

IFOY AWARD

international intralogistics and
forklift truck of the year

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Report / Jury verdict

The winners of the IFOY AWARD 2023

All the winners of the IFOY AWARD 2023 in detail: AGILOX, Crown, DS AUTOMOTION, HUNIC and STILL are each delighted to receive one of the coveted intralogistics awards, while Jungheinrich wins in two categories.

Ismaning near Munich / Dortmund, June 22, 2023. The International Intralogistics and Forklift Truck of the Year (IFOY) AWARD recognises the year's best intralogistics products and solutions. The decision is based on the three-stage audit, consisting of the IFOY test protocol comprising around 80 criteria, the scientific IFOY Innovation Check and the jury test. The decisive factor is that the nominees are not compared with each other, but with their competitor products on the market.

The sponsors of the IFOY AWARD are the VDMA Materials Handling and Intralogistics Sector Association and the VDMA Robotics + Automation Sector Association. IFOY partners are Messe Dortmund and the world's leading forklift attachment manufacturer Cascade. The IFOY pallet partner is CHEP, the global market leader in pallet pooling. Logistics partner is LTG. Trailer partner is Fliegl Fahrzeugbau. The headquarters of the IFOY organisation are in Ismaning near Munich. The IFOY AWARD is under the patronage of Dr. Robert Habeck, German Federal Minister for Economic Affairs and Climate Action.

Members of the jury: Snežina Badjeva, editor-in-chief Logistika magazine (Bulgaria), Winfried Bauer, editor-in-chief f+h Fördertechnik (Germany), Cecilia Biondi, editor-in-chief Logistica Management (Italy), Alejandra Cabornero, editor-in-chief Logistica Profesional (Spain), Rosa Maria Cherubini, editor Il Giornale della Logistica (Italy), Charleen Clarke, editor-in-chief Focus on Transport and Logistics (South Africa), Theo Egberts, IFOY tester and owner of Buro Andersom / Andersom Testing (Netherlands, without voting rights), Klaus Koch, editor-in-chief LogisticsInnovation.org (Switzerland), Valeria Lima de Azevedo Nammur, editor-in-chief LogWeb Magazine (Brazil), Øyvind Ludt, editor-in-chief Moderne Transport (Norway), Peter MacLeod, news editor Logistics Business (Great Britain), Bernd Maienschein, specialist editor MM Logistik (Germany), Marilena Matei, editorial director Tranzit / Tranzit Logistica (Romania), Matthias Pieringer, editor-in-chief Logistik Heute (Germany), Szilvia Rapi-Jaubert, publisher and editor-in-chief Supply Chain Monitor (Hungary), Matthias Rathmann, editor-in-chief trans aktuell (Germany), Isabel Rodrigo, editor-in-chief Cuadernos de Logística (Spain), Hans-Joachim Schlobach, publisher and editor-in-chief Business+Logistic (Austria), Sascha Schmel, managing director association materials handling and intralogistics in the VDMA (Germany, without voting rights), Sebastian Śliwieński, editor-in-chief Warehouse Monitor (Poland), Gilles Solard, Publisher and Editor-in-Chief Stratégies Logistique (France), Michal Štengl, editor-in-chief Transport a Logistika (Czech Republic), Jarlath Sweeney, editor-in-chief Fleet transport (Ireland), Ying (Crystal) Xu, representative Editor-in-chief, China Industrial News Network (China).
The executive chairperson of the jury is Anita Würmser, logistics journalist and managing partner of impact media projects.

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**IFOY Winner: AGILOX, AGILOX ODM
AGV / AMR**



The IFOY AWARD 2023 in the category "AGV / AMR" goes to AGILOX for the intelligent logistics robot AGILOX ODM. The international jury chose the vehicle as the best new release in this market segment.

The AGILOX ODM, an intelligent logistics robot for small load carriers, ensures the production supply of small parts. Users can transport small load carriers such as containers or dollies with dimensions of 600x400 millimetres and a maximum weight of 300 kilograms from one station to the next. As with other products in the AGILOX range, there is no need for additional infrastructure or navigation aids such as magnetic strips on the hall floor. Freely navigating and autonomous, the ODM makes it possible to supply production lines flexibly. With its omnidirectional travel system, the AGILOX ODM can easily navigate through narrow aisles, even turning on the spot or travelling in parallel. Numerous safety sensors ensure 360° personal protection.

