

# KASTO *SmartSolutions*

Innovative, digital solutions



# KASTO SmartSolutions

The path towards Industry 5.0

At KASTO, we are paving the way for Industry 5.0 with our *SmartSolutions*. Virtual and Augmented Reality, as well as human-machine interaction, are already integrated into our daily operations. These solutions lay foundations for further advancements in intralogistics.

We already provide our customers with automated and interconnected solutions for all their processes, including storing and retrieving raw materials, intelligent material search, picking, bundling, strapping, feeding the sawing machine, and subsequent processing steps.

In keeping with our motto: Sawing. Storing. More.

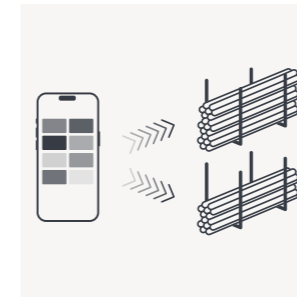
If you want to achieve more, you need to do more. Dare to be more future oriented. Invest more. Integrate more performance. Think beyond the horizon.

Our KASTO *SmartSolutions* are already included in our product portfolio which focus on digitalisation, resource conservation and sustainability. Please see below for an overview of these offerings:.

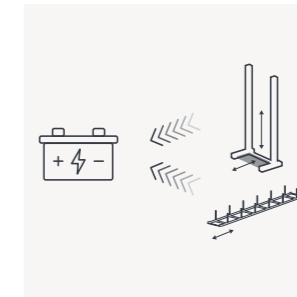
## Overview of our smart solutions



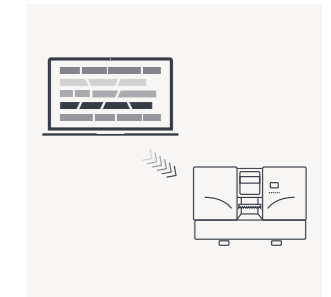
KASTOlogic



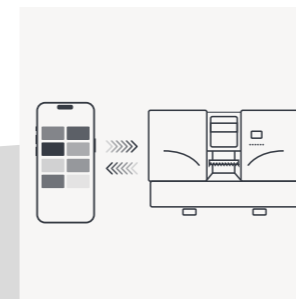
KASTOlogic mobile



KASTOenergysave



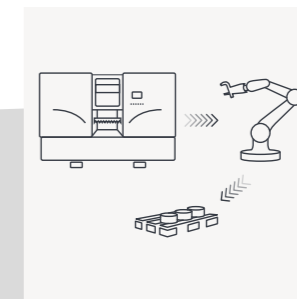
KASTOoptimisaw



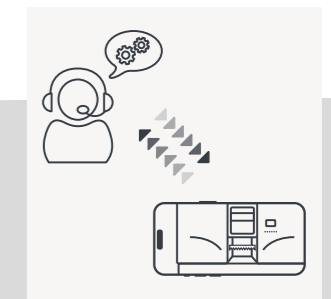
KASTOapp



KASTOrespond



KASTOsort



KASTO VisualAssistance







KASTOlogic is designed using the modules of your choice

The basic module serves as a foundation for the following available modules:

- **materialflow:** Automated storage system control
- **stock:** Stock management with subgroups:
  - logistic: Additional logistic functions
  - production: Production management
  - manualstore: Management of manual storage
- **automation:** Machine integration
- **statistics:** Statistics for system analysis



## KASTOlogic

Warehouse Management made by KASTO

Whether fully automated high bay or manual storage, the Warehouse Management System (WMS) software suite KASTOlogic enhances your work processes and increases efficiency.

A graphic, user-friendly interface based on a consistent operating philosophy that covers all aspects of warehousing tasks, from simple controls to order processing, making it easier for users to perform their daily tasks.

Integrated algorithms continuously generate statistics, enabling the detection of bottlenecks in the automated storage system. The system's full potential is utilised by making adjustments to the material flow strategies. A modern 3D simulation checks and assesses potential system modifications. Consistent path optimisation in the automated storage system enhances its overall performance.

### Improved energy efficiency

The energy efficiency of our storage solutions is improved thanks to the continued advancement

of KASTOlogic's material flow algorithms. This is achieved by a mathematical process which considers the energy requirement and regulates the storage system components based on demand, thereby minimising energy usage. The system's efficiency is not affected through this process.

### Interfaces for production

KASTOlogic enables the integration of sawing machines and material handling solutions manufactured by KASTO as well as other leading manufacturers. The integrated order and production management provides an improved overview of the capacity of the connected production machinery, focusing on the fields of sawing, stamping and laser cutting.

