EWELLIX

MAKERS IN MOTION

Linear technology for flexible assembly lines

The heritage of innovation

Ewellix is a global innovator and manufacturer of linear motion and actuation solutions used in assembly automation, medical applications and mobile machinery. Formerly part of SKF Group, the Ewellix Group consists of 16 sales units and six factories. External net sales are approximately 250 EUR million and we employ around 1 250 people. Ewellix is headquartered in Gothenburg, Sweden and is owned by Triton.

Technology leadership

Our journey began **over 50 years** ago as part of the SKF Group, a leading global technology provider, with the world's first precision ball and roller screw factories. Our history with SKF provided us with the **expertise to continuously develop new technologies** and use them to create cutting edge products that offer our customers a competitive advantage.

In 2019, we became independent from SKF and changed our name to Ewellix. **We are proud of our heritage**. This gives us a unique foundation on which to build an agile business with engineering excellence and innovation as our core strengths.

Global presence and local support

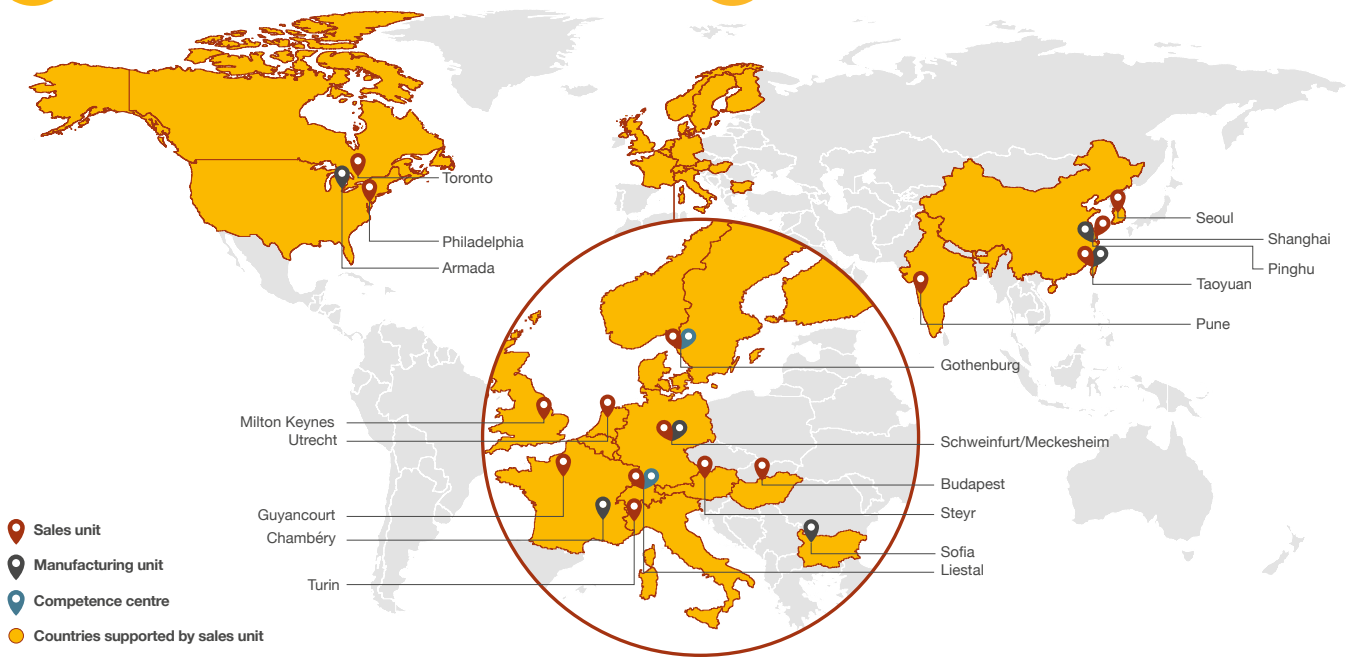
With our **global presence**, we are uniquely positioned to deliver **standard components and custom-engineered solutions**, with full technical and applications support around the world. The long lasting relationships with our distributor partners allow us to support customers in a variety of different industries. At Ewellix, we don't just provide products; **we engineer integrated solutions** that help customers realise their ambitions.

1250 employees

6 factories

16 sales units

2 competence centres



Increase flexibility in automotive production lines with modular design

In a fast-changing industry with new car technologies, electrification and embedded advanced software, automotive production lines must be highly flexible and adaptable to remain competitive and cost-effective.