The new AGILOX ODM is part of a product group, which makes it possible to drive together with other vehicle types of the AGILOX family. Compared to alternative AMR, neither additional infrastructure nor navigation aids are required.

The AGILOX ODM is of great relevance mainly to the pharmaceutical and electronics industries. Monotonous tasks no longer have to be carried out by (over-)qualified employees but can henceforth be handed over to the intelligent logistics robot. The company thus wants to close the gap from partial automation to full automation. The manufacturer estimates the market potential for its own company at around 30 million euros.

The manufacturer relies on the motto "Plug & Perform". The first AGILOX can be put into operation in less than twelve hours, each additional vehicle in 15 minutes. Increasing demand should be child's play for the intelligent intralogistics robot.

The name says it all: AGILOX takes changing environmental or process conditions in its stride. The manufacturer relies on multi-level operation. Sounds exciting, and it is. After all, an AGILOX can also operate on different building levels if it is connected via a lift.

IFOY Test Verdict

The new AGILOX ODM omnidirectional dolly mover is an intelligent logistics robot for transporting small load carriers. With the help of the field-proven X-Swarm Technology integrated in the vehicle, the industrial truck independently finds the fastest route through the production or logistics environment in real time. Thanks to the omni-directional drive concept, the dolly mover can drive transversely into rack aisles as well as turn on the spot, and thus manoeuvre even in the tightest of spaces. The lithium iron phosphate battery (LiFePO4) creates the conditions for short charging times and long operating cycles.

Original test report, IFOY Innovation Check and pictures at
https://www.dropbox.com/sh/7xxyoc1tc7f78i4/AAC8zMmuIR9_sS3JxyzY2oF8a?dl=0



**IFOY Winner: CROWN, SP 1500
Warehouse Truck “highlifter”**

The IFOY AWARD 2023 in the category " Warehouse Truck ‘highlifter’" goes to the SP 1500 from Crown. The international jury selected the highlifter as the best new product in this category.

With the SP 1500, Crown introduces its latest high-lift order picker. It offers a load capacity of up to 1,250 kilograms, travel speeds of up to 12 km/h and a maximum lift speed of 0.71 m/s with a lift height of up to 11.2 metres. To meet market demands, Crown has redesigned the entire platform–based on feedback from 250 customer surveys worldwide. The result is greater comfort, better handling and more customisation options for users. The only element in the cab that has not changed is the Gena system, although the display now runs a new generation of software.

Numerous customised solutions allow the operator to set up the workstation just the way he wants, thanks to the Work Assist Rail. In the current configuration, however, this is only possible with tools. The safety doors that allow access to the cabin have been renewed and are now easier to operate. The cab itself is 150 millimetres higher, so that even tall operators do not feel trapped as quickly or hindered by peripheral equipment attached to the Work Assist.

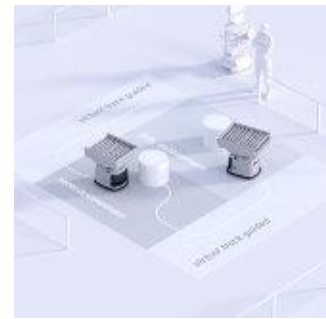
For the first time in high lift trucks, Crown offers the option of a dual configuration that allows the operator to control the truck from either side of the cab. The controls are equipped with active sensing: If the right-hand control unit is gripped, the left-hand unit is automatically activated. Thanks to the clever positioning of the controls, all hydraulic functions can be operated with a single movement. The steering wheel is tiltable and can be adjusted and operated in both horizontal (European) and vertical position (standard in the USA). The two control units on the mast side are also height adjustable. Also new are the bright LED lights on the sides of the cabin contours. These illuminate the picking positions in the often dark aisles and give the driver an even better view of the goods.

During the IFOY test drive, it is noticeable that the visibility of the SP 1500 is optimised to an unprecedented degree. A standard centre window, which is only available on these units, ensures unsurpassed downward visibility even from great heights. Two large viewing windows are also present on the fork side, while the cab floor features grilles that provide optimal visibility without requiring the operator to leave the safe contours of the truck. For the first time on high-lift order pickers, Crown has also included a panoramic skylight that also optimises upward visibility.

