



## **mar**Management

RFID-Technology for hospitals –  
Add intelligence to your assets



Innovation is our passion.  
Bringing innovative solutions to  
products and processes.

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What is the secret behind the development, manufacture and distribution of over 10,000 exclusive surgical instruments, products whose distinguishing characteristics truly set them apart from all the others? The answer is passion, the overwhelming desire to discover new ways of serving humankind in its search for ultimate health.

KLS Martin products are designed to consistently meet high demands for application-oriented functionality, intelligent operation and top quality. And we are not prepared to compromise when it comes to meeting the justified expectations of customers, present and future.



Caretag® Aps is located in Copenhagen and Berlin and provides different RFID solutions for healthcare with special focus on tracking of surgical instruments, bulk reading and assets tracking.

The Caretag® Surgical Tracking System is a full workflow system covering from the CSSD/RUMED to the operating theaters with integration to existing or new third party solutions. But all solutions are modular and therefore highly configurable to a hospital's demand and changing environment.

Caretag®'s solutions are all about efficient handling of information. They operate all over Europe and are specialized in user-friendly, customizable solutions, which significantly reduce costs and man-hours within the health care organization.

### **Cooperation**

The new cooperation offers knowledge and solutions from both sides. Offering solutions was always our both objection in the past. The new solutions are flexible and individual. Suited to every user. The cooperation adds intelligence to your assets and prepares the processes for all daily and future tasks. Because it is all about managing your business and creating leaner workflows.