Conventional ERP systems are complemented by interfaces that round out the automation of work processes. The storage system utilises proven and customisable algorithms and intelligent warehouse strategies to increase capacity and running times while reducing wear and tear.

## Module overview of KASTOlogic

### Basic module

- graphical UI
- System visualisation/dashboard
- User management
- Interface to the customer ERP

### materialflow

- Random warehouse management
- Restocking (only in conjunction with current stock)
- Drive strategy of multiple OGCs on one rail
- Dynamic shelf heights
- Downtime strategy

### automation

- Other processing machinery for straight and mitre cut bar stock
- Other processing machinery for sheet metal and plates
- Manipulator for sheet metal and plates

### statistics

- Comprehensive statistics for system analysis

### stock

- Item master data
- Heat management
- Permanent inventory
- In-out strategies
- Packing drum
- Remnant piece management
- Material compaction

#### logistic

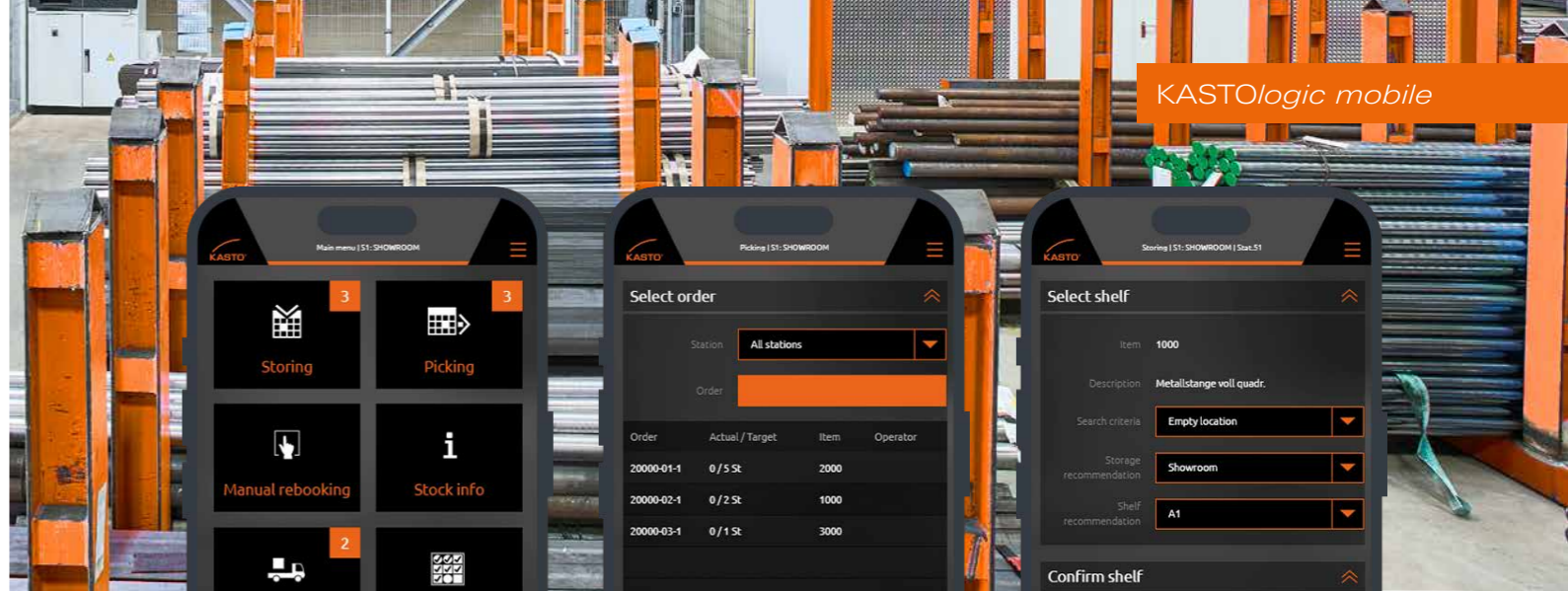
- Clients
- Plausibility analysis
- Quality management
- Packaging management
- Shipping cassettes

#### production

- Production orders and machinery
- Cutting layouts 1D + 2D
- Optimisation 1-dimensional, 2-dimensional rectangular, 2-dimensional free forms