IFOY Test Verdict

The SP 1500 high-lift order picker is the new standard for efficient order picking. Visibility and clarity are industry-leading and bring the greatest benefits. But the numerous customisation options to configure the workstation entirely according to your needs are also unique.

Original test report, IFOY Innovation Check and pictures at
<https://www.dropbox.com/sh/xrqodt5w0u25hsl/AADDaXltzfw-FgSfHsXd62ea?dl=0>



IFOY Winner: DS AUTOMOTION, ARCOS Intralogistics Software

The IFOY AWARD 2023 in the category "Intralogistics Software" goes to ARCOS by DS AUTOMOTION. The jury selected the innovative software, which combines the strengths of AGV and AMR, as the best new release in this segment.

Automated Guided Vehicles (AGV) are known for the tireless execution of their transport assignments. They travel rigidly predefined routes and bring the respective transport loads to their destinations. Each lane, curve or intersection is carefully planned to realise the highest possible efficiency of the system. Mutual obstruction of the vehicles or even blocking is thereby ruled out.

Autonomous Mobile Robots (AMR) are responsible for achieving their own goals. They are often only provided with the target and a map of the operational environment. With the help of sensors, they then continuously record their surroundings and can react independently to changes. Planning their paths independently allows them to avoid obstacles, but carries the risk that decisions made may negatively affect the efficiency of the overall system. The individual vehicles can interfere with or even block each other.

It is understandable that for plant operators it is tempting to use the positive features of both worlds. Therefore, the company DS AUTOMOTION has combined the strengths of both worlds (AMR and AGV), thus setting a milestone in the industry. According to the operator's requirements, vehicles can act autonomously and avoid obstacles without blocking, but also follow pre-planned lanes.

The innovations are not only characterised by the coining of the terms "plannable autonomy" and "cooperative navigation", as new core functions of the vehicle software. The conformity with the VDA-5050 interface, which is used across the fleet, should also be emphasised.

IFOY Test Verdict

With the new software, DS AUTOMOTION vehicles can be integrated quickly and easily into production or logistics processes. In combination with the NAVIOS fleet manager, the planning and integration effort is reduced via the web-based interface. The zone-based planning and transport flow editor included in it enable the operator to adapt and expand the system. Transport systems using AMR with full autonomy usually have limited possibilities to intervene in the process. The functions of "plannable autonomy" offer the possibility here to define the behaviour of the vehicles more precisely. As with the virtual lane-guided AGVs, complex systems are thus realised with the highest possible efficiency. Due to the standardised interface, the operator can integrate the system into an already existing plant with VDA-5050 interface and also expand it at any time.

Original test report, IFOY Innovation Check and pictures at
<https://www.dropbox.com/sh/qlv999nsc6qujgm/AAAU2gZYWmr22LznLG1vu8aYa?dl=0>

**IFOY Winner: HUNIC, SoftExo Lift
Start-up of the Year 2023**



The IFOY AWARD 2023 in the category "Start-up of the Year" goes to HUNIC with their passive exoskeleton "SoftEXO Lift". The international jury chose the assistance system for the prevention of postural defects and back pain as the best new development in this segment.

High and prolonged strains, for example through repeated lifting of heavy objects, pose a health risk for employees in production and logistics, which in the worst case can lead to an inability to work. According to the Berufsgenossenschaft Handel- und Warenwirtschaft, every tenth day of incapacity to work in Germany is due to back pain.

This is precisely where the assistance system from HUNIC can provide preventive help. The passive exoskeleton uses a spring principle to support the leg and back muscles when lifting loads and sensitises the user to ergonomic movement. Due to the adjustment possibilities, the system can be worn by persons from 50 kilograms body weight up to 140 kilograms, regardless of gender. In addition, all modules can be easily exchanged, cleaned in the washing machine and simply replaced when worn out. By optimising the working posture, the forces acting on the back are reduced by up to 50 percent and distributed evenly. In this way, the SoftExo Lift permanently relieves and protects the spine, joints and muscles of the wearer.

In addition, the tension of the leg support gives up to 21 percent more strength when lifting. Wearing the SoftExo Lift also improves the individual's lifting and carrying technique, so that a lasting effect can be observed beyond the everyday working day. Users tire less and thus make fewer picking errors at the end of the shift.

