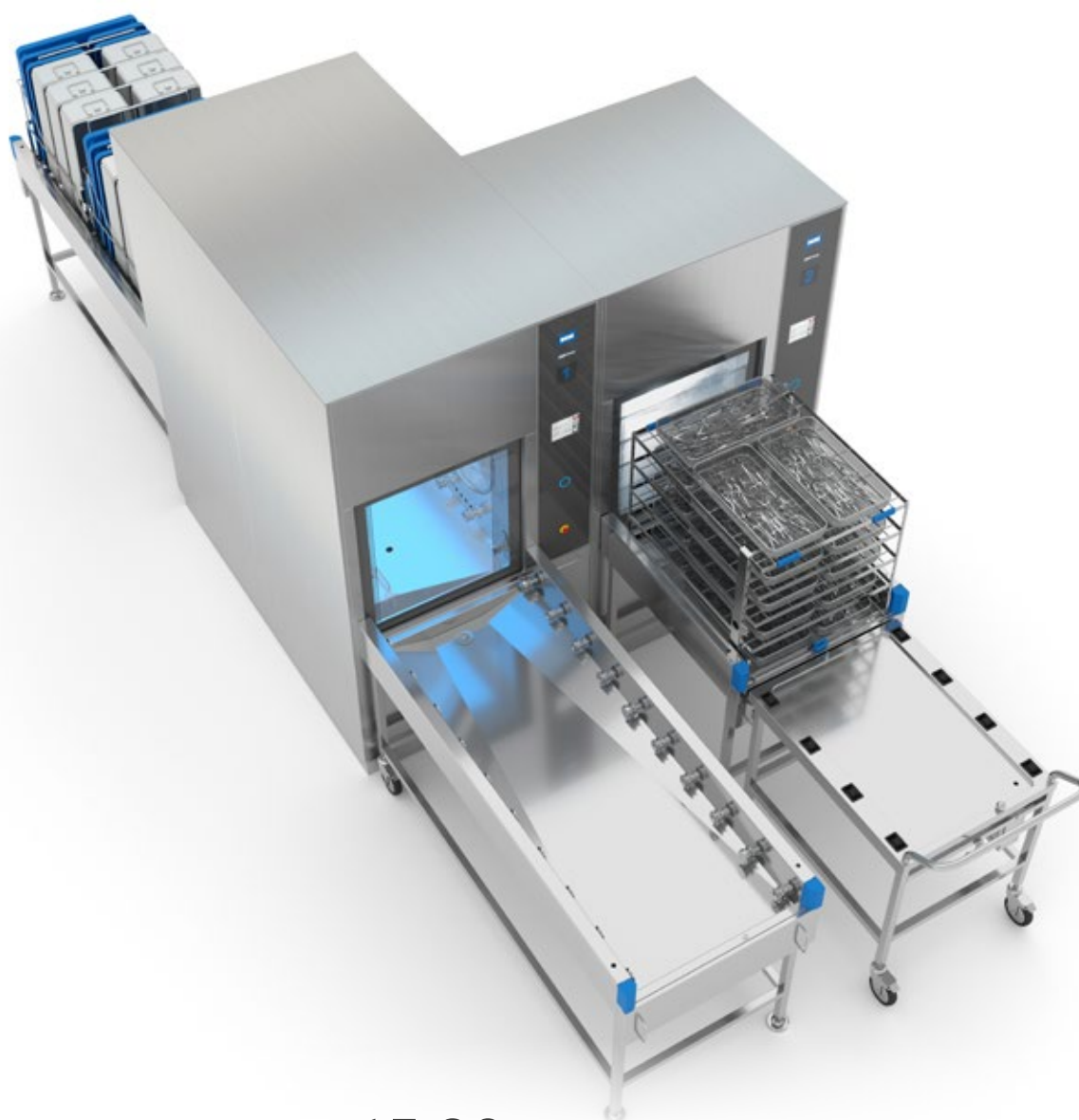


Uniclean[®] PL II 15 Uniclean[®] PL II 30

Premium Line



concept 15.30

Cleaning and disinfection systems
for 18 or 36 DIN trays



Protecting human health

MMM has been operating worldwide as one of the leading system providers in the service of health since 1954. With a full portfolio of products and services pertaining to sterilization and disinfection systems for hospitals, scientific institutes, laboratories and the pharmaceutical industry, MMM has positioned itself as a crucial quality driver and innovator on the German and international markets. MMM products manufactured in our own production facilities combine industrial production and high-quality skilled work Made in Germany with state-of-the-art control systems and quality to meet all requirements of our customers.

□ MMM Group in health care – everything from a single source

The requirements for commercial, logistical and organisational processes for managing a hospital are becoming more and more complex. Particularly because there are so many tasks and so many different solutions our customers need partners who are reliable, competent and directly involved to manage the specific site conditions.

We consider ourselves as not just a supplier of high-end medical devices but as a complete supplier of services and solutions that make both a commercial and medical contribution to society, ensuring people become healthy and remain healthy.

□ MMM Group is more than a manufacturer – we implement holistic solutions

MMM offers a comprehensive range of expertise for all aspects of the RUMED*. Our services cover the manufacture of our own products, detailed planning and consultation, software, installation, logistics and service, which includes the validation of all processes in the RUMED right through to the project management of all construction works for the cleaning, disinfection and sterilization departments.