Automakers and assembly solutions suppliers have traditionally evolved cautiously, through evolutionary steps. The enormous investment associated with vehicle manufacturing has always made prudence a basis for new models and plant planning. Until last decade, the established model for mass-production, with dedicated facilities producing maximum production with consistent quality at the lowest costs, worked fine for stable product lines and predictable future demand.

However, today, the automotive industry is looking to integrate modularity in its production to support the speed of market change. The most effective way to accommodate uncertainty is to switch from conventional 'long line' production to manufacturing cells, which can be quickly reconfigured and repurposed to adapt to fluctuations in demand. The traditional line may still be suitable for final assembly but would be supported by flexible cells that do not require changes to the overall facility and can be repurposed without loss of manufacturing output. The goal is to have lean production lines that can produce various models while limiting the footprint and downtime in resetting the line. This means a more adaptable, easier to install and space-saving line with practical and flexible solutions for optimum results.

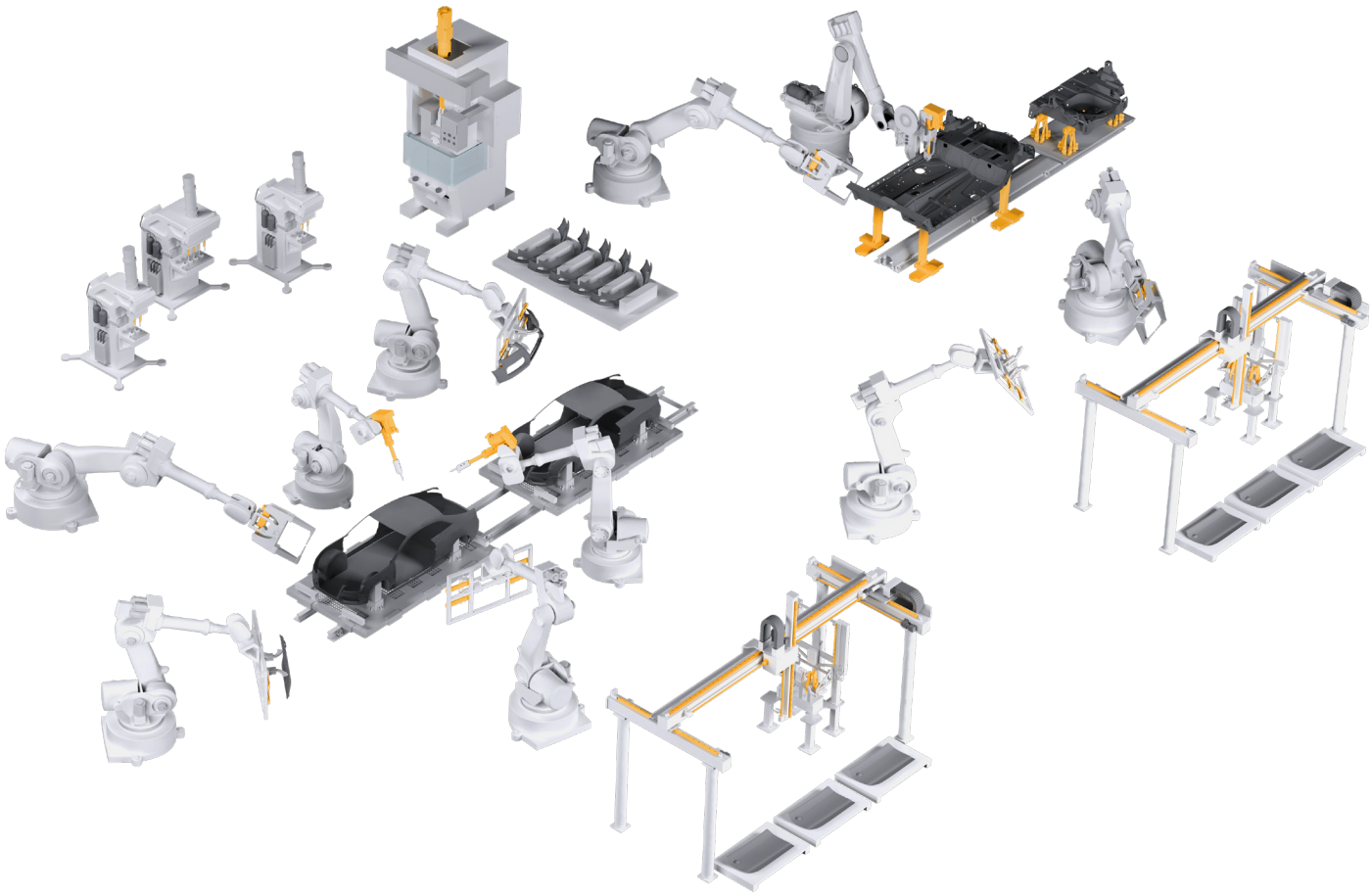
For electric vehicles and hybrids, technology is changing so rapidly that equipment is expected not to be suitable after 10 years vs 15 to 20 years in the past. Consequently, it is essential to build in flexibility: equipment needs to be repurposed with minimal changes or additional investment costs because as well as shortening model cycles, customers' cars are becoming more customised.

