

**e c o s** *systems*



manage your things  
with ecos

**ecos object management**

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# Things in the system

The focus is on  
your valuables.

For 20 years ecos systems help to provide keys and other things in a controlled way. Since then, we have been working relentlessly on managing more and more different objects in our systems.

Our focus is on merging the physical world with the digital world.  
In the real world, physical objects, things are at the center.  
We use them every day, we make use of them in all aspects of our lives.  
But most of these things are not interconnectable.

In order to integrate things into our digital lives, we need to monitor them, count them, issue them in a controlled manner, and take them back. ecos locker systems do just that.

Late returns, as well as reaching reorder points, are reported electronically and actions such as reminder emails or reorders are triggered automatically.

This is our world, the ecos world:  
We use state-of-the-art technologies to bridge the gap between the physical and digital worlds.

ecos - electronically controlled organisation systems

# The being of things

## Our view on things

We at ecos, see things in the following light:

"Things, as movable objects of man's material environment,  
everyday objects that shape man's life".

- Museum of things

Things can be categorised into consumables and usables.

Consumables are goods that must be replaced regularly because they are used up or their use has changed.

Conversely, things like equipment are not classified in this class, but are considered usables.

Usables are designed to last for a longer period.

## Keep things apart

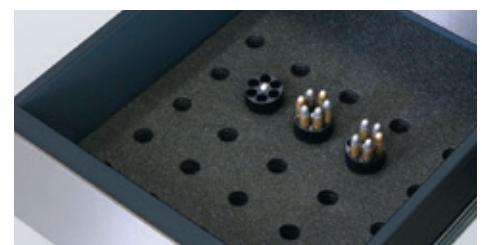
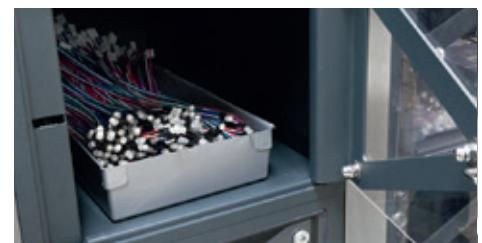
To better keep your things apart, you first need a concept and then lockers, lots of lockers. Lockers for small things and for big things, for light parts and for heavy parts. Individual items and bulk goods need to be managed. Your valuables need to be highly secured or charged.

This is exactly where our intelligent locker systems come in. Of course, a uniform solution for the variety of objects and uses is not possible. Nevertheless, your organization profits from managing all its objects in the same manner. The administrative costs reduce for each additional object managed by a locker system by having a standardized object handover and employee training.

## Usables



## Consumables



Vehicles, electronic devices, tools, weapons

Drugs, data carriers, cables, ammunition

# Recognize things

## Storing things

ecos compartment systems were specially designed to be able to store a wide variety of items in the most space-saving way possible. The modular design with 40 different locker sizes from 0,5 to 500 liters capacity offers the right place for all things.

## Using things ...

Objects of daily use, such as tools, drills, or tablets, are often used by different people every day for several years. To be able to recognize these objects, which often are worth thousands of dollars they must be tagged. Particularly important for similar items such as weapons or laptops. In some regulatory situations, it must also be possible to identify the object without any doubt. The technologic solution of choice is to mark these items with RFID labels.

Many tools are powered by rechargeable batteries. This increases their mobility and thus the possibilities for use. But to use them, they must be charged. Integrated charging functions in the lockers allow the work tools to be charged while they are stored, making them fully operational for the next user.

## ... or consuming things

Consumables and disposable items, on the other hand, are used only a few times, often even only once, and are then used up. Therefore, more cost-effective detection methods are necessary for objects such as drill heads, medicines, and ammunition.

To avoid additional costs or additional work, the best way to mark consumables is to use a recognition feature inherent in the object. The simplest unique characteristic of a thing is its weight.





## Object Management of the Future With ecos locker cabinets



# Identifying things

Your organisation's usables must be permanently and uniquely marked. This is not only required for their inventory but is also essential for usage tracking. Above all, automatic, contactless identification of these objects saves time and avoids errors.

## Recognize what's important. RFID identification of ecos

RFID technology is the most proven method to clearly identify almost any object. By attaching unique RFID tags or stickers to your valuables, our intelligent lockers detect at any time whether the **right, wrong, or no object** is in its assigned locker. The currently detected status is signaled via RGB LED on the outside of the locker, as well as displayed in the software on the system, the web and the app.

There are corresponding RFID labels for every object, whether large or small, made of metal or any other material.