#### manualstore

- Management of manual storage
- Trolley management



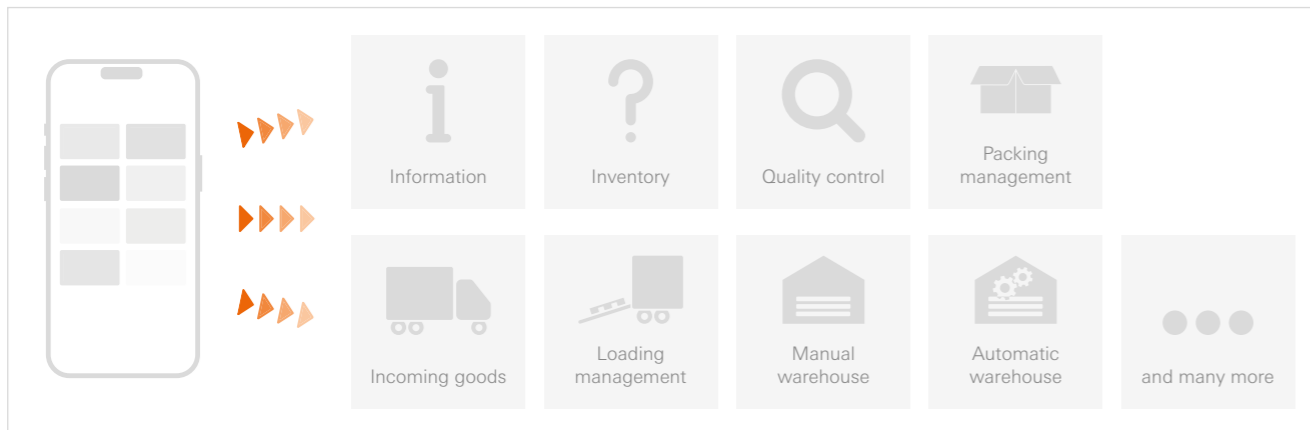
Main menu KASTOlogic mobile

Order processing

Target shelf search

## KASTOlogic mobile

Mobile solution for managing manual storage



KASTOlogic mobile management areas

Obtaining information about stored material can be challenging in manual storage systems. This can result in improper storage and labeling of materials, leading to longer search times. In addition, damages are often not documented, which leads to the need for costly extra process steps.

KASTOlogic mobile enables the system to manage warehouse. The in-house developed app enables users to easily transmit transaction data from their smartphones or tablets directly to the warehouse management system, KASTOlogic, as well as their

own ERP. This includes information such as stock receipts and transfers, order picking, shipping, and inventory data.

KASTO offers a handheld device that makes such transactions effortless. It features an easy-to-read display, durable housing, and a built-in barcode scanner. Warehouse employees receive digital support for their daily tasks through structured work instructions. To ensure extra security and prevent careless errors when handling and booking materials, barcode scans are used to verify the

provided information. The details of the order item are saved on the device and transmitted wirelessly to the KASTOlogic warehouse management system, ensuring transparency and traceability.

With KASTOlogic mobile, it is also possible to incorporate a "Pick-by-Crane" system. The app allows the user to control the movements of a connected overhead crane. The system is coupled with the crane's weighing system, allowing for easy weight measurement with just the push of a button.

KASTOlogic mobile is a platform-independent and mobile solution of the KASTOlogic warehouse management system. It allows users to access essential functions on their mobile devices. With the WMS KASTOlogic, customers can now connect to their ERP system directly and even manage automatic storage systems through their mobile device. You can manage the entire storage system regardless of how far away you are from the nearest control panel. KASTOlogic mobile is the ideal solution for monitoring your entire warehouse.

### Your advantages at a glance

Mobility independent from the control panel

Control of crane and scales

The touchscreen interface makes it easy to use, providing a degree of flexibility and saving time

Structured instructions ensure efficient and error-free handling of complex processes

Material posting, removal and transfer posting, inventory taking, display inventory levels

The KASTOlogic mobile app can be customised to fit all customer requirements





## KASTOenergysave

### Storage technology with integrated energy storage

Our focus is on providing our customers with energy-efficient machines and systems that offer great benefits. Manufacturing and trading companies require increasing amounts of energy for their intra logistics to achieve a higher level of automation. The use of energy-efficient operating gantry cranes is crucial for the economic viability and investment in logistics systems.

By utilizing innovative KASTO technology, users can gain long-term and strategic competitive advantages through improved energy efficiency. This is achieved since the potential energy savings are calculated on a continuous basis, resulting in increased competitiveness.