Enhanced productivity, increased flexibility

Technological advancements, emerging competitors, global sourcing, and industrial restructuring are significant challenges for the automotive industry.

The main challenge is agility with greater capacity to rapidly switch production volumes and product mix while remaining cost-competitive. To succeed, synergies and long-term technical partnerships are essential.

Every process will become fully automated in the future, and the key is a good R&D partnership to support systems with the market's needs.



Return Of Investment with flexible production lines

Many variables can impact the return on investment from robotics and automation, however, flexibility in production is essential. How can different components be produced on the same system? How can production be stepped up at short notice? For example, how can changing one model to another be executed quickly on the same system?

What is necessary are smart production and logistics systems that combine modularity and intelligent automation to allow maximum flexibility. The main goal is to quickly adapt production to evolving requirements and increasing demands for greater variety, coupled with frequent model changes and fluctuating batch sizes.

Focusing on flexibility allows companies to adapt continuously, leading to cost-efficient production cells and significant savings.

Main parameters driving the result:

- Quantity of flexible systems
- Investment per flexible system
- Number of car models produced over 15 years

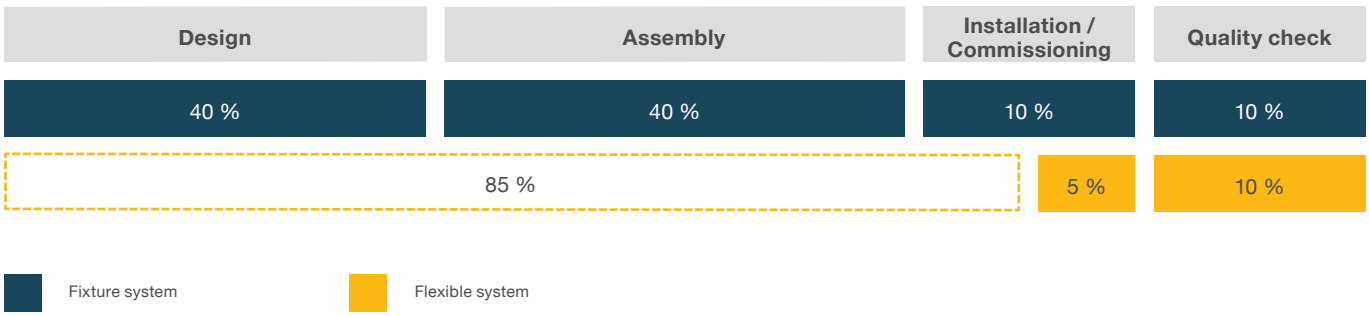
Fig. 1

Potential global cost savings, covering design optimisation with flexible tooling, assembly and installation of the tooling, and commissioning.

Besides cost savings, flexible systems lead to time-saving when resetting an assembly cell from one car model to another (↳ **fig. 2**).

Fig. 2

Standard fixture vs flexible system: assembly cell resetting optimisation.



Body-in-white grippers (end effectors)

To cover a broader market and grow sales, manufacturers need to design significantly more new models as demand increases. Furthermore, factories must produce these new models on cost-effective assembly lines that can switch quickly from one model to another seamlessly.

At Ewellix, we offer robust linear modules for flexible gripper (end effector) systems suitable for robots with a heavy load capacity, durability and continual use.

A gripper is a device that enables the holding of an object, such as a door panel, that needs manipulation. It allows holding, tightening, handling, and releasing, just like a human hand. There is a significant trend in the electrification of grippers throughout the industry and the removal of old pneumatic systems, thereby optimising power and maximising savings.