* Reprocessing Unit for Medical Devices

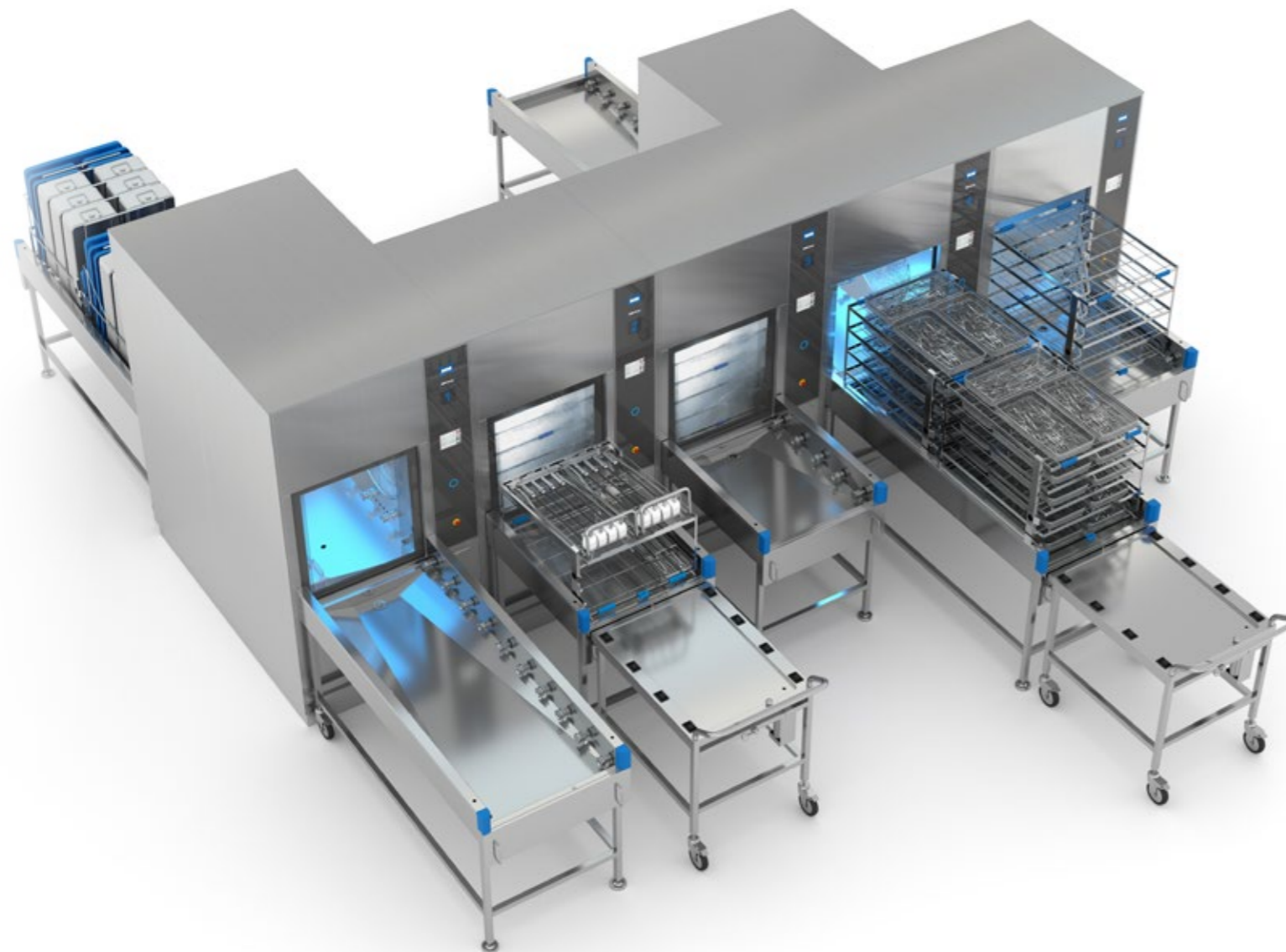
concept 15.30

A scalable system

The requirements of the design of a RUMED are varied and challenging. The MMM Group has developed the 15.30 concept to assist the design to deliver the optimal solution for high preparation capacity in a restricted space based on the specified area.

The combination of the **Uniclean® PL II 15** for 18 DIN trays and the **Uniclean® PL II 30** for 36 DIN trays offers new options for design of the room layout and optimization of the workflow. The two devices form a perfect combination and can be used to adapt the design to the local conditions.

Synergy effects are achieved with the devices coming from the same range of products (same racks, transport trolleys, roller conveyors and spare parts), which increases efficiency in your RUMED. The **Uniclean® PL II series** has been developed for thorough preparation of large quantities of medical products, such as general surgical and MIS instruments, anaesthesia materials, ophthalmological instruments, containers, receptacles, bowls, basins, OR shoes and other utensils.



The Uniclean® PL II series fulfils all quality-relevant requirements and meets the latest standards (such as the standards series DIN EN ISO 15883 Parts 1 and 2) and guidelines that authorise, among other things, use of the CE symbol.