Our RFID technology is available for all drawers and lockers. Installed under a double bottom, the sensors recognize each marked object regardless of its exact position in the locker. Up to 4 objects can be detected simultaneously. Since the reading process takes place in the closed locker undisturbed by external influences or movement, extremely accurate detection is guaranteed.



## Labeling options:



### RFID-Tag

Classic RFID tags are particularly suitable for use on key rings or visitor badges. With a frequency of 13.56 MHz, ecos tags are characterized by high transmission rates as well as clock frequencies, which guarantees reliable detection in the locker.



### RFID-Sticker

For frequently used items, such as tools or vehicle keys, the ergonomics and handling must not be disturbed. This is where our distinct RFID stickers in various sizes come into play. Designed for single use, the stickers adhere easily to any surface and are irreparably destroyed when removed.



### Multi-RFID

To manage all an employee's work equipment as efficiently as possible, our multi-RFID technology is used. With it, up to 4 objects can be reliably recognized in one locker. This application not only reduces space consumption and acquisition costs, but also increases efficiency during daily removal and return.



### ID-Plug in a locker

Important equipment required for work, such as radios or documents, must often be managed together with the corresponding room or vehicle key. Our lockers can be equipped with an additional ID plug for this purpose. Entire bunches of keys can be attached to it and recognized in addition to the RFID recognition in the locker.

# Electrifying things

## With integrated charging function

Storing your electrical devices is all about maximizing efficiency in your workflow. Only if each device is fully operational at the start of the shift, your employees can get going right away.

That is why both our lockers and drawers are available with charging connections for 5V or 12V. For larger devices, a 230V connection is also available in our lockers.

Just like magic, once the devices are brought back the charging process begins and takes place outside of working hours. The device's current charging status is displayed by an RGB LED mounted on the outside of each locker. This allows you to see immediately which devices are fully charged.

For even greater efficiency, our First In - First Out automation can be used as part of a sharing concept or multiple-shift operation. It always issues the most charged device of a group to your employees.



Smartphone in a 1m depot with 5V USB-socket (top) and m/2 drawer (bottom)



Laptop in a L depot with 230V socket (top) and m/2 drawer (bottom)