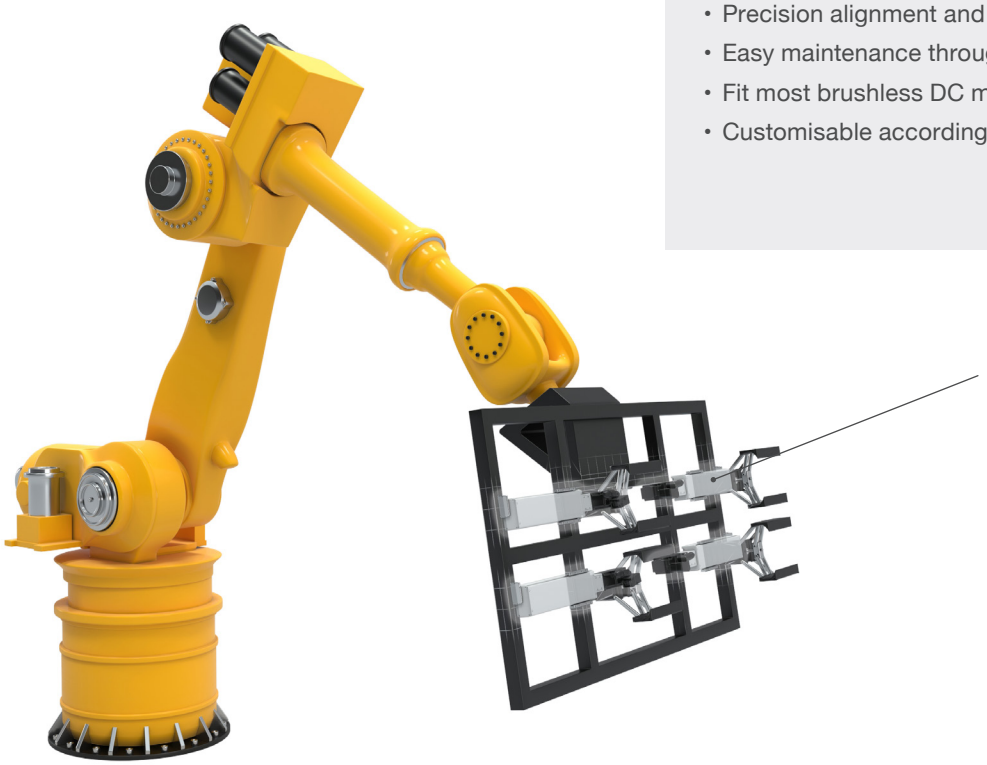
Ewellix solutions

Features

- Compact design
- High load capacity
- Greater positioning accuracy and repeatability with precision ball screw
- Stainless steel cover for anti-spatter
- External mechanical brake option

Benefits

- Heavy load carrying capabilities and long service life
- Easy integration in the machine design
- Designed and validated for demanding automotive applications
- Precision alignment and secure clamping
- Easy maintenance through outside lubrication port
- Fit most brushless DC motors and servomotors
- Customisable according to customer needs



Linear modules

CLSM-92

CLSM-120

CLSM-150

Car transfer unit

Handling different car chassis, Body in White (BIW) on the same line requires a flexible system that allows quick resetting with precise positioning.

Transfer units can be quickly and efficiently reconfigured to transport different car models on a single assembly line. In addition, in comparison with conventional assembly equipment and tooling, using a Car Transfer Unit (CTU) reduces the amount of re-programming and commissioning needed to move between the production of different models.

Optional linear module for the vertical axis provides high speed from precision ball screws. In addition, integrated dampening systems protect the lifting column from mechanical shocks during the loading and unloading phases, ensuring reliability and a longer lifetime in operation.

The use of customer-defined servo motors allows for easier integration into the control network, reducing the commissioning time of the transfer unit.