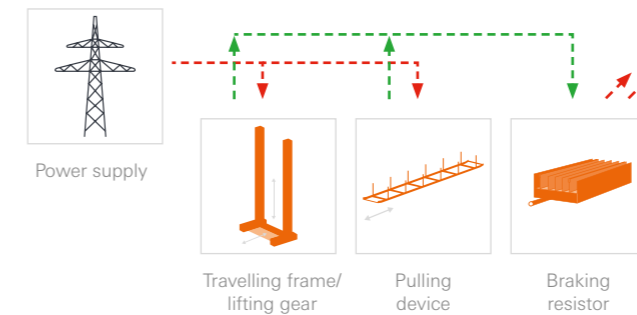
At KASTO, we understand the importance of energy efficiency in our customers' intralogistics operations. That's why we design our tower, overhead, bar, and honeycomb storage systems using high-performance

assemblies with low energy consumption. KASTO can offer its customers various energy management strategies based on factors such as machine utilisation and energy efficiency:

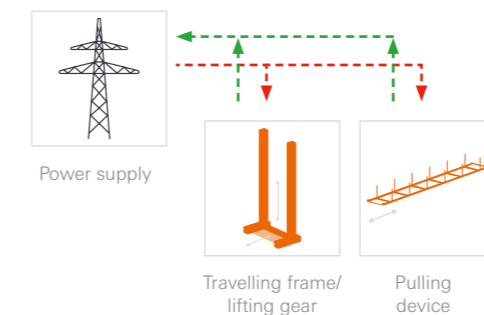
- With KASTO, the DC intermediate circuit connection between the inverters of traction and hoist drives allows the energy produced during braking of one drive to be used by the other drive for energy compensation.
- When using a regenerative unit, any excess energy can be returned to the supply grid.
- With the latest KASTO energy efficiency solution, the energy gained can also be stored in the storage system until it needed by other consumers (integrated energy storage through the use of capacitors). This enables a reduction in the overall energy requirements of the supply grid.

Dashboard from KASTOenergysave

### History of the energy usage

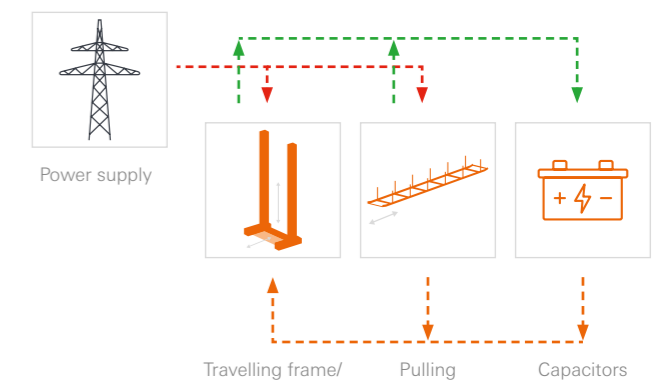


1. Excess energy is lost due to braking resistors. No energy can be saved, resulting in additional costs.



2. Excess energy can be fed back into the grid. An energy savings of up to 40 % can be achieved, provided immediate energy use is possible.

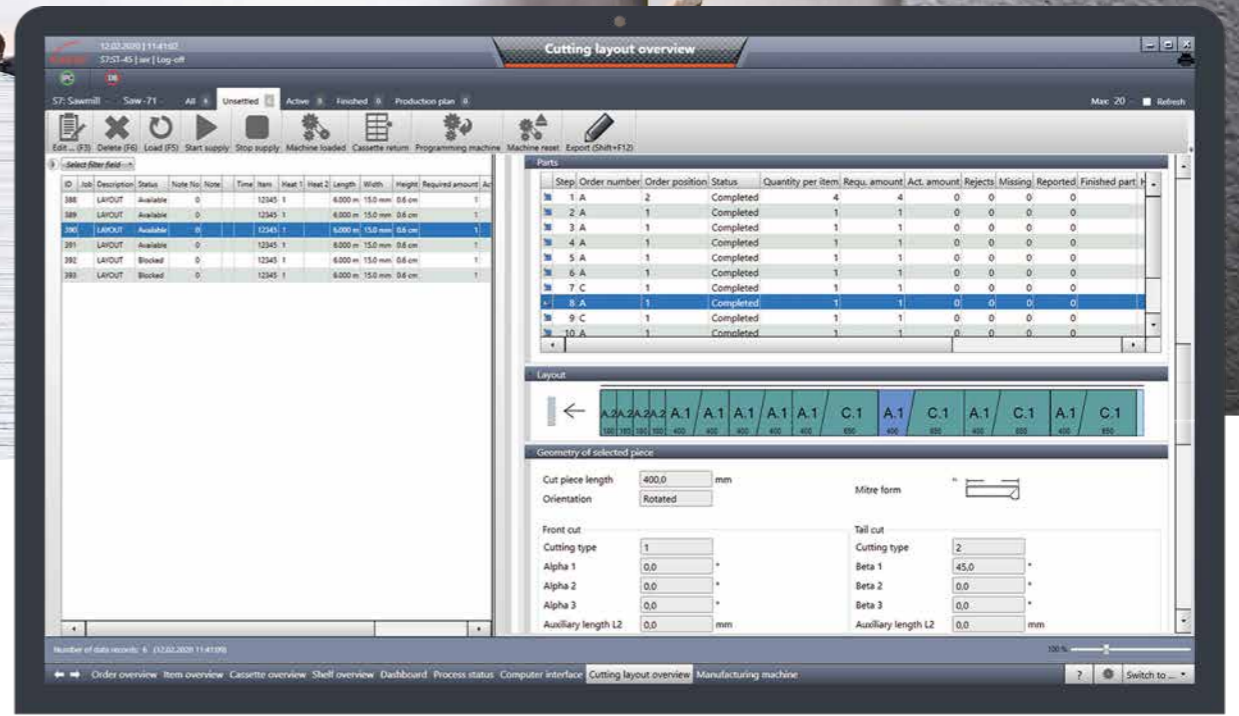
### Improved energy efficiency with KASTOenergysave