With the help of the patented back rail, the spine is completely decoupled from additional load. No tensile forces are placed on the shoulder, which lead to additional strain on the intervertebral discs. The back splint also provides the user with haptic feedback if he or she should fall into a hunched back or excessive twisting of the lower lumbar sector. As a result, the user resumes an ergonomic posture. The user's body is thus loaded according to anatomical ideals.

IFOY Test Verdict

The SoftExo Lift permanently relieves and protects the spine, joints and muscles of the user. Wearing the exoskeleton from HUNIC on a regular basis improves the individual's working posture to an ergonomically more favourable posture. This creates the conditions for more comfortable work and ultimately for a better quality of life. Especially towards the end of the work shift, a reduced fatigue of the users can be observed. Due to reduced downtime and more motivated employees, the company gains an economic advantage. Consequently, the investment of 1,000 euros per exoskeleton is well worth it.

Original test report, IFOY Innovation Check and pictures at
<https://www.dropbox.com/sh/u60zxzy2dpn8wvz/AAArJZwL4KiimFqWhu2I5JPja?dl=0>



**IFOY Winner: JUNGHEINRICH, addedVIEW fork camera with barcode scanning
Special of the Year 2023**

The IFOY AWARD 2023 in the category “Special of the Year” goes to Jungheinrich for the first fully digital fork camera in series production, with full HD resolution, broadband automotive Ethernet data transmission and software for transferring the results to any WMS.

Technically, the device is the first fully digital fork camera in series production, with full HD resolution, broadband automotive Ethernet data transmission and software for transferring the results to any WMS. For the Jungheinrich WMS, the product is equipped with additional intelligence which, with the help of coloured overlays in the camera image, makes it possible to recognise whether the correct or incorrect barcode is located in front of the fork. In addition, an acknowledgement button is mounted near the steering wheel. This keeps the forklift driver's hands on the controls of the industrial truck. The driver does not have to reach for the scanner, scan and put the mobile device back every time.

Scanning on-site at the storage compartment and/or the goods avoids scanning incorrect barcodes from a list at the rack foot, which means that the WMS always receives correct data and incorrect deliveries are avoided. The high-resolution, digitally optimised image allows labels to be read at great heights, bypassing the unnecessary unstacking of incorrect goods.

By scanning with the fork camera, the location of the goods movement and the location of the scan coincide. This drastically reduces storage/retrieval errors. Examples of this are wrong storage but scanning the "correct" barcode expected by the WMS or retrieval of wrong goods but scanning the "correct" barcode expected by the WMS. The camera, data transmission, image processing, forwarding to the WMS and, as in the case of Jungheinrich, the WMS itself were newly developed or expanded - into an integrated series solution.

IFOY Test Verdict

The integrated series solution is unique on the market, because the addedVIEW fork camera with barcode scanning gets to the root of a previously unsolvable basic problem in logistics and offers a practical and effective solution. The previously described problem of incorrect storage is particularly pronounced with reach trucks, as mix-ups can occur in high-bay warehouses due to the large number of uniform storage locations and the low clarity in the upper racking levels. Depending on the type, 20 to 40 per cent of reach trucks have tine cameras, are connected to a WMS via a radio data terminal and book by hand scanner. These industrial truck operators will benefit from the innovation. But the forklift drivers also benefit from the image quality and the ergonomic acknowledgement function on the steering wheel.

Original test report, IFOY Innovation Check and pictures at
https://www.dropbox.com/sh/ucpcsev9wv3cpsi/AABKFNGvt_1k1w9NYwQ-EgSZa?dl=0



**IFOY Winner: JUNGHEINRICH, PowerCube
Intralogistics Robot**

In the "Intralogistics Robot" segment, the IFOY 2023 jury awarded the PowerCube from Jungheinrich. The automatic compact container storage system from the Hamburg-based intralogistics company is the best new development in this category.

Since the storage operating units of the PowerCube automatic compact container storage system do not travel on top of the container racking but underneath it, the height of the individual container stacks can be easily adapted to the respective building infrastructure. Accordingly, it is possible to react to obstacles and, for example, adapt sloping roof shapes to the racking system, which can be up to 12 metres high.