Highlights

- ✓ One product family – one scalable system
- ✓ High capacity and flexibility in a small space with custom layout design
- ✓ Select manual or automatic loading and unloading
- ✓ Parallel loading and unloading possible
- ✓ Shuttle function for the Uniclean® PL II 30 provides new options for workflow optimization
- ✓ Identical racks and accessories
- ✓ Ample storage space for racks
- ✓ Flexible prioritisation for express batches
- ✓ Emergency concept not required
- ✓ Existing installations can be extended or retrofitted with the Uniclean® PL II 30 at any time to increase capacity.

18 DIN trays

The **Uniclean® PL II 15** is MMM's most powerful cleaning and disinfection system, designed for thorough preparation of large quantities of medical products.

The innovative one-chamber machine can accommodate 18 DIN trays and has a compact design of only 1000 mm.

The **Uniclean® PL II 15** can also safely process complex instruments such as da Vinci robotic instruments.



36 DIN trays

The **Uniclean® PL II 30** one-chamber machine has been specially designed for areas in which it is not possible to house a large-chamber WD for reprocessing sterile goods containers.

The **2 in 1** tandem chamber can reprocess 8 1 StU sterile containers and up to 12 1/2 StU sterile containers or up to 36 DIN instrument trays in one batch.

The benefit of the tandem chamber design lies in the doubled reprocessing capacity with the same minimal space requirements (width) compared to the **Uniclean® PL II 15** of the same series.



Uniclean® PL II 15 – for 18 DIN trays

High cleaning power with a small footprint

Highlights

- ✓ Narrow device dimensions (1000 mm wide)
- ✓ 4D cleaning system with water management
- ✓ H-Flow high-performance drying system
- ✓ High service friendliness



Technical equipment

- Maximum width only 1000 mm
- 18 DIN tray capacity
- PLC industrial controller from B&R in IP 54 control cabinet
- Smart HMI with 5.7" colour screen
- PPV system for process parameter verification
- H-Flow: highly efficient drying system
- HEPA H13 filter
- Electric air heater
- No lateral service access needed, access is from the front
- JANUS connection for cleaning racks
- Intelligent water management system
- 4D cleaning system
- Sliding unit for control cabinet with glass front panel and integrated touchscreen
- Sliding unit for cleaning agents and dosing system
- Chamber material AISI 316L
- Electrically operated glass doors open vertically downward
- Electric or steam-heated tank
- Drainage pump
- 2 dosing pumps
- Large number of preconfigured standard programs
- 3-colour LED chamber lighting
- AO value control or temperature holding time control, as required

Important options and accessories

- Deionised or reverse osmosis water pre-heating tank (speed cycle)
- Deionised or reverse osmosis water recovery tank
- Exhaust air draft interrupter
- Economizer exhaust air system for heat recovery
- HEPA filter monitoring
- Connections from below
- Additional dosing pumps
- Dosing line for small quantities of cleaning agents
- Conductance measurement
- Barcode hand scanner for recording trays
- Barcode scanner for automatic program selection
- Datamatrix recording system for reading codes
- Potential-free contacts
- Semi-automatic loading and unloading
- Automatic loading and unloading roller conveyor
- Energy manager
- Media shut-off valves
- Device tub with drain and base
- A4 batch report printer
- Thermoplotter
- Remote maintenance
- ISA – Intelligent Service Advisor
- Cleaning system for da Vinci robotic instruments
- Large assortment of loading racks, transport trolleys, manual and automatic roller conveyors, sliding windows, rack hatches and rack storage tables

Technical data

DIN tray capacity	1-door	2-door	Effective chamber dimensions in mm (W x H x D)	Usable chamber volume in litres	External device dimensions in mm (W x H x D)
18	•	•	667 x 695 x 828	384	1000 x 1950 x 950

Uniclean® PL II 30 – for 36 DIN trays

Tandem chamber for large capacities

Highlights

- ✓ Narrow device dimensions (1000 mm wide)
- ✓ Tandem chamber for 2 racks with double the reprocessing capacity
- ✓ Shuttle operating function without rack removal
- ✓ Same racks and peripherals as for Uniclean® PL II 15
- ✓ High service friendliness



Technical equipment

- Maximum width only 1000 mm
- Capacity for 36 DIN trays, 8 1 StU or 12 ½ StU sterile containers
- PLC industrial controller from B&R in IP 54 control cabinet
- Smart HMI with 5.7" colour screen
- PPV system for process parameter verification
- Double H-Flow: highly efficient drying system
- 2 HEPA H13 filters
- Electric air heater
- Service access does not require additional space in combination with the Uniclean® PL II 15
- JANUS connection for cleaning racks
- Intelligent water management system
- 8D cleaning system
- Sliding unit for control cabinet with glass front panel and integrated touchscreen
- Sliding unit for cleaning agents and dosing system
- Chamber material AISI 316L
- Electrically operated glass doors open vertically downward
- Electric or steam-heated tank
- Drainage pump
- 2 dosing pumps
- Large number of preconfigured standard programs
- 3-colour LED chamber lighting
- A0 value control or temperature holding time control, as required
- Semi-automatic loading and unloading of racks