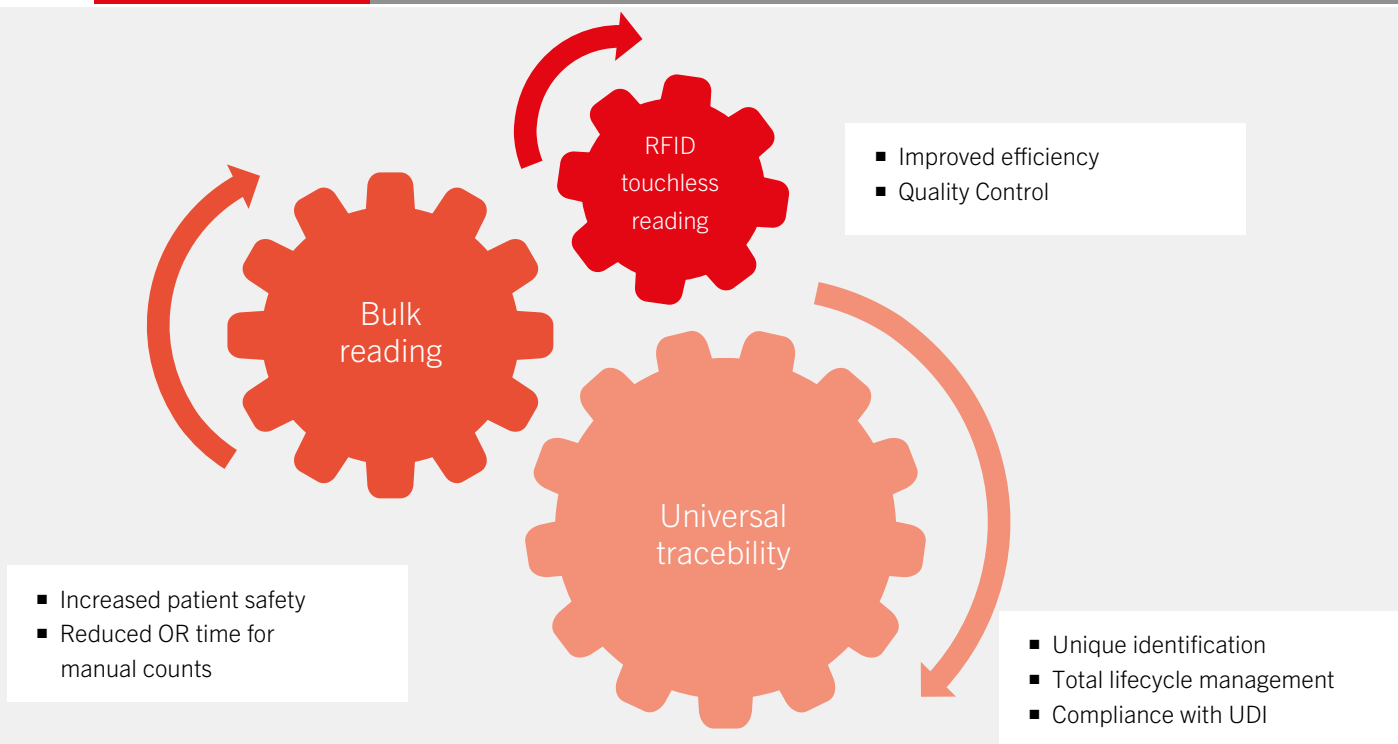
## The RFID-Technology beyond



### Description of the RFID solution

RFID refers to a technology for receiving and sending data without contact. An RFID system consists of a transponder, a reader that can identify the transponder by means of electromagnetic waves, and the software for digital management. The major advantages over other technologies such as data matrix or barcode are the high security of the system and the good readability of the transponder. RFID technology is suitable for bulk reading of entire trays and the application of an RFID tag does not result in any alteration of the surgical instrument

The reprocessing of medical devices has a major impact on healthcare costs. RFID technology enables hospitals to continuously track surgical instruments without contact, reducing costs and thus increasing efficiency over the entire life cycle of an instrument.



RFID technology offers a wide range of benefits to different hospital areas and work steps, from reprocessing to use in the operating theatre:

Success factors	OR	RUMED	Administration
Simplification of the replenishment warehouse through tagging (stock; procurement)		X	X
Efficient repair management through product-specific rules		X	
Efficiency increase through faster packing of trays		X	
Quality increase of the packed trays through completeness and functionality	X	X	
Lifetime tracking of individual medical devices		X	X
UDI compliant			X
Real-time localisation of products and trays	X	X	
Shortened OR changeover times through automated reading of trays (bulk reading)	X		X
Improve patient care and safety by preventing forgotten products	X		X
Documentation of products used in the patient directory at individual product level	X		X
Increased efficiency through (semi-)automatic tray optimisation	X		X
Instrument Shrinkage Tracking			X
More efficient OR planning through better planning of product availability	X	X	X



## Specifications

The RFID tags and adhesives have been developed to meet the most stringent FDA and EU requirements for RFID applications, ISO 10993, and are validated to ISO 15883 and ISO 17665.

### Further specifications:

- Extremely flat design
- UHF-RFID-Tag compliant with International Standards
- Adaptation to most products possible
- Developed for Steam Sterilisation, EO and H2O2
- 2.500 cycles guaranteed in Steam Sterilization