Another important feature results from the 2D track system on which the shuttles perform their service. The system can be installed on standard industrial floors in accordance with DIN 18202 and uneven floors can be levelled with adjustable feet according to standards.

The maximum load of a container stack is 750 kilograms. Containers developed for the application are used that can take a load of up to 50 kilograms. The maximum interior size of the containers is designed in such a way that the transport of standard KLTs (length x width x height: 600 x 400 x 290 millimetres) is possible. Jungheinrich does not want to rule out further container dimensions in the future. The PowerCube system containers are compatible with other automation solutions from the manufacturer and can also be used outside the compact storage system with the aid of externally connected conveyor technology. Storage and retrieval stations or order-picking workstations have been implemented accordingly, but could only be visually inspected during the IFOY TEST DAYS, as could the entire system.

The newly developed shuttles move through the facility at a maximum speed of 4 m/s and an acceleration of up to 2 m/s². The vehicles are designed for the simultaneous transport of two containers. In doing so, the shuttles are able to move automatically in the level below the racking. Since the shuttles operate at floor level, no platform is required to carry out maintenance work.

With the help of appropriate relocations, the shuttles reach the containers required to process an order. During the relocations, which are limited due to the storage strategies used, another feature comes into play: the potential energy of the lifted container stacks is used for shuttle recuperation.

IFOY Test Verdict

Perfect use of space and time: this is how Jungheinrich defines the demands on the automated, compact and scalable PowerCube system. The pilot application, a retail company from Switzerland, will show whether the expectations are fulfilled. In any case, the potential is there.

Original test report, IFOY Innovation Check and pictures at
https://www.dropbox.com/sh/7qx61f5nmfv8tx8/AADecJ75oCwi_OW_bkbqh_hsa?dl=0

**IFOY Winner: STILL, EXH 16
Warehouse Truck “lowlifter”**



The international IFOY jury selected the EXH 16 electric pallet truck from STILL as the best new product of the year in the “Warehouse Truck lowlifter” category. The development of the new series focused on the operator.

The EXH 14-20 Plus series is the latest addition to STILL's electric pallet truck range. The development of the new series focused on the operator. The operating concept has been completely revised and the EXH 14-20 Plus series now has a unique tiller head with integrated display in two versions. The so-called MMI (Man-Machine-Interface) is the interface between the driver and the vehicle and thus the pivotal point in daily operation.

The EXH 14-20 Plus series includes several units with a load capacity of 1.4 to 2.0 tonnes. The IFOY unit is an EXH 16 with a lifting capacity of 1.6 tonnes. The integrated lithium-ion battery enables up to 80 millimetres shorter front dimensions and significantly smaller turning radii and working aisle widths. The L2 dimension is only 429 millimetres. Thanks to the compact dimensions, the driver retains optimum visibility. Even in confined spaces, such as retail outlets. In addition, the compact dimensions improve the manoeuvrability of the truck, which is now even easier to operate.

The EXHs are equipped with mechanical steering as standard. Despite this mechanical steering, the long and low-lying tiller enable easy operation. During the IFOY test, the power and speed of the newcomer were convincing. The unit has a high acceleration capacity, both without and with load. The driving speed of 6.1 km/h is quite snappy. If you want to work more quietly and economically, you can double-click the turtle button to select turtle mode or STILL's Blue-Q optimisation programme.

The unique design of the tiller head is a real eye-catcher. The operating elements have been given a new and modern design. Extra-large buttons support intuitive operation, no matter how big your hands are. Even when wearing work gloves, simple and effective one-handed operation remains child's play for both left- and right-handers. STILL plans to use the new controls in future trucks as well. There, the concept will bring additional benefits, such as even better proportional control. This is less relevant for electric pallet trucks.

IFOY Test Verdict

The EXH 14-20 Plus series has a unique tiller head with integrated display in two versions. The special design of the tiller head enables intuitive operation for every operator. Numerous small innovations combine to bring great progress. The compact truck is very powerful, fast and quiet. It is also easy to recharge between uses thanks to the Li-Ion technology.

Original test report, IFOY Innovation Check and pictures at
<https://www.dropbox.com/sh/wuz2rkcz1t17wmb/AABm1s5OX1057Xf9LyT2RFeYa?dl=0>