Important options and accessories

- Deionised or reverse osmosis water pre-heating tank (speed cycle)
- Deionised or reverse osmosis water recovery tank
- Exhaust air draft interrupter
- HEPA filter monitoring
- Connections from below
- Additional dosing pumps
- Dosing line for small quantities of cleaning agents
- Conductance measurement
- Barcode hand scanner for recording trays
- Barcode scanner for automatic program selection
- Datamatrix recording system for reading codes
- Potential-free contacts
- Automatic loading and unloading roller conveyor
- Energy manager
- Media shut-off valves
- Device tub with drain and base
- A4 batch report printer
- Thermoplotter
- Remote maintenance
- ISA – Intelligent Service Advisor
- Large assortment of loading racks, transport trolleys, manual and automatic roller conveyors, sliding windows, rack hatches and rack storage tables

Technical data

DIN tray capacity	1-door	2-door	Effective chamber dimensions in mm (W x H x D)	Usable chamber volume in litres	External device dimensions in mm (W x H x D)
36		•	667 x 695 x 1656	768	1000 x 1950 x 1778

Your requirements – our passion

Development on the highest level

Uniclean® PL II Series

Components



Automatic cleaning and disinfection

In a well-functioning central sterilization facility, cleaning and disinfection is the pivotal element for timely processing and delivery of sufficient sterile instruments to the operating rooms. In a very short period of time, large quantities of medical products must be reliably cleaned, disinfected and moved to the clean side of the RUMED so they can be prepared for sterilization.

Only a standardised, i.e. automated and validated process, can provide verifiable documentation about these processes. Successful cleaning and disinfection processes consist of the complex interplay of intelligent process control, cleaning mechanisms in the chamber, coordinated use of the cleaning chemicals and loading in accordance with the specifications.

Sophisticated design concepts

High quality with the combination of industrial production and painstaking skilled work "Made in Germany"

Tailored design

- The compact design is ideal for tight spaces.
- Very high flexibility for transport of goods into the facility.

Complete ergonomics

- Ergonomical loading height 810 mm.
- The EasyMove system allows racks and trolleys to be moved with little effort.
- CoolTouch silicon grips make it easier to unload hot racks.

Chamber and piping

- The chamber is manufactured from high-quality, polished stainless steel.
- The SANIcirc piping is free of dead space and is routed in a hygienically flawless and self-draining manner.
- A central water distributor with the **Uniclean® PL II** optimally distributes the volume flow between the machine rotary arms and the loading rack.

MMM products are distinguished by their relevance throughout the complete product life cycle. Top quality materials are used at MMM on state-of-the-art machinery. Qualified staff and process-oriented quality assurance guarantee consistently high standards. Continuous product development and upgrade packages for older machines ensure that MMM devices always meet the latest requirements.

The MMM Smart HMI

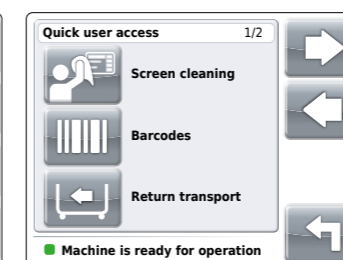
Small, finely crafted, ergonomic and intuitive to operate

Barcode scanner: Automatic, reliable, documented

- The clearly structured menu navigation on the colour touch display with unambiguous symbols provides for high operational reliability.
- Hygienically impeccable: The 5.7" display is seamlessly integrated in the glass panel and easy to clean.
- The large remaining time display enables optimal time management.
- Barcode reading system with program pre-selection: Automatic barcode detection ensures that the right program is selected for the items to be cleaned.
- In conjunction with a documentation system such as EcoSoft, all process steps are automatically documented in accordance with the items being cleaned.



Program selection



Quick user access



Remaining time

The controller

The controller controls the process sequence. The sensors continuously provide the controller with information about the actual state of the device (temperatures, pressures, dosing of the process chemicals, water level, etc.). The controller, in turn, controls the actuators such as valves, pumps and contactors in accordance with the target values set during commissioning. All control components are located in one control cabinet (protection class IP 54).

The software – a clever solution

- The MMM software is validated as per DIN EN 62304 "Medical device software – Software life cycle processes".
- The sophisticated parameter structure enables a high degree of flexibility in the configuration of the machine. Up to 25 programs can be configured at the same time.
- If the system is not used for a longer period of time, an energy-saving idle mode is activated.
- Access to the parameter menu is password-protected.

Precise process control

- The program sequence is controlled on a fully automatic basis. The drive elements are precisely controlled, and all measured values are monitored continuously.
- A₀ value calculation as per DIN EN ISO 15883.
- The disinfection process can be time or temperature controlled, with additional documentation of the A₀ value.

Double the safety with process parameter verification (PPV)

- The PPV system verifies and documents the most important process parameters with control-independent sensors. If the limit values are exceeded or undershot, an alarm is triggered and the system is stopped. It is then impossible to remove items on the clean side.



The three-colour LED chamber lighting indicates the current machine status, visible from afar.