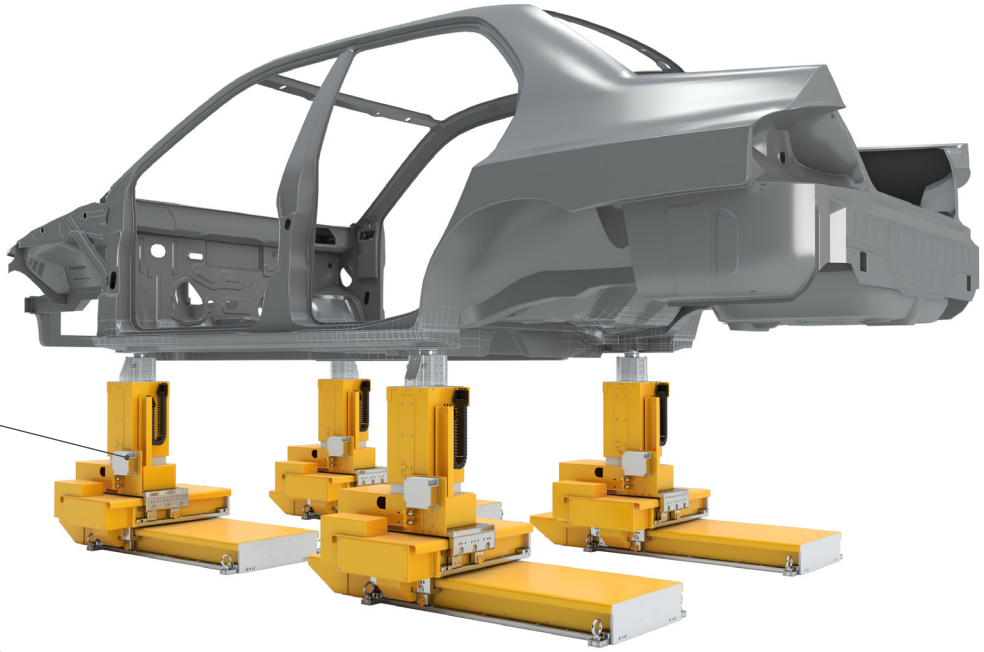
Ewellix solutions

Features

- Compact design
- Various sizes for load capacity
- Multi axes options
- Greater positioning accuracy and repeatability with precision ball screw
- Steel cover and inner mounted cableveyor for anti-spatter
- Integrated motor, controller, cables, mechanical brake and shock absorber

Benefits

- Designed for long service life and high loads
- Easy maintenance through outside-point lubrication
- Precise alignment and secure fastening of attachments



Positioning system Car Transfer Unit (CTU)

Linear positioning transfer units

LCTU

HCTU

Jig (Geo-set)

A Jig or fixture is a device that holds, supports or places a piece to be machined or welded. It is a manufacturing tool designed to locate and hold the workpiece and guide the tool as the operation is performed.

Ewellix can provide robust linear modules for flexible Jig (Geo set) systems with heavy load capacity, repeatability and longer working life.

As for the gripper application, Jig or fixture helps support the automotive industry looking for flexible assembly cells to minimise resetting time and efficiently adapt production from one model to another.

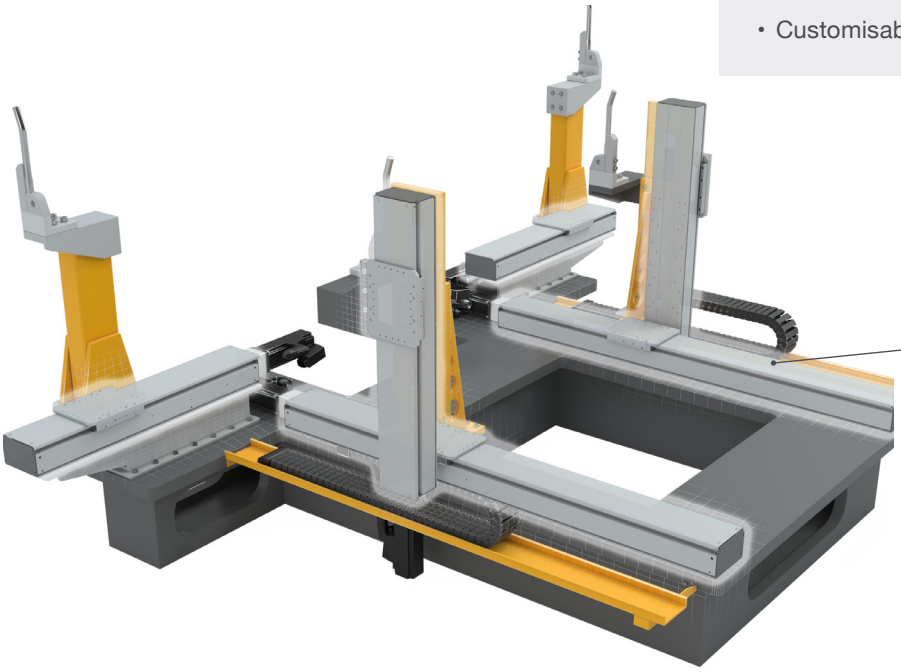
Ewellix solutions

Features

- Compact design
- High load capacity
- Greater positioning accuracy and repeatability with precision ball screw
- Easy maintenance
- Stainless steel cover for anti-spatter
- External mechanical brake option

Benefits

- Heavy load carrying capabilities and long service life
- Easy integration in the machine design
- Designed and validated for demanding automotive applications
- Precision alignment and secure clamping
- Easy maintenance through outside lubrication port as option
- Fit most brushless DC motors and servomotors
- Customisable according to customer needs