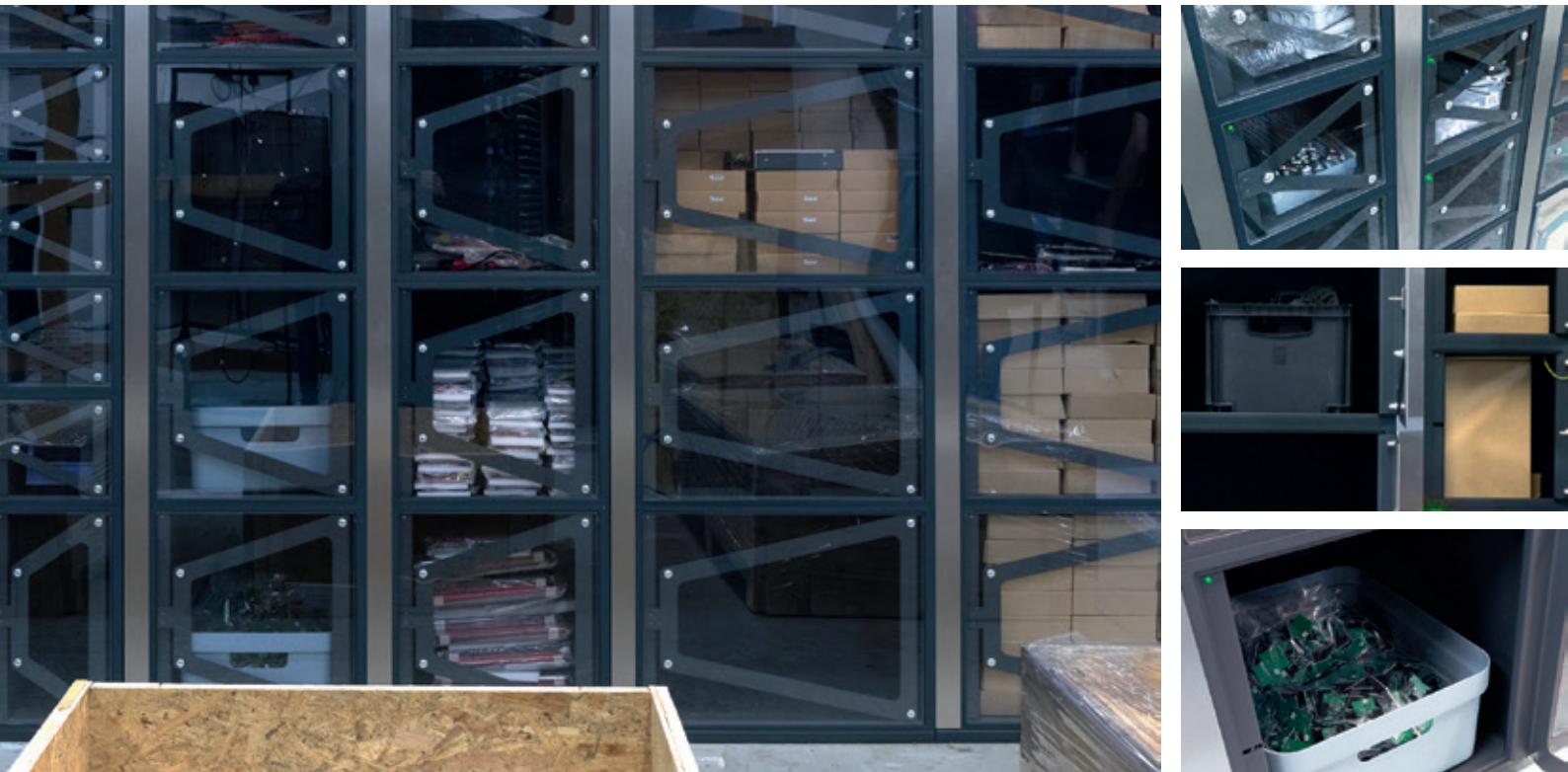


Tablet in L/6 drawer with 5V socket (bottom)



Laptop with 12V outlet in a L/6 drawer

# Weighing things



## The weight of things

Our systems can accurately determine objects with weights between 5 grams and 500 kilograms aiming at the per mil range. This enables the identification of a single object from up to a thousand other similar objects.

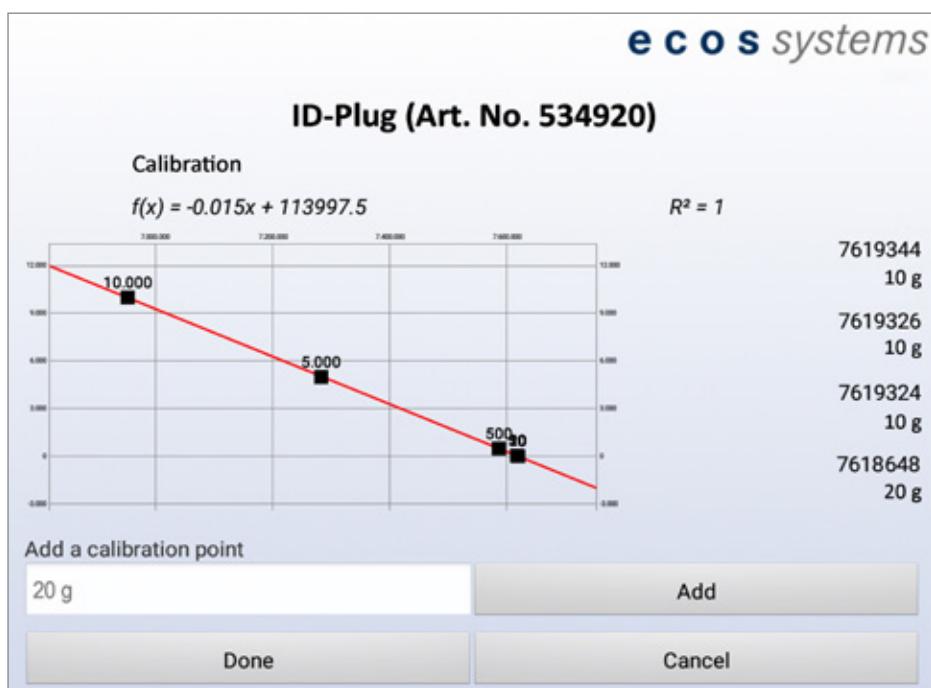
Consumables are ideal for this purpose. Many similar items are stored in lockers, e.g. drill heads, printer ink, medicines or cartridges. But also, in-process products, merchandise held in stock in the warehouse or spare parts can be issued automatically in this way. The inventory takes place via continuous stocktaking. If the stock level falls below the reorder level, this is automatically passed on.

The similarity of the objects allows an exact electronic counting. Thus, individual parts of several hundreds can be easily distinguished and assigned to the authenticated respective user. Using intelligent algorithms, up to two packaging levels can be calculated.