3. Climate change leads to legal requirements, resulting in a continuous increase in energy prices. Our intra logistic systems, which feature cutting-edge KASTO storage technology and an integrated energy storage system, offer substantial cost savings.

- Energy remains in the system until reuse
- Energy savings of up to 40%
- Energy supply can be reduced by up to 50%





## KASTOptisaw

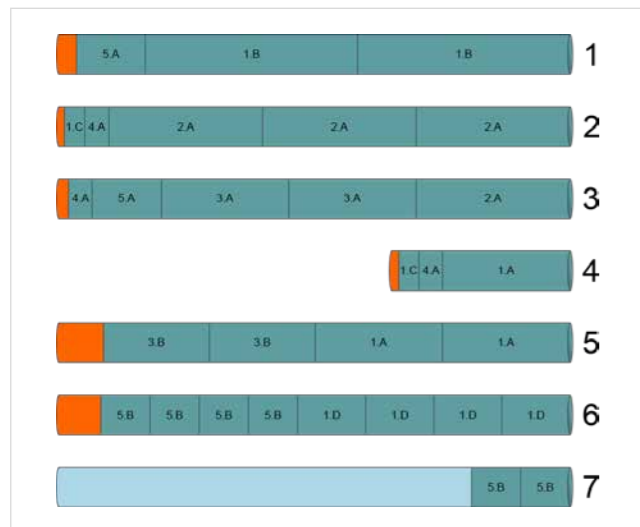
### Straight and mitre cut optimisation integrated in KASTologic

Selecting bars and assigning cut pieces for cutting jobs with varying cut lengths can be a complex task.

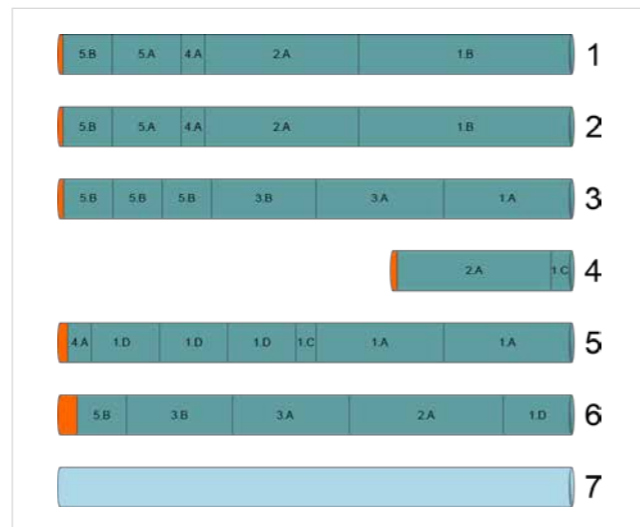
Short remnants that cannot be stored should be avoided whenever possible. In cases where this is not feasible, it is important to maximise bar utilisation to the fullest extent possible. The alignment and sequence of sections when making mitre cuts determine the gusset losses.