Linear modules

CLSM-92

CLSM-120

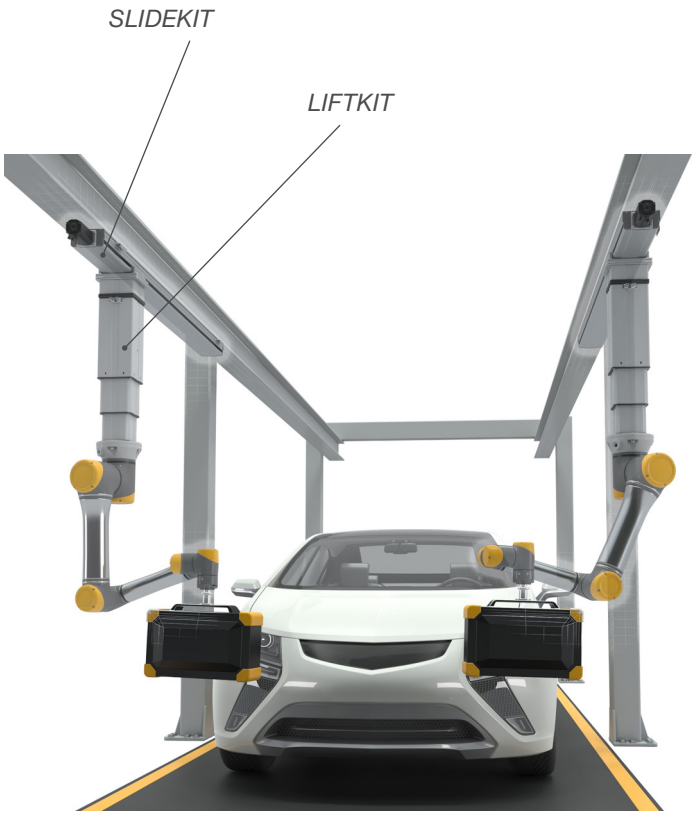
CLSM-150

Final inspection processes

Ewellix provides practical solutions to complete vertical and horizontal adjustments smartly. In addition, we offer a wide range of ‘ready to mount’ additional linear axis solutions. They are designed for different applications, giving your robot an extended operating range to perform manufacturing processes like finishing and parts inspection.

Whenever you need a repetitive operation usually done manually that are time consuming and with low added value for the operators, such as the end of line quality inspection, our LIFTKIT and SLIDEKIT can guarantee precision and reliability to maximise your results and automate these processes.

Below is an application example in automotive assembly lines, with custom LIFTKIT and SLIDEKIT axes for ceiling mount installation.



LIFTKIT by Ewellix

Features

- Vertical lifting of the cobot by up to 900 mm (1 400 mm on request) with compact retracted height
- Robust column design for industrial use, vibration free motion and virtually maintenance-free
- Hardware interface compatible with any robots
- LIFTKIT control through TCP/IP

Benefits

- Operating range extension
- Plug-and-play solution
- Cost savings and higher productivity
- Improved performances

SLIDEKIT by Ewellix

Features

- Horizontal sliding of the cobot by up to 3 000 mm with a compact height
- Heavy load and moment carrying capabilities and long service life
- Precision alignment and high level of accuracy and repeatability
- Easy maintenance through outside lubrication port
- Hardware interface compatible with any robots
- SLIDEKIT control through CANOpen

Benefits

- Operating range extension
- Plug-and-play solution
- Cost savings and higher productivity
- Improved performances

7th axis for robots

LIFTKIT

SLIDEKIT

Ewellix's core technologies for assembly automation

Reduced downtime for greater productivity

Greater flexibility and higher performance in production operations are essential to automotive manufacturers. However, the challenge to achieve this is frequently linked to production facilities, and many were built to support a market-driven high-volume production of a select number of top models.

Nowadays, the request for increased functionality and versatility of body welding and assembly processes is applicable. This has led to innovative manufacturing solutions that can be easily integrated within existing facilities while meeting or exceeding the highest requirements concerning flexibility, quality, speed and reliability.

Electrical systems in automation lines help improve assembly processes and follow market trends, thanks to flexibility and ease in programmability. Additionally, electro-mechanical actuation is more reliable and more energy-efficient than pneumatic actuation.

Ewellix's mechatronic solutions understand market needs. Our robust, high-power density, accurate and efficient systems help reduce downtime, maintenance operations and total cost of ownership. In addition, we support our customer's evolution with state-of-the-art linear technology, i.e., powerful ball and roller screws and high-quality linear guides integrated with engineered systems.