## Because every thing counts. Precise calibration for every locker.

Only with an accuracy in the per mil range, such a system makes sense from an economic and legal point of view. Of course, it must be ensured that the user returns 100 rounds from 100 rounds taken; that only one sedative tablet was taken; that all drill heads taken end up back in the respective locker.

Exactly this accuracy is achieved by a built-in calibration program, which recognizes the exact number of each item. By using artificial intelligence in our evaluation algorithms to analyse the data received from the continuous weight measurements we detect the smallest deviations. If needed we take out interfering elements such as temperature fluctuations automatically. Unusual behavior is forwarded to the responsible person as an alarm message.



Input mask on the system for calibrating the ecos weight sensors



Calibration in drawer und depot

# Weighing heavy things

Things that do not fit into the concept.



Inventory - conventional (left) and with ecos upgrade kit (right)

## Intelligent pallet shelves

The greater the number of different things that can be stored and counted, the more economical it becomes for you. For very large or very heavy things, the expense of building new, non-standard storage systems is disproportionately high.

For this reason, we have resorted to the most widely used storage system in the world:  
Storage shelves for pallets. We provide the technology, and you provide the pallet shelves.

Our pallet shelf upgrade kit is suitable for weighing identical items from 5 to 500 kg per pallet space. The data is integrated into the existing locker cabinets and visualized on its control unit. The pallet weighing system can easily be retrofitted at any time.

## Making things smart

The electronic shelf displays are fully integrated into the data flow of the ecos programs. The article name, the article number, and the respective QR code are managed via the software. Stocks are balanced and restocking is triggered.

Calibration data and current weights are collected and forwarded at the pallet location. State-of-the-art technologies recognize the respective employee who is removing material from the shelf or restocking it.

The system is energy-optimized and powered by lithium batteries. These only need to be recharged once a year. In addition, the system sends an alarm message if the voltage falls below a certain level.

The upgrade kit contains two stable U-profiles per pallet location, in which all components are integrated. These are simply placed on the uprights of the pallet shelf and adjusted. Wiring is not necessary; you save the installation costs and are more flexible in case of modifications.



ESL signage on each pallet location



Wireless mounting on the shelf uprights



# Big & small things

The modular design of our locker systems allows any combination of classic lockers and state-of-the-art motorized drawers. Individually configured according to your needs, over 40 locker sizes offer the right space for every object.

## ecos depots - the intelligent lockers

The classic ecos depot lockers are available with a high-quality 3 mm stainless steel door as well as a transparent polycarbonate front.

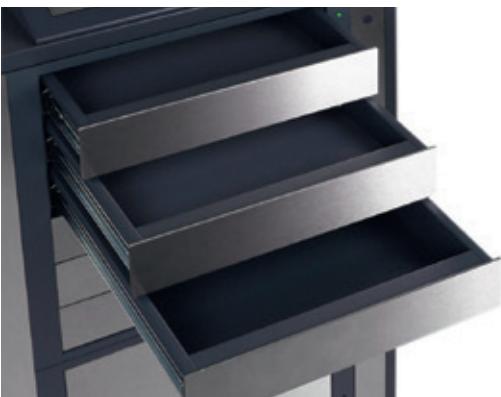
Thanks to 40 locker sizes and capacities of up to 500 liters, the depots are suitable for managing most everyday items. An RGB LED on the outside of the locker always provides information on the current occupancy status.



ecos depot	Outside block / mm	Inside use / mm *			/l		
		Width	Height	Width	Height	Depth	Volume
Depth 250	depot m						
	1m	270	150	220	135	240	7
	1mx2	270	300	220	285	240	15
	1mx3	270	450	220	435	240	23
	2m	590	150	540	135	240	17
	2mx2	590	300	540	285	240	37
	2mx3	590	450	540	435	240	56
Depth 500	depot M						
	1Mx1/3	270	150	220	135	490	15
	1Mx1/2	270	225	220	210	490	23
	1Mx2/3	270	300	220	285	490	31
	1M	270	450	220	435	490	47
	1Mx2	270	900	220	885	490	95
	1Mx3	270	1350	220	1335	490	144
	1Mx4	270	1800	220	1785	490	192
Depth 500	depot L						
	lx1/3	430	150	380	135	490	25
	lx1/2	430	225	380	210	490	39
	lx2/3	430	300	380	285	490	53
	L	430	450	380	435	490	81
	Lx2	430	900	380	885	490	165
	Lx3	430	1350	380	1335	490	247
	Lx4	430	1800	380	1785	490	332
Depth 500	depot 2M						
	2Mx1/3	590	150	540	135	490	36
	2Mx1/2	590	225	540	210	490	56
	2Mx2/3	590	300	540	285	490	75
	2M	590	450	540	435	490	115
	2Mx2	590	900	540	885	490	234
	2Mx3	590	1350	540	1335	490	353
	2Mx4	590	1800	540	1785	490	472