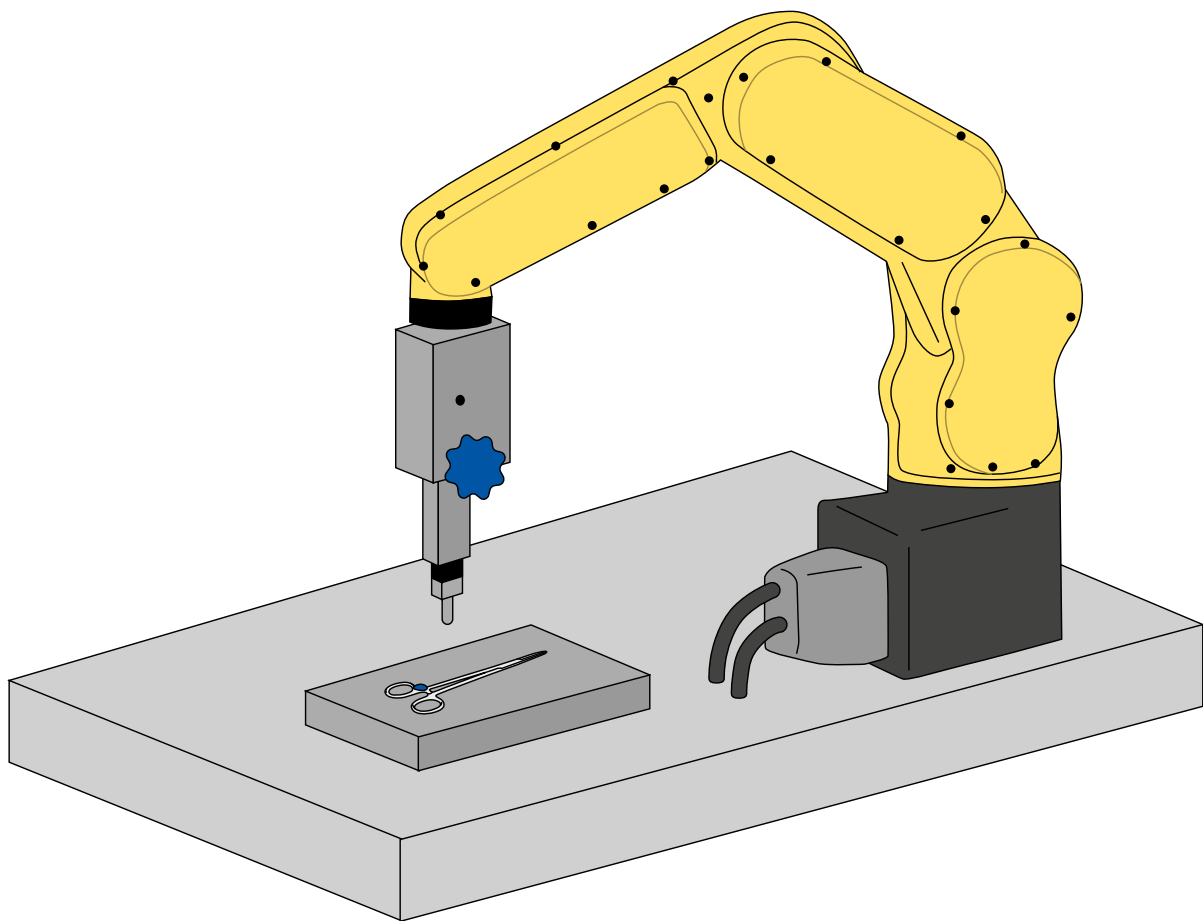
## The appropriate processing of the data

Without the right software, a tag is just a tag. But a complete platform solution releases valuable information for better management. Together with our partner Caretag®, we offer a modular tracking system capable of managing and tracking all types of devices to which an RFID tag is attached.

An important component of the software system is Knowledge Hub®. Knowledge Hub® is about collecting and sharing information reliably, accurately and securely. Through Knowledge Hub® you share information with other databases and information systems. Our various modules on service, packaging and technical rules increase the efficiency of tasks in reprocessing. Control stations in the OR allow simultaneous bulk reading of transponders within the OR sets, reducing manual counting before, during and after surgery. Automated documentation in your digital patient directory is mandatory for us.

The integration of the Knowledge Hub® into standard software systems or open interfaces of specially designed software is easy and makes the complete system versatile.





## Implementation of the RFID System

The RFID tags can be applied to existing instruments in the hospital as well as to new instruments from the manufacturer by means of a patented robot solution. After application by the robot, the tags are coated with a special adhesive and cured in an oven. The tags are then cooled, registered in the database and the data entered. The data includes, for example, the UDI number, the manufacturer's article number, the name of the clinic and the maintenance rules.

The robot and the oven are transportable and only require 120 x 80 cm and 80 x 80 cm floor space respectively. The tags can therefore be applied to stock items by trained staff directly on site at the hospital.

New KLS instruments can be delivered directly with tag. This requires no additional rework.