Straightforward process documentation

To verify successful cleaning and disinfection, the batch data is initially saved locally in the WD. The process data are transferred to a process documentation system such as MMM EcoSoft at the same time, if such a system is used. The process documentation contains all the relevant information required for standards-compliant reports. Pressure and temperature are also shown as a colour-coded graph. For long-term archiving, the batch data can be transferred to an external server via the in-house network.

Full data integrity

- Process log with plain text and colour graph display.
- The batch log can be printed out using the integrated printer or an external DIN A4 colour printer.
- Zero-voltage-resistant data storage in the controller
- Approx. 10,000 batches can be saved on the plug-in compact flash memory card.
- Optional: Network storage for back-up data archives.

We have developed a special software package to further process your batch data: **SimServ** is used to save the batch data on an external computer as a file. The data is then available to the **ChargenViewer** for various management tasks.

Available at all times

- Long-term archiving of batch data as files.
- Can be reprinted at any time.
- Can be viewed and analysed at a later time.
- Export to Excel.
- Can be saved as a PDF file if desired.

EcoSoft® is a particularly easy-to-operate and intuitive documentation software that will help you structure and organise the workflows of the entire preparation cycle in the RUMED:

EcoSoft – needs-oriented process documentation and sterile goods management

- Documentation of the entire sterile goods cycle in the RUMED.
- Set collation and management.
- Automated process documentation of all connected devices.
- Instrument management (sets or individual instruments).
- Quality assurance.
- Sterile goods management.



Perfect cleaning and drying performance

4D/8D cleaning system

- The **4D/8D cleaning system** developed by MMM creates a full-coverage spray pattern effective from above and below. The pump pressure, which is optimally matched to the water volume and process chemicals, distributes the water evenly to all four consumers (two rotary arms in the chamber, two **JANUS** rack connections).
- The elaborate cleaning geometry and the interplay between the machine and rack allows all external and internal surfaces of the goods being treated to be optimally cleaned.

H-Flow drying system

- The two-level high-performance drying system consists of two heating elements, a fresh air fan with a HEPA filter and a fan installed on the inside of the chamber. Due to the horizontal rotating flow of air current, the hot air reaches all rack levels evenly.
- The high degree of hot-air circulation in the chamber allows the existing heat to be stored and greatly accelerates the drying process.
- Impeccably hygienic: The integrated air turbine and the heating elements are also cleaned and disinfected during each process.

Short batch times

- The **self-cleaning** H-Flow drying system operates as a combined system consisting of a A) fresh air supply via a HEPA filter and B) recirculating air via the horizontally arranged air turbine and heating elements in the chamber. This highly efficient arrangement promotes heat storage and heat recovery, which results in **shorter drying times**.



Uniclean® PL II 15 chamber with H-Flow drying system.



Uniclean® PL II 30 chamber with double H-Flow drying system.

Complete ergonomics

Making daily work easier

- The rotary arms must be cleaned on a regular basis. For this reason, they are readily accessible and easily removed.
- For daily cleaning, the chamber's fine filter can be removed without tools.

Dosing of the process chemicals

- The process chemicals can be dosed at several levels depending on the temperature.
- Up to four dosing pumps with flowmeters are available for dosing and monitoring.
- The dosing system, including the optional cleaning agent canisters and storage tanks of a central dosing unit, all are securely stored in an integrated pull-out compartment.

Great serviceability

- The service-friendliness of the system was already addressed in the design phase. All important components are clearly arranged and accessible from the front.
- Plug connections make it easier to replace the measuring probes.
- Heavy components such as pumps and fans are mounted on sliding systems that do not cause back strain.



Service- and user-friendly sliding units of high quality



Roller conveyors and rack storage systems

When designing an ergonomic and workflow-optimised RUMED, the handling of WD racks is a core consideration. The degree of automation is important in daily work routines. The semi-automatic or fully automatic roller conveyors from MMM, used to load and unload the WD or a return station, have considerable storage capacity and can perfect the workflows. In addition, racks that are not directly involved in a process can be temporarily stored on space-saving storage tables.

Loading and unloading roller conveyor

- Multiple WD can be loaded and unloaded simultaneously.
- Electrically operated roller conveyors with easy-to-clean elements and surfaces.

Rack return

- Double-doored, automatic rack hatches in combination with roller conveyors.
- Single-doored sliding windows in combination with automatic or manual roller conveyors.
- High storage capacity for racks.