Locker system with ecos depots

\* The dimension of the pass-through opening is calculated in each case from the external dimensions minus 1.4" in height and 3.0" in width



## ecos drawer - the motorized locker

All models of ecos drawers are equipped with the latest generation motors. The fully automatic opening and closing reduces potential security gaps when managing your most valuable items.

With their particularly space-saving arrangement and high accessibility, the drawers are designed for the management of highly sensitive objects of daily use, such as vehicle keys, medicines, tools or weapons. If required, all lockers can be fitted with precision-fit foam inserts.

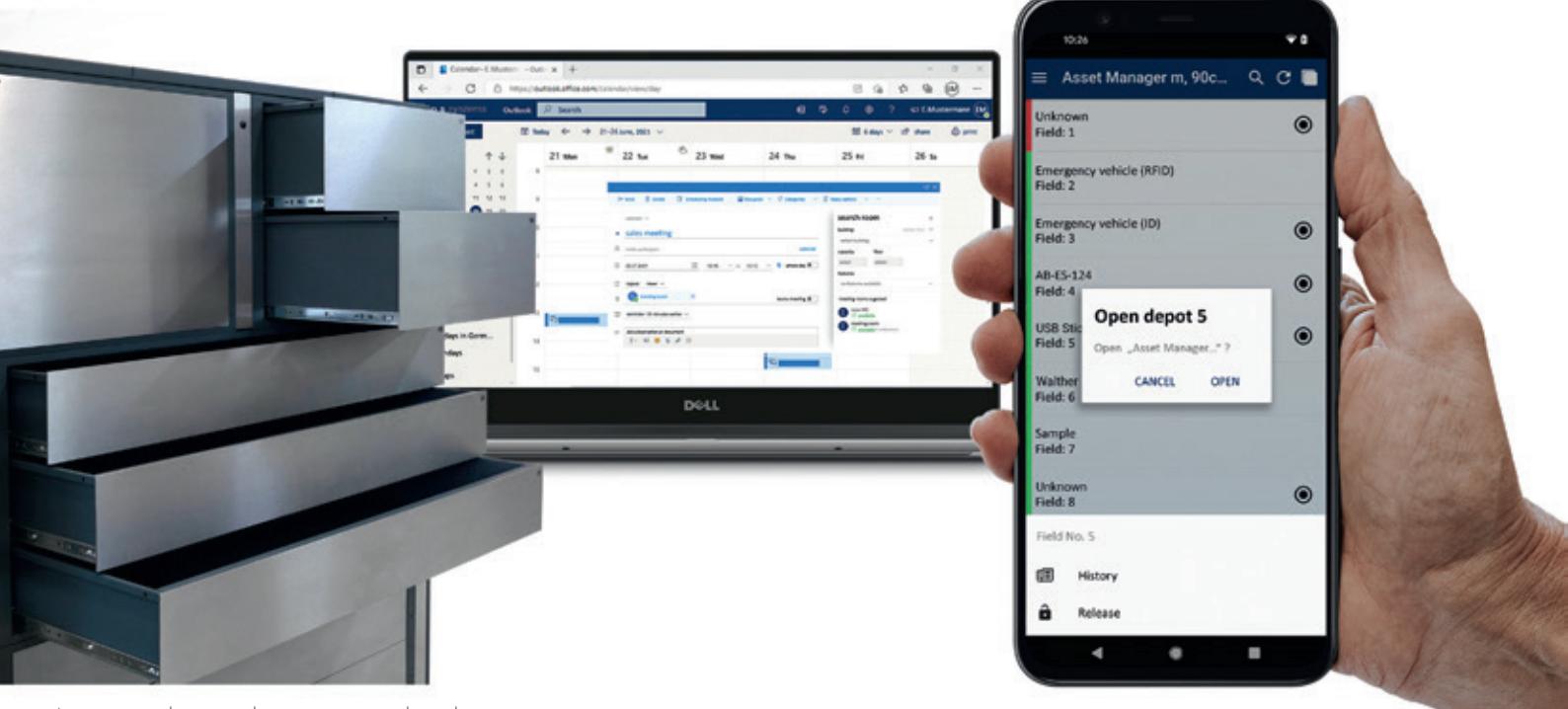
The ecos drawers are only available in blocks to allow easy combination with ecos depots.