## RFID-Modules

Our RFID solution is modular in design and can be individually adapted to the needs of a hospital. So if you are interested in certain success factors or in solutions for specific areas - RUMED, OR or administration - our offer can be tailored exactly to your needs. All in all, the system is divided into eight modules, whereby the administration module and the packing station form the basis for the other modules.

Before the modules can be used, the RFID system must be implemented by applying the tags.

### **Requirements for modules:**

- Instruments with RFID-tag
- 230V – socket
- LAN connection
- Access to Caretag®'s central SQL Server (install by user IT department)
- No firewall that is preventing access to the SQL Server (Check by user IT)
- PC running Windows (Version 7 or 10)
- Minimum Dot Net 4.6.1.
- For CheckBox: a static IP address for the reader (IP4)



## Module 1 - Administration

The administration module is the software basis and thus the foundation of the RFID system. It offers the respective administrator, for example the RUMED management, a complete overview of all tagged instruments and enables their life cycle to be monitored digitally. Information such as an overview of the number of instruments present, a function check of the systems in operation and an indication of malfunctions in the system can be called up. In addition, packing lists can be created and modified, and a connection to the database can be established for easy import and extraction of data to third-party systems. This makes it possible, for example, to automatically link the tagged instruments to a patient directory.

### **The administration module includes:**

- Caretag® Administration software
- Optional: Standard PC ready for use from Caretag® can be included

### **Advantages:**

- Digital overview and monitoring of the entire instrument cycle
- Life time tracking of instruments
- Documentation of products used in the patient directory at individual product level
- Smooth process flow
- UDI compliance



## Module 2 - Packing Station

The packing station makes it possible to store all pack contents for instrument trays in the RUMED. This is done on the basis of the item numbers and the number of instruments. During the packing process, the trays are then automatically matched with the corresponding packing list by scanning the instruments. This eliminates the need to count the instruments manually, which speeds up the packing process and reduces the probability of errors when packing the trays.

**The module includes a ready-to-use packing station consisting of:**

- Touchscreen
- Screen mount
- RFID reader (ISO 18000-6)
- Caretag® Packing Station software

**Advantages:**

- Overview of instruments in a set
- Efficiency increase through easier and faster packing of screens
- Completeness of the trays

Note: The prerequisite for this module is the administration module.

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## Module 3 - Rules and Service for RUMED

This module enables proactive repair management. In this way, certain rules, such as test criteria for testing or oiling the products, can be stored in the software. In addition, a fixed service interval can be fixed. In case of a corresponding service message, the product can be taken out of the set and sent to a service partner for repair via a service report. In addition, assembly and disassembly instructions for the instruments are available, which appear automatically in the system by scanning the instruments and can be retrieved. The module thus contributes to an increased value retention of the instruments and to time savings in the work processes in the RUMED.

### **The Rules and Service module for RUMED includes:**

- Touchscreen
- Screen mount
- RFID reader (ISO 18000-6)
- Caretag® Service and Rules software

### **Advantages:**

- Efficient proactive repair management through product-specific rules
- Overview of instrument condition
- Automatic monitoring of regular service intervals
- Increased value retention of instruments through stored function control
- Prolongation of instrument life
- Time and cost savings
- Improved cleaning through stored disassembly instructions (e.g. videos)

Note: The prerequisite for this module is the administration module and the packing station.

## Module 4 - Checkbox Set OR (Information Station included)

In this module, all pack contents of the instrument trays can be checked for completeness by using the CheckBox IN when they are brought into the operating theatre. Through the integrated information station, individual instruments that are additionally required in the operating theatre can also be registered manually.

The same check is carried out when the CheckBox OUT is used. This ensures that no instruments are missing for the OR and that the sets are complete. At the same time, a difference between Check IN and Check OUT can be detected, and thus whether an instrument is left behind in the OR.

Here, the individual instruments are also taken into account by the registration in the information station. The information station can also be used to display all instruments that are in the operating theatre at a certain time.