Rack storage table

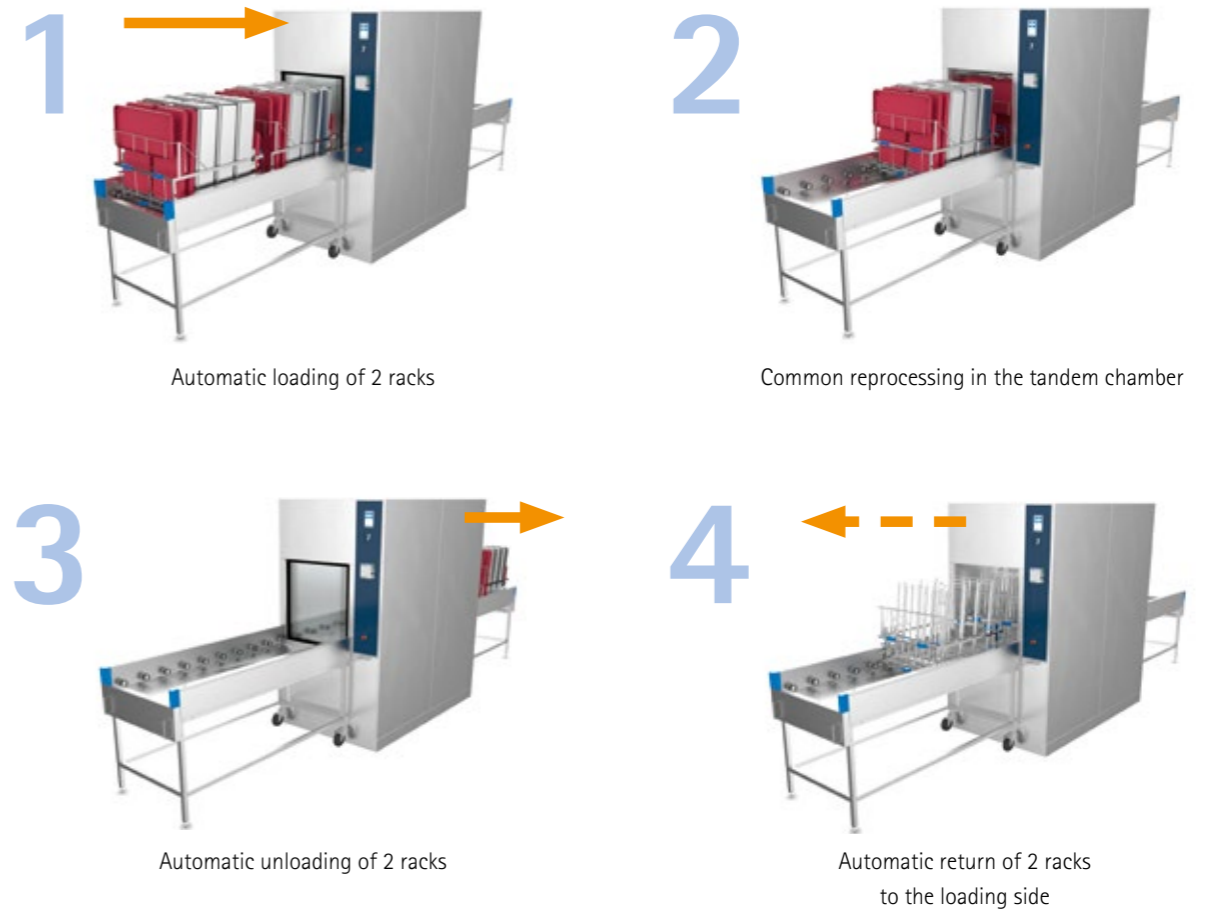
- Two-storey storage tables.
- Integrated "Easy glide" rollers for comfortably sliding the racks from the transport trolley onto the table.
- High capacity.
- Modular, expandable design.



Shuttle function of the Uniclean® PL II 30

The Uniclean® PL II 30 is attractive for users with its wide range of options. The washer-dryer can be configured for conventional operation for a range of different applications or as an optional shuttle mode function for mono-applications.

For example, the shuttle mode function allows two container racks to be used for continuous operation. In this fully automatic operating state, Uniclean® PL II 30 works as a cleaning and disinfection device for a mono application, whilst simultaneously returning both racks automatically by means of a shuttle function. This enables capacity utilisation to be perfectly tailored to the individual needs of the RUMED. For a best possible usage the Uniclean® PL II 30 can be fitted with a single or double loading and unloading roller conveyor.



The loading racks

Modular, versatile and practical

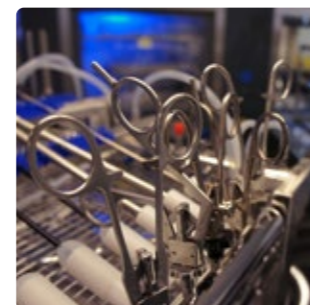
The cleaning effectiveness of a WD largely depends on the rack design and on correct loading. For this reason, we have developed racks that take into account the special features of the items being treated. The loading racks can be neatly equipped with a variety of inserts for various utensils. The modular concept does not only reduce procurement costs for the many different racks and individual situations as possible; it also provides for good use of space in the wet zone.

For seamless documentation, each rack can be equipped with its own ID number encrypted as a barcode. This number is read by a barcode reader device as the rack enters the chamber and is documented in the batch log.

Perfect handling

Ergonomics, ergonomics

- To make handling as pleasant and safe as possible, the loading racks are open all around and can be conveniently loaded from all sides.
- The practical design of the loading racks ensures correct and safe loading.
- Fully loaded racks can quickly reach a weight of over 100 kg. As a result, our racks are particularly sturdy and torsion-resistant. Thanks to the groove-guided Easy-Move rollers, the racks can be pushed into the chamber and precisely positioned with little force.
- The rubberised CoolTouch grips can be attached in different ways and enable operators to unload hot racks safely.



JANUS system

JANUS system

- The mirror-image arrangement of the rack connections enables uniform pressure and water distribution to all of the rack's consumers.
- The JANUS system also features excellent loading flexibility, because the racks can also be inserted into the chamber turned by 180°.
- The various attachments and connections ensure perfect spray coverage both inside (hollow parts) and outside.