<b>ecos drawer</b>		<b>Outside block / mm</b>			<b>Inside use / mm</b>			<b>/l</b>	<b>/kg</b>
<b>Depth 250</b>	<b>drawer M</b>	<b>Width</b>	<b>Height</b>	<b>Width</b>	<b>Height</b>	<b>Depth</b>	<b>Volume</b>	<b>Loadweight</b>	
1m/4	1m/4	270	150	85	45	140	0,5	1	
	1m/2	270	150	210	45	140	1	2	
Depth 500	drawer M	Width	Height	Width	Height	Depth	Volume	Loadweight	
		590	450	480	45	350	8	20	
		590	450	480	114	350	19	20	
	drawer L	590	450	480	184	350	31	20	
		910	450	800	45	350	13	20	
		910	450	800	114	350	32	20	
	drawer L	910	450	800	184	350	52	20	
		1230	450	1120	45	350	18	20	
		1230	450	1120	114	350	45	20	
		1230	450	1120	184	350	72	20	
Depth 500	drawer L	Width	Height	Width	Height	Depth	Volume	Loadweight	
	L/6	430	450	320	45	350	5	20	
	L/3	430	450	320	114	350	13	20	
	L/2	430	450	320	184	350	21	20	



Locker cabinet with ecos drawers

# Access to things



Access your things on the system, via web and app.

## Via web, app or directly on the system. All things at your fingertips.

Thanks to wireless real-time communication via Wi-Fi and cellular network, you can retrieve the current data of your objects from smartphones, laptops, or tablet at any time. In addition to our web software ecos webman, we have developed our ecos app especially for this purpose. In it, you can view current locker occupancies, as well as receive push notifications for alarms.

However, our app offers more than just viewing data. You can also interact with your locker system from anywhere: Remote unlocking, for example, allows you to automatically open a locker simply by tapping it with your finger. You can grant your employees access to lockers in case of a short-term assignment that would otherwise be inaccessible for them.

If you have already removed an object, you can simply hand it over to a colleague, fully documented, using the handover function in the app. You also benefit from efficiency-enhancing features such as mobile object reservation or integration into your Outlook calendar as a resource.



Choice of authentication methods  
on the system

## Protect things according to their value.

State-of-the-art authentication methods protect your ecos systems and identify access to your objects. In addition to classic PIN code and RFID readers, biometric readers for fingerprint and finger vein, as well as QR code readers are available.

Our multi-RFID reader enables compatibility with common RFID protocols such as Legic, Mifare, DesFire, I-Code, HID, HID Prox, and Hitag. Your existing readers can easily integrate via RS232, Wiegand or Data/ Clock interfaces.

The multifactor authentication function activates the necessity to combine several authentication methods. Access to a locker is only granted after successfully combining e.g. an RFID card and a PIN code.

A four-eye principle can be activated for particularly sensitive items. In this case, access to the system is only granted when several people log on to the locker system one after the other with their respective authentication medium.



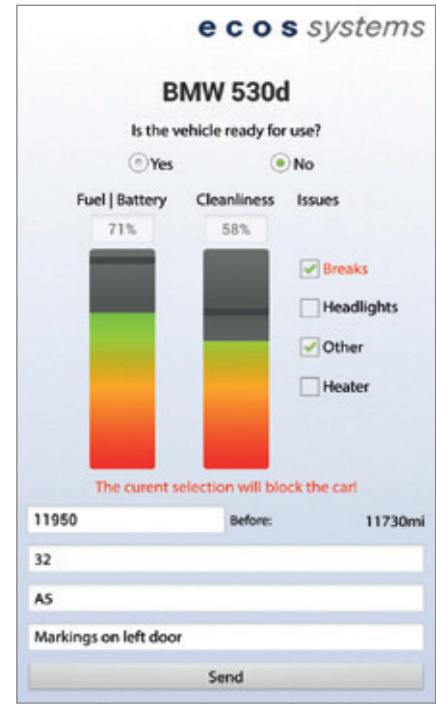
## Simple - efficient - certified. ecos care.

For an even easier user experience, we also offer software-as-a-service. With our all-round worry-free package ecos care, you benefit from automatic software updates and backups, as well as all the functions of the ecos app.