**KASTOptisaw uses advanced algorithms to improve production efficiency: It repeatedly explores various possible section arrangements, combining them to find the optimal solution.**

This process takes into account various goals and constraints to optimise the process. It includes minimising waste and reducing the amount of material movement.



Before optimisation: Large remnant losses



After optimisation: Higher utilisation rate and one unused bar

Graphic Overview of cutting plan generated by KASTOptisaw

KASTOptisaw is fully integrated in KASTologic. It is possible to configure both the direction of material flow and the contact edge.

The cutting plan can be created automatically or manually. If you create a cutting plan manually using a graphic wizard and geometry data, you can optimise it further by selecting a different stock. All mitre cuts have a numerical angle display.



Wizard in KASTologic

### Your advantages at a glance

Straight and mitre cuts with up to 3 angles cutting pattern

Mitre cuts with material symmetry: optimisation by rotating, turning and folding the sections as well as alternate angles

Consideration of machine parameters such as minimum residual length, etc.

Configurable calculation time (usually 10 - 20 sec.)

Configurable weighting of the goals: Low scrap amounts vs. preferred use of short bars, lower time requirement (KASTOcenter)

Additional options based on customer needs are including order fulfilment, batch processing, layer cutting, and reducing cassette changes



## KASTOapp

Live status overview of your saw machine

With KASTOapp, a platform-independent web application, you can easily keep track of the status of your sawing machines in real-time.

No installation is necessary to start using the KASTOapp. Its responsive design allows it to adjust seamlessly to the size of any terminal. Users can easily check the status of sawing machines from anywhere and at any time using their browser on a smartphone, tablet, or computer. This allows them to monitor the machines and respond promptly to any issues that arise.

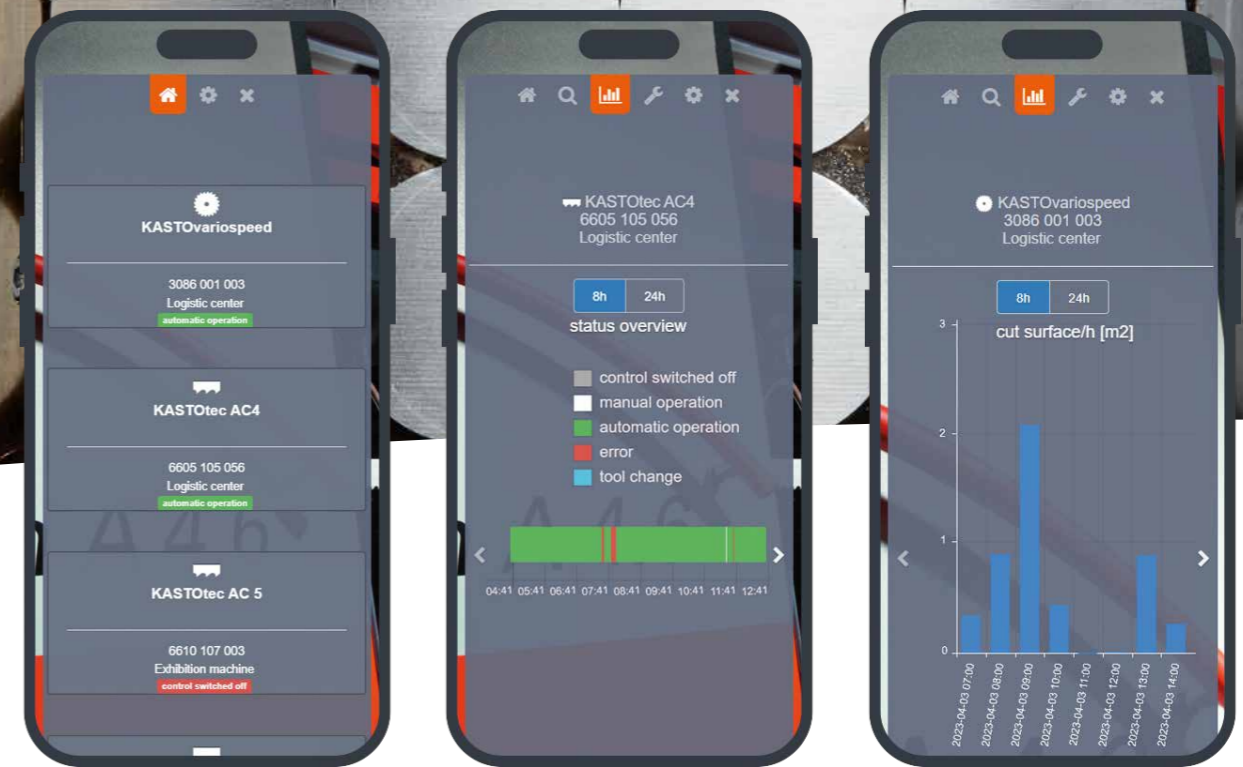
The KASTOapp is well-organized and easy to use. It provides users a quick overview of the essential data for all sawing machines which feature the latest control technology. Multiple users can access the information simultaneously.