5-level rack



MIS rack



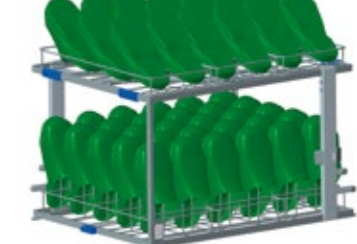
Baby bottle rack



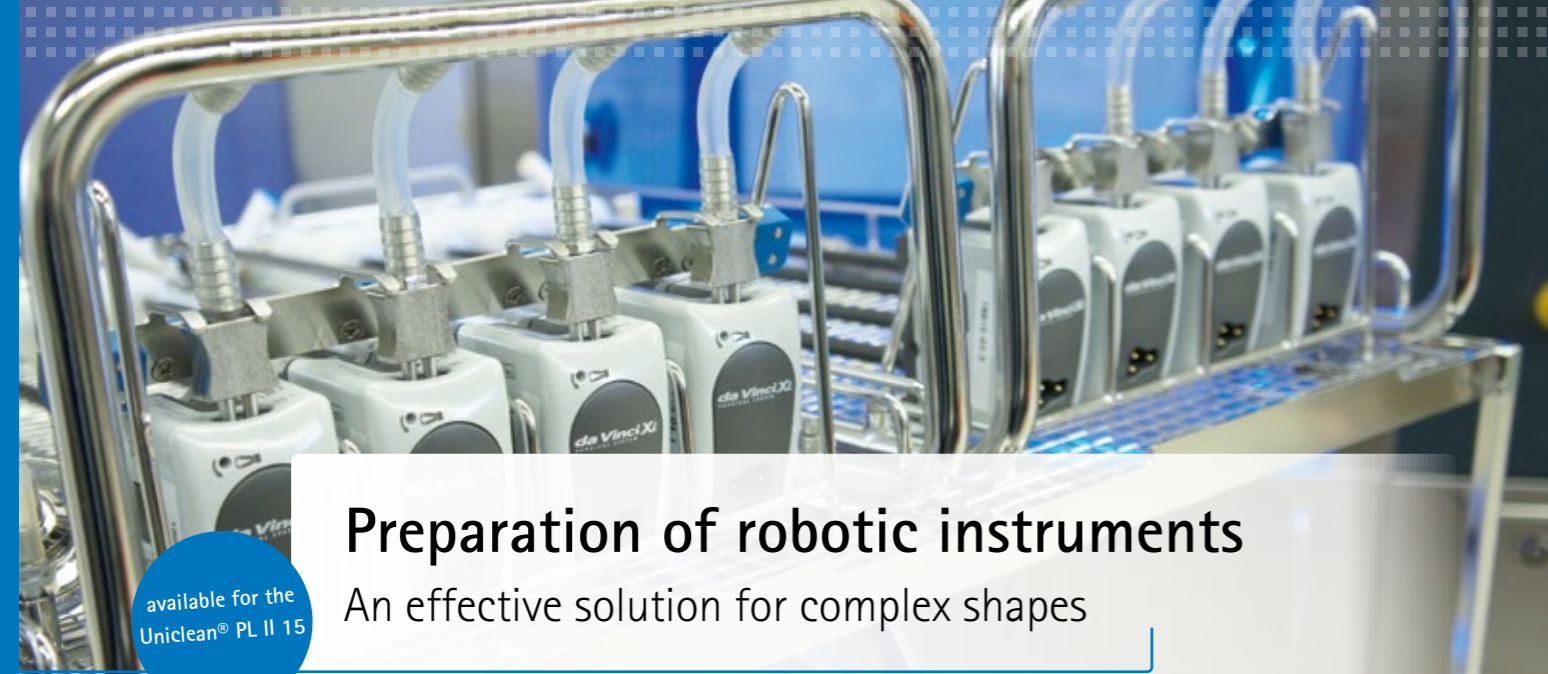
Anaesthesia rack



Container rack



Two-level rack insert for shoes



available for the
Uniclean® PL II 15

Preparation of robotic instruments

An effective solution for complex shapes

Modern surgery with robotic systems and their complex instruments places high demands on preparation in the RUMED. The MMM Group in cooperation with Intuitive Surgical have developed a procedure for cleaning and disinfecting da Vinci® instruments. The procedure consists of two phases. These phases are inseparable, both contributing to creating a safe and validated process.

Phase 1: Manual cleaning

Manual cleaning is a mandatory prerequisite for successful machine cleaning. It must be executed in accordance with the instructions from Intuitive Surgical.

Phase 2: Machine preparation

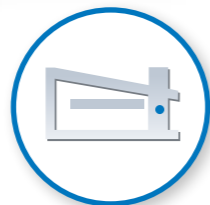
The overall MMM concept for the safe and validated machine preparation of robotic instruments consists of three components: Robotic instruments rack, robotic instruments program and process chemicals.