The communication is in one hand and includes both the cloud and cellular communication. With 99.9% availability between system and server and our information security ISO 27001 certification, you are safe with us.



# Information about things



Information about the vehicle is entered into the system directly upon return of the vehicle key...

## Premium interaction at the system

The success of an automated system is dependent on its ease of use for your workforce. Therefore, we took utmost care to implement an interface that is state-of-the-art and understandable for everybody.

Using Android as our operating system allows us to access the latest communication technologies, similar to smartphones. This includes 4G and 5G, WIFI with hotspot functionality, and audio and video communication. Therefore, users can get on-site video assistance.

Our high-resolution capacitive touch displays in sizes 7", 10", 12" or 15" together with powerful ARM processors provide crystal clear, detailed and smooth interaction with the user.

To ensure that the user always has a premium ergonomic experience, the terminals can be integrated at any position in the locker system or even mounted next to it.



...and are by a click on the virtual locker  
viewable for the next user

## Intuitive and Intelligent Input Screens

Usables change, they get used, worn out and become defective.  
Therefore, they need to be maintained and repaired.

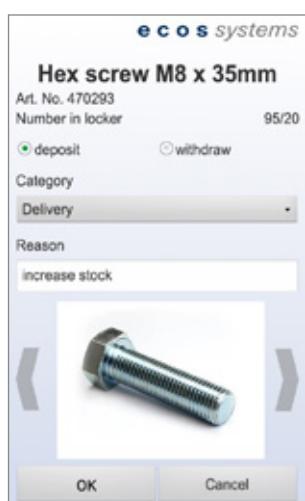
To integrate these activities into your processes as harmoniously and efficiently as possible, we place great value on the transfer of all important information about your things.

Via individual input masks for your objects, which include error messages, maintenance cycles or special usage activities, the respective user can easily and immediately pass on his knowledge about the used things when returning them.

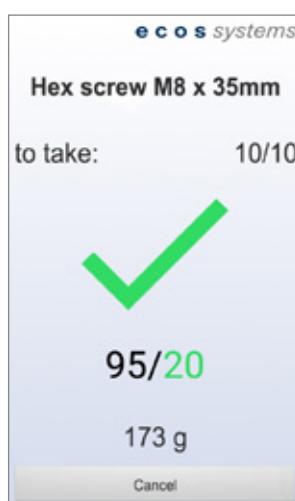
In case of defects, the responsible technician is immediately informed via email or push message and can promptly restore the objects to usable condition. In case of severe damage, alarm messages can be sent, and the object can be automatically blocked for further use.

## Consumables are integrated into the workflow via the stored information and images.

The interactive interfaces enable the system to load and unload items, enter reorder points, and calibrate on site.  
An individual work order with all the parts required for it can also be displayed and output via a QR code.



manual interaction



additional article information



Parts needed for one order

# Highest security for weapons and ammunition

## The World Organization

For over ten years, an international organization at its headquarters in Geneva has entrusted us with its weapons and ammunition. In the meantime, three further branches in Paris, Rome and Santiago de Chile have reinforced their security with our systems.

The respective security concepts were adapted to local requirements. The weapons always need to be stored separately from the ammunition. Either distinct lockers are used for separation or when reaction time is crucial the weapon lockers and ammunition lockers are built side-by-side in one locker cabinet.

The weapons are stored in drawers with RFID recognition, so they can be clearly identified at any time. The use of motorized drawers guarantees easier and faster access to the weapon and saves space.

Ammunition is stored in lockers, with doors made of clear polycarbonate for visual control. Sometimes weight sensors were integrated into the locker for accurate detection of the number of rounds.



1m depots with polycarbonate front for ammunition



1m/2 drawers for pistols combined with  
1m depots for ammunition



50 4M/3 drawers for long guns



Locker sizes for every caliber

With foam inlay

Visual control for ammunition

Our long drawers 3M and 4M with RFID recognition are used for storing long weapons.

Time-restricted, individual access rights allow the removal of weapons only for employees currently on duty. This can be set up quickly and easily via group assignments. Access to one long gun per shift is also controlled by means of group authorisation.

In the event of unauthorized withdrawal attempts or exceeding of the withdrawal time, an alarm can also be sent automatically to the administrator as an e-mail or mobile push notification.

# Always at hand tools and accessories

## A railroad company

A small European country has equipped its entire rail infrastructure with ecos systems to manage electronic handhelds and equipment. All train stations have been equipped with locker systems as shown below.

In such systems, the payment peripherals used are identified, charged and managed via RFID. Over the decades, 4 different types of terminals have accumulated, with different power supplies.