- Improve asset reliability
- Increase productivity
- Optimised design
- Improve energy efficiency
- Decrease maintenance costs

Value proposition of Ewellix solutions

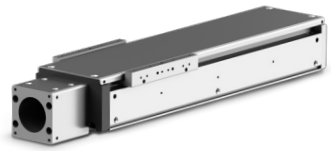
Reduced System Footprint	Space and weight reductions
Downtime	Reduced installation time
Performance and Programmability	Precise, predictable and repeatable motion
Configurability	Several options including manual overrides
Efficiency	Lower energy consumption

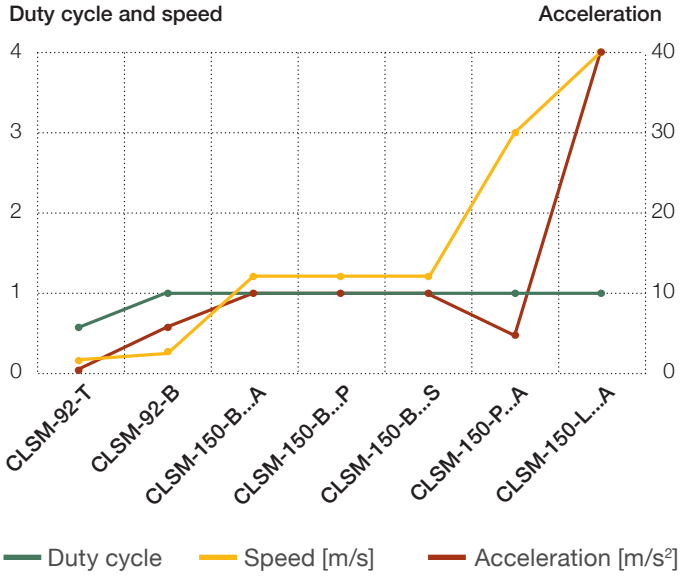
CLSM linear modules

Ewellix linear modules are specially designed for automation and automotive applications to follow industry needs in robust, adaptable and flexible systems.

They are equipped with a pair of profile rail guides, each with two carriages designed for maximum rigidity and stability.

In CLSM linear modules, a wide selection of ball or lead screw, linear motor and belt drive options are available to ensure a high level of speed, and positioning accuracy to perfectly meet automotive requirements.





Design features

- Compact design with lead or ball screws or linear motors
- Aluminium or steel as the base material option
- External mechanical brake option
- Inline and parallel (belt) gear boxes
- Customised motor adapter
- Different cover options for most applications

User benefits

- Heavy load carrying capabilities
- Long service life
- Precision alignment and secure clamping
- High level of accuracy and repeatability
- Fits most brushless DC motors and servo-motors
- Easy maintenance

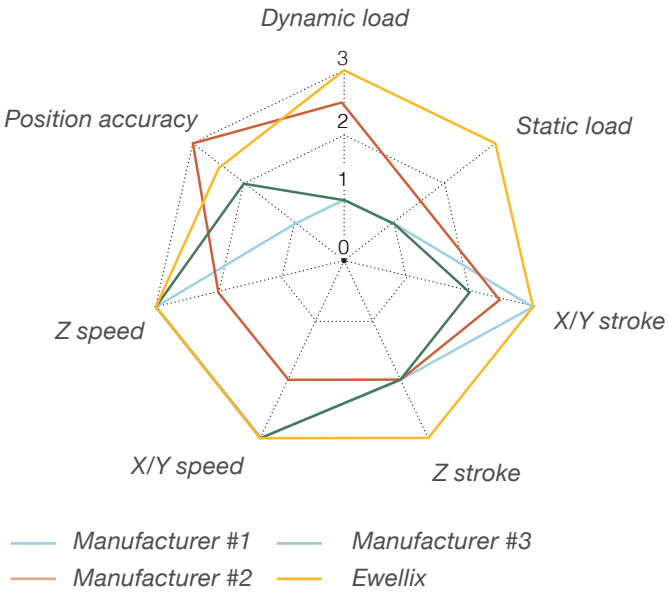
Multi axis transfer units

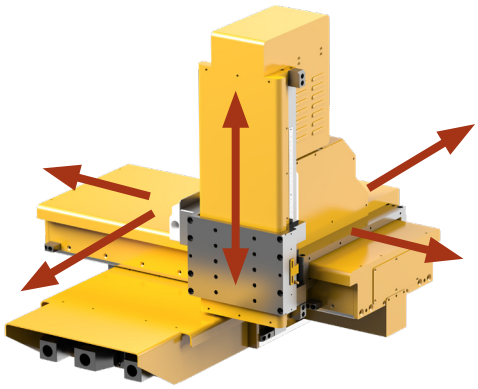
Car Transfer Unit (CTU) positioning systems are specifically designed for the automotive industry.