Manual cleaning



Robotic instruments program



Robotic instruments rack



neodisher® MediClean forte process chemical by Dr. Weigert

An interlinked system

The powerful Uniclean® PL II 15 is uncompromising in its high design quality. Together with its special racks, a process developed specifically for robotic instruments and the associated process chemicals, Uniclean® PL II teams up to create a powerful cleaning solution.

Robotic instrument racks

This rack was specifically designed for *da Vinci® EndoWrist* instruments and consists of the basic rack and two insert modules. Four *da Vinci® EndoWrist* instruments can be connected to each module.

The modular design is uncomplicated and ergonomic in use. The modules can simply be placed on a table to load them.

Each insert module has a removable fine filter that prevents small particles from being deposited in the instrument. An additional pressure check immediately in front of the instrument is enabled by Luer Lock connections on the supply lines to the instrument.

The accessories of the *da Vinci® EndoWrist* OR set are placed on the lower level of the same rack.

- Secure positioning of the instruments and connections.
- Optimal mechanical cleaning performance.
- High efficiency and safety.
- Easy and ergonomic handling.



Easy handling



Rinsing holders for joint and tip



Holder for Xi stacker instruments with separate filter

Robotic instruments program

- The individual phases and pressure conditions of the **Uniclean® PL II 15** cleaning and disinfection program are optimally configured to the requirements of complex robotic instruments.

Process chemicals

- The **Uniclean® PL II 15** robotic instruments program was developed for use with *neodisher® MediClean forte* from Dr. Weigert. The program routine and the process chemicals act in a perfect symbiosis. Other chemicals are available on request.

Resource management

Certified environmental management system

The MMM sustainability concept protects the environment even in everyday business operations. All MMM devices are designed for low energy and water consumption and can be equipped with energy recovery systems. MMM has a certified environmental management system as per DIN EN ISO 14001 that not only covers our products but also encompasses the operative processes.

Intelligent water management

- Low water consumption, controlled via the **Uniclean® PL II** controller – adapted to the goods being treated and the process phase. Thus, for example, water consumption when cleaning containers with a simple surface is less than for an anaesthesia set with many connections.

Reduced deionised water consumption

- In the **Uniclean® PL II** with the optional deionised water recovery tank, the deionised disinfection water from the last rinse is stored and used for the intermediate rinsing in the next program sequence. This saves time and energy as well as up to 20% of the deionised water compared to a device without a recovery tank.

Short batch times

- Thanks to the low water volume, the rinse bath heats up rapidly and the chamber can be filled and drained more quickly. At the same time, the consumption of cleaning chemicals is reduced. The deionised water pre-heating tank reduces batch times considerably.

Heat is energy

- The combination of fresh air and recirculating air drying ensures maximum heat usage in the cleaning chamber and utilises the stored heat energy for optimal and fast drying.

Environment and material

- MMM products are environmentally friendly and recyclable: All components can be returned to the material cycle in recycled form.

MMM customer service

Efficient and reliable

Our knowledgeable service organisation is available to you around the clock, ensuring long-lasting, trouble-free operation of the installed systems. Thanks to our branches and representative offices optimally distributed worldwide, we are always nearby and can very quickly be on site in an emergency.

The sophisticated and innovative design of our systems and devices makes it possible in many cases to quickly rectify functional impairments with a remote diagnosis by qualified personnel. On the basis of professional maintenance planning, we guarantee you the highest degree of availability of your systems.

In addition to performing maintenance and repair, we also make sure that the installed systems are up-to-date. Tailored solutions for adaptation to changed situations, for optimization of consumable materials and for continuous adjustment to individual needs and legal requirements increase the service life and cost-effectiveness of the systems and secure your investment.

- **Maintenance planning**
- **Inspection and service**
- **Repair**
- **24-hour hotline**
- **Spare parts logistics – 24-hour service**
- **Upgrade service**
- **Process validation**
- **Training & further training**

Europe's market leader in process validation

MMM is your partner when you need to verify that your systems and processes are always consistent with the required specifications.

We offer a variety of packages for validation and preparatory measures such as calibration, adjustment and optimization of the processes and devices. Process validation by MMM is always in line with the current guidelines of DGKH, DGSV and AKI and also in accordance with DIN EN ISO 15883 Part 1 and 2, if required. There is good reason why we are Europe's market leader, with approx. 2500 process validations per year.

Validation from a single source

- Cleaning and disinfection processes including endoscopic reprocessing
- Steam sterilization processes
- Steam-formaldehyde sterilization processes
- Gas plasma sterilization processes
- Hot-sealing processes



MMM Group

MMM has been operating worldwide as one of the leading system providers in the service of health since 1954. With a complete range of products and services relating to all aspects of cleaning, disinfection and sterilization systems for the areas of **Healthcare** and **Life Science**, MMM has positioned itself as a crucial quality and innovation driver in the German and international

market. Our products are individually adapted to the requirements of our customers all over the world. The high vertical range of manufacturing in our production plants ensures that we fulfil the strictest demands of quality in the medical technology sector. More than 1200 employees apply their expertise and dedication to the mission of the MMM Group: **Protecting human health.**



MMM Münchener
Medizin Mechanik GmbH
Sammelweisstraße 6
82152 Planegg / Munich, Germany
Tel.: +49 89 89918-0
Fax: +49 89 89918-118
www.mmmgroup.com