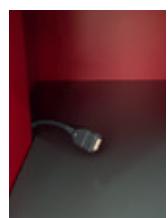
For the tools and equipment in the large maintenance center, the system shown opposite was procured. Here, a wide variety of tools and equipment are always kept ready for use.



Locker systems in use at railroad stations



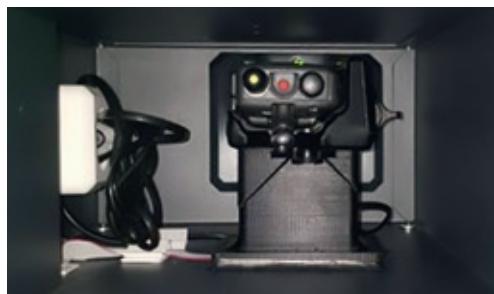
Terminal with 5 V - socket



Terminal with 12 V - socket



Terminal with 230 V - socket



Many of the maintenance center's operating resources and tools required in everyday operations are managed in just one system



# Working material charged and ready to use

## A development and quality assurance company

Many years ago, an international company in the automotive sector needed two locker systems for a regional development and quality assurance branch. The goal was to increase internal security and organization.

One locker system was intended for daily use, for issuing important pooled work equipment such as cell phones, tablets, laptops and vehicle keys. The user group consisted primarily of development engineers who regularly visited their customers on site, even for longer periods of time.

Of course, the electronic tools always had to be ready for use. Often, the engineers working in the field did not even see each other: One returned from his assignment very late, while the other had to leave early in the morning.

The other facility was used primarily to secure the internal organization. Special development laptops were stored here. But important media, such as program CDs and backup tapes, were also kept under surveillance. A reserve of work equipment was also kept in stock.



Locker system for securing digital storage media

## Four applications in one system



various locker sizes offer charging space  
for all kinds of tools



# Producing things Manufacturing at a glance

## A manufacturing company

Very labor-intensive, simple production steps are increasingly being outsourced: the modern division of labor largely takes place at various locations around the world. In order to keep an eye on its semi-finished products manufactured abroad at all times without great effort, a small but internationally active industrial company has opted for our locker systems.

The simple solution with automated weight measurement allows them to track the entire production at any time without large local management capacities: All raw products and all manufactured semi-finished products are stored in the system and automatically counted. Since the system is accessible worldwide in terms of information technology via our cloud solution ecos care, the current inventory can be viewed from anywhere in the web software.

In the daily process, the employees authenticate themselves via fingerprint at the system in the morning. This automatically opens the lockers with the raw material needed for that day. The employee removes his parts and begins with their further processing. In the evening, the employee clears his workstation and packs the semi-finished products into another designated locker. The unprocessed raw parts are also put back in their original place.

The locker system documents the inventory by automatically counting the semi-finished products. It also determines each day's waste by comparing it with the documented raw material input. Further finishing steps with other employees can now follow seamlessly.



system with special height up to 250cm for management of raw products and produced semi-finished products



Half-processed products



...and spare parts from production



...and spare parts from production

The industrial company has also installed locker cabinets in its second facility for final assembly and quality assurance. In this way, the entire cross-company inventory is always at a glance.

The locker system at the second site is complemented by our upgrade kit for pallet shelves. On these, the large-format and heavy finished products are stored and monitored logically efficiently.

# Care at home Keys and medicines

## Many care services

This is the area in which ecos grew large:

The first things managed by ecos were keys, important keys - the house keys of the customers of care services.

In the case of care services, the caregivers must get into the homes of their customers, who are often bedridden. To ensure easy access to the apartments, the keys of the customers must be managed by the care service. Since this can involve hundreds of keys, the use of a key cabinet is suitable here.

The customer visits, which can take place up to three times a day, are often associated with the administration of medication. By managing the prepared medications in an ecos locker, their dispensing can be combined with that of the apartment key: When an apartment key of a patient is requested at the key cabinet, the locker with the corresponding medication of that patient will also open. In this way, confusion is reliably ruled out, increasing the safety of the customer.

As the house keys and drugs are associated, the control unit of the key cabinet manages the lockers as well.



house keys...



...and medicine managed together



Locker system with eight m/2 drawer combined and controlled by a ecos key 360 key cabinet



It also works the other way around:  
The ecos key 120 cabinet is combined with and controlled by a locker cabinet  
with 33 x 1m- and 6 x 2m depots.



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ISO 27001  
Information security



ISO 9001  
Quality management



ISO 14001  
Environmental management