With the information station, the life cycle of the instrument can be called up and a service request can be registered directly in the operating theatre if it is determined during the operation that the instrument needs to be repaired. The existing service rules of the instrument are also displayed.

### **A CheckBox Set includes:**

- High-quality Stainless-Steel CheckBox on wheels (certified RoHS)
- Touch Panel PC, fanless, certified RoHS
- Special high-performance RFID Reader ISO 18000-6 configured by Caretag®
- RFID reader (ISO 18000-6)
- Screen mount
- Internal configuration software to perform the initial installation
- Caretag® Checkbox software
- Caretag® Information Station software

### **Advantages:**

- Digital overview and monitoring of the set contents
- No instruments left behind in the operating theatre, increase in patient safety
- Complete sets
- No manual counting / searching of missing instruments
- Bulk reading by special high-power RFID laser
- Recording of individual instruments
- Life cycle monitoring
- Registration of a service request directly in the operating theatre
- Display of the existing rules of the instrument

Note: The prerequisite for this module is the administration module and the packing station.

## Module 5 - CheckBox-Set RUMED

In this module, all pack contents of the instrument trays can be checked for completeness by using the CheckBox IN when placing them in the RUMED. The same check is carried out by the CheckBox OUT. In this way, it can be ensured that no instruments are missing for the OR and that the sets are complete. At the same time, a difference between Check IN and Check OUT can be detected and thus the remaining of an instrument in the RUMED.

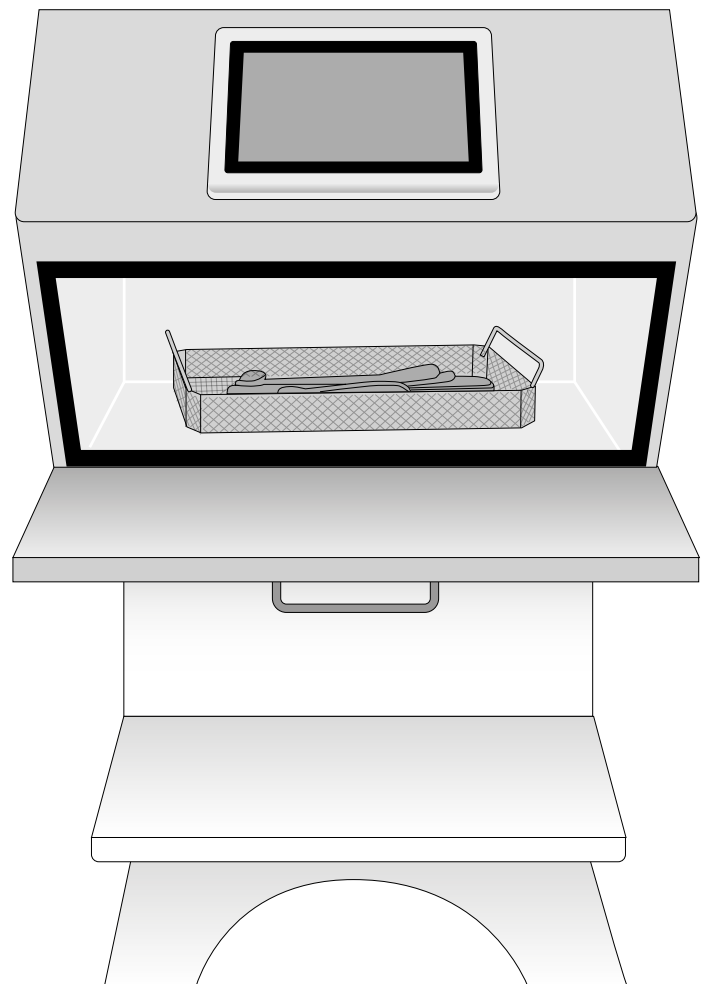
### **A Checkbox Set includes:**

- High-quality Stainless-Steel CheckBox on wheels (certified RoHS)
- Special high-performance RFID Reader ISO 18000-6 configured by Caretag®
- Touch Panel PC, fanless, certified RoHS
- Caretag® Checkbox software

### **Advantages:**

- Digital overview and monitoring of the set contents
- Complete sets
- No instruments left behind in the RUMED, increase in patient safety
- Time saving through bulk reading with special high-performance RFID laser
- No manual counting / searching of missing instruments

Note: The prerequisite for this module is the administration module and the packing station.