Your data is protected from unauthorised access at all times. Our server is located at our site in Achern, and the data transmission is unidirectional through encrypted connections using HTTPS. Furthermore, you can prevent incoming connections, guaranteeing that only data is transmitted and restricting external

access to the control system. The KASTOapp allows you to access your KASTO sawing machine securely from anywhere.



Detail overview



Machine and status overview

Machine performance

History of shift/day

## Your advantages at a glance

Saw description including name, machine number, and machine model

Historical timeline of the machine status and number of cuts made

Status of the saws (automatic mode, manual mode, tool change, malfunction)

## Support in the automatic mode of the saw

If a sawing machine is operating in automatic mode, the KASTOapp can also access the information on the current job stored in the respective machine control

system. The user can access precise information about all relevant parameters during the cutting operation.

Article

Technology parameters such as feed rate and cutting speed

Cut off length

Quantity (target, actual)

If an error occurs, a collective message appears, helping the user to respond appropriately and minimise potential downtimes





## KASTOrespond

Intelligent saw optimisation through digital control of the feed rate

With *KASTOrespond*, you can easily adjust your sawing machine for solid materials, tubes, and profiles of different material types. The system constantly registers forces acting on the tool without the need for extra sensors that are often prone to errors. It then uses this information to intelligently determine the ideal digital feed rate.

*KASTOrespond* can detect thick-walled and thin-walled materials, changing contact lengths in round materials, and hard spots in solid materials. It then cleverly converts this information into the correct feed rate. The operator simply needs to input the necessary information, such as the length of each section, the quantities needed and the material to be cut.

### Intelligent sawing

Materials may have different cutting characteristics, even if they are in the same group. Often, identical materials are cut very differently, for instance, because they are from different batches. Up until now, both materials were cut with the same parameters. *KASTOrespond* can determine if a material is easier to

cut based on the cutting force used. It then adjusts the saw feed until the desired cutting force is achieved.

The system performs exceptionally well when cutting tubes, profiles or pipe/profile bundles.

For these uses, the previously used control system can hardly make a difference, as the engagement lengths of the tools and cutting forces are constantly changing. *KASTOrespond* is a highly effective tool to help optimise the cutting range of the machine.

*KASTOrespond* can be switched on or off. When turned off, the control system uses technology values, dimensions, and tool data to calculate the saw feed rate for cutting the material.

The cutting-through process is performed at a constant feed rate for all material shapes except when cutting in and undercutting.

### Example: Thin-walled square tube

When the blade meets the surface of the square tube, numerous teeth are engaged. This means that the saw blade quickly becomes overloaded and the tooth gaps are filled with material.

*KASTOrespond* quickly adjusts the feed rate within split seconds, allowing the tool to slowly advance at a moderate feed rate.

As soon as the saw blade penetrates the surface and reaches the edges of the material, the cutting force is reduced and the control system increases the feed value to the ideal level.

The system regulates the cutting force to ensure the saw blade moves constantly within the permissible cutting force. However, the permitted cutting force is not exceeded. *KASTOrespond* optimises the cutting feed without any need for operator input.

*KASTOrespond* improves the cutting process by providing optimisation options that lead to faster and more tool-friendly results.







## KASTOsort

Handling expertise for sawing machines and storage technology using industrial robots integrated by KASTO

With KASTOsort, you can easily palletize the complete variety of cut-pieces of your KASTO sawing machine without extra operator assistance. You can also transfer it to other processing systems if needed.

The possibilities are endless with our experience of integrating over 100 industrial robots on sawing systems worldwide, our highly flexible program structure, and innovative gripping concepts. The system can handle stacking, deburring, and marking of flat material, discs, and round bars with ease. It is equipped with a decentralised, self-organised program logic and a multi-stage gripper change concept that allows it to intelligently adapt to any new cut-off dimension.

The user does not need to be trained via teach-in or have any programming skills. The robot system gathers all necessary information by communicating with your ERP system or the upstream or downstream machines. This ensures the flexibility of your system and prepares you for the future.