## Module 6 - Gates

Using this module, goods movements can be recorded without active participation and thus the logistics of the instrument cycle can be optimised. The RFID gates enable contactless tracking of tagged objects in real time and a digital overview of the movement of goods in the system. Objects lost in the instrument cycle can be tracked down easily and in a time-saving manner using this module.

### **This module includes:**

- Standard Windows PC ready for use with Caretag® Gates software
- Special high-performance RFID Reader ISO 18000-6 configured by Caretag®
- Up to 4 antennas
- Caretag® Gates software

### **Advantages:**

- No manual scanning necessary
- Digital overview and monitoring of goods movement in real time
- Calculation of lead times to improve efficiency
- Tracking and tracing instrument shrinkage

## Module 7 and 8 - OR- / RUMED-Status

The status modules are available separately for operating theatre departments and the RUMED and provide the respective staff with an overview of the incoming and outgoing instruments or trays. In combination with the CheckBox modules, it is possible to analyse which instruments were needed in the respective ORs and thus automatically optimise the trays. For the RUMED it is possible to create packing and instrument lists, which are necessary for the workflow. In addition, the replenishment warehouse can be simplified by digitally monitoring the inventory through RFID tagging and initiating the procurement of new instruments in good time. The status modules thus enable a sensible use of assets and increase economic efficiency throughout the entire instrument cycle.

### **The status-modules include:**

- Caretag® Status software
- Optional: Standard PC ready for use from Caretag® can be included

### **Advantages:**

- Digital overview and monitoring of the entire process in the operating theatre, especially the instrument cycle and demand
- More efficient OR planning through better planning of product availability
- Automated screen optimization
- RUMED: Simplification of replenishment stock (inventory & procurement)
- Generation of data and possibility of extraction from the database
- Smooth process flows

Note: The prerequisite for this module is the administration module, the packing station and the corresponding CheckBox Set.



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## Contact

RFID tracking on medical devices, sterilisation containers and wire baskets - intelligent networking

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## Module overview

Success Factors	
Patient Safety	Documentation of used products in patient directory at individual product level
	Improved cleaning through stored disassembly instructions (e.g. videos)
	No instruments left behind in the OR / RUMED
	Increase patient safety
Process Optimisation	Smooth process flows
	UDI compliance
	Efficiency increase through easier and faster packing of trays
	Completeness of the Trays
	Efficient, proactive repair management through product-specific rules
	Increased value retention of the instruments through stored function control
	Extending the life of the instrumentation
	Time and cost savings
	Complete sets
	Time saving through bulk reading with special high-power RFID laser
	No manual counting or searching of missing instruments
	No manual scanning necessary
	Calculation of lead times to improve efficiency
	More efficient OR planning through better planning of product availability
	Increased economic efficiency through automated set optimisation
RUMED simplification of the replenishment warehouse (stock & procurement)	
Generation of data from possibility of extraction from the database	
Overview and monitoring	Complete and digital overview and monitoring of the entire instrument cycle
	Lifetime tracking of the instruments
	Overview of the instruments in the set
	Overview of the condition of the instruments
	Automatic monitoring of regular service intervals
	Digital overview and monitoring of set contents
	Digital overview and monitoring of goods movement in real time
	Tracking and tracing instrument shrinkage
Digital overview and monitoring of the entire process in the OR, especially the instrument cycle and requirements	

## Module overview

Module 1 Administration	Module 2 Packing Station	Module 3 Rules and Service	Module 4 CheckBox- Set OR	Module 5 Check- Box- RUMED	Module 6 Gates	Module 7 & 8 OR- / RUMED-Status
x						
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