KASTOsort is seamlessly integrated into the KASTO global system. The operating personnel can easily monitor and control the robot system through a simple and graphic interface.

The stacking pattern of cut pieces in the bins is automatically generated and optimised for any dimension. You can freely choose the containers in which to stack the cut pieces.

KASTOsort provides not only technical flexibility but also dynamic and cost-effective adaptability to the chosen shift model based on production capacity. If you operate on two or three shifts, investing in KASTOsort systems can result in a return on investment within one to one and a half years.

## Achieve full process integration while maintaining individual adaptability

To meet your automation needs, you can expand the robot handling system with additional processes. Aside from handling processes such as palletising, loading and picking, the following processes are available:

- Weighing, (length) measurement
  - Labelling, printing
  - Dot peen marking
  - and much more
- Chamfering, deburring
  - Centre drilling
  - Cleaning, suctioning out tubes

When the automation of work processes requires a unique approach, our team of developers create customised solutions and strategies to meet customer-specific needs.

## Your advantages at a glance

Greater flexibility and competitiveness

Automating subsequent processes allows for greater flexibility and utilisation. Automated additional shifts can effectively lower operating expenses and shorten processing times while simultaneously boosting productivity

Achieve optimal handling of workpieces with varying dimensions and geometries despite limited space, while also ensuring high energy efficiency

KASTOsort's autonomous gripper change allows for optimal availability, even with small batch sizes

By handling workpieces gently at minimal noise levels achieves improved quality and ensures the highest product quality

By increasing safety and ergonomics in your sawmill, you can create more attractive workstations





## KASTO VisualAssistance

Innovative remote maintenance and repair

*KASTO VisualAssistance offers a wider range of remote maintenance and repair options.*

The core component of KASTO VisualAssistance is an interactive app available on tablets, smartphones, and smart glasses. If necessary, the KASTO helpdesk technician can establish a video and audio connection with the customer's terminal.

KASTO technicians and customer service personnel share the same field of vision in real-time. It makes mutual understanding significantly easier and helps to quickly identify individual system components and

possible malfunctions. The app also makes it possible for KASTO experts to provide visual assistance and for example, show markings in the live video.

When performing maintenance or repairs on the saw or storage system on-site, the customer can easily access all necessary information through augmented reality displayed on their screen. When using smart glasses, the customer can control the software through voice commands, allowing for hands-free operation and making the work even easier. The user interface is easy to use, e.g. Log-in using a QR card.



Users and technicians can connect via video and audio streams



You share the same field of vision in real-time.

KASTO's helpdesk technician is on-site virtually, providing live stream assistance to employees. There is no need for time-consuming training programs or expensive travel. At the same time, users benefit from minimal downtimes and the high availability and productivity of their machines and systems.

KASTO VisualAssistance is a system that utilises augmented reality to provide users with easy and quick assistance for maintenance and servicing. It offers practical benefits and is a great way to tap into the potential of this technology.

### Your advantages at a glance

Enables quicker and more accurate exchange of information

Improves availability and productivity

Increases the ratio of remote repairs compared to conventional service calls

Lowers repair costs

Our KASTO experts offer reliable remote support services

Hands-free remote maintenance and repair thanks to smart glasses

Download the software here:



Google Play



Apple App Store



Smart Glasses App



# KASTO - sawing machines. Storing. More.

## Excellence in all areas

For nearly 180 years, KASTO stands for innovation and exceptional quality. In addition to metal saws and automated storage systems for long goods and sheet metal, KASTO offers customised material logistics solutions. Our range of products is complemented

by cutting-edge digital software solutions and reliable KASTO services. KASTO has become the global leader in sawing and storage of metal through their dedication to advancing technology and constantly improving machine concepts.

### Sawing machines from KASTO



KASTO offers a wide range of saws, from saws for the machine shop to fully automatic high performance sawing machines including hacksaws, bandsaws and circular saws. [www.kasto.com/saws](http://www.kasto.com/saws)

### Storage solutions from KASTO



KASTO's storage systems are known for their efficient use of space, easy accessibility, and excellent storage overview. [www.kasto.com/storage](http://www.kasto.com/storage)

### KASTO-Service



Rapid availability of spare parts and individual customer support are an integral component of KASTO-Service. KASTOretrofit is a service to modify existing systems to meet current demands. [www.kasto.com/service](http://www.kasto.com/service)

### KASTO SmartSolutions



KASTO provides digital automation solutions that enhance the efficiency, flexibility, and cost-effectiveness of metal processing and storage. [www.kasto.com/smart](http://www.kasto.com/smart)

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