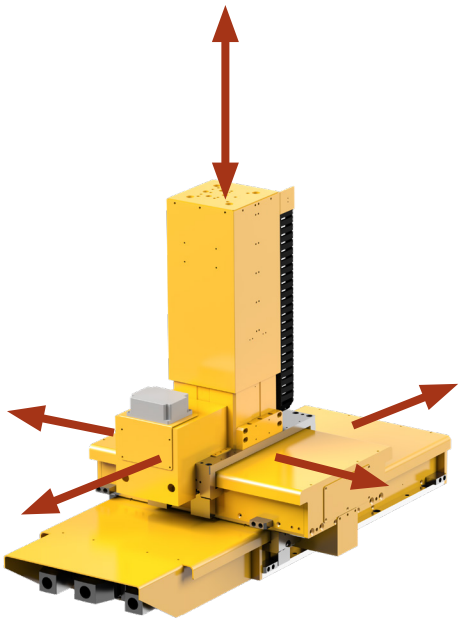
They are equipped with a pair of profile rail guides with two carriages each and provide high performance in terms of guiding accuracy and stiffness. The profile rail guide system has a wide range of ball screws to match high dynamics and positioning accuracy. CTU systems have integrated motors, controllers, cables, mechanical brakes, shock absorbers and steel covers. They are available with lifting columns or linear modules for the additional vertical axis.

Light Car Transfer Unit (LCTU) with linear module for the Z-axis provides high speed and high dynamic load capacity for lifting BIW. Typically, LCTU is used for the welding process on the BIW shuttle line and is located outside the shuttle.

Heavy Car Transfer Unit (HCTU) with a lifting column for Z-axis provides low retracted length and high static load capacity for BIW assembly. Usually, HCTU is used for the welding process on BIW pallets and is located on a moving pallet (under BIW).







Design features

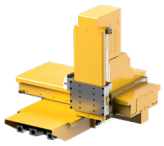
- Compact design aluminium or steel as the base material
- Integrated motor, controller, cables, mechanical brake and shock absorber
- Lifting column or linear module as option of vertical axis
- Inline and right-angle gearboxes with customised motor adapter

User benefits

- Made for long service life and high loads
- Easy maintenance through outside lubrication port
- Precise alignment and secure fastening of attachments
- High precision in positioning and repeatability

Products overview

Linear modules and systems


	CLSM	LCTU	HCTU
Max linear speed	up to 4 000 mm/s	up to 300 mm/s	up to 300 mm/s
Dynamic load carrying capacity	up to 41 kN	up to 62 kN	up to 21 kN
Max stroke (mm)	up to 3 000 mm	up to 700 mm	up to 700 mm

High performance actuator



	CASM-32-40-63	CASM-100	CPSM
Max axial force	up to 5,4 kN	up to 60 kN	5 kN
Dynamic load carrying capacity	up to 21 kN	up to 106 kN	21 kN
Speed	up to 1 067 mm/s	up to 890 mm/s	100 m/s
Stroke	up to 800 mm	up to 2 000 mm	up to 700 mm

7th axis for robots


	SLIDEKIT	LIFTKIT
Max dynamic payload	up to 10,9 kN	up to 1,5 kN
Speed	up to 1 000 mm/s	up to 80 mm/s
Stroke	up to 3 000 mm	up to 900 mm

Precision ball screws

	Precision rolled ball screws
Dynamic load carrying capacity	up to 92,9 kN
Max speed	1 500 mm/s
Nominal diameter	from 6 to 63 mm
Screw lead	from 2 to 50 mm

Profile rail guides

	LLT
Dynamic load carrying capacity	up to 72,5 kN
Linear speed	up to 5 m/s
Size and range	15 to 45
Acceleration	up to 75 m/ sec^2

Your engineering partner

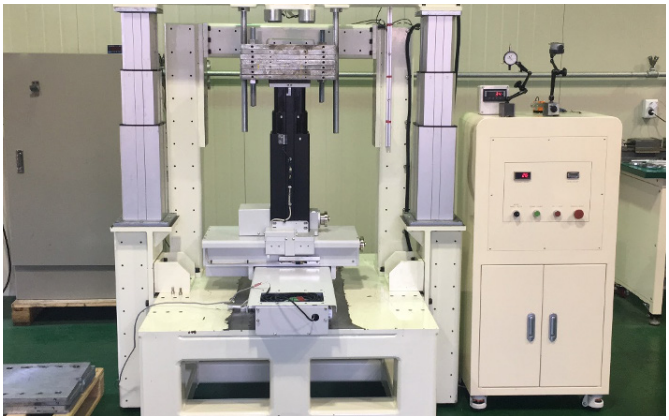
Customisation

Ewellix has many years of expertise in realising powerful linear modules that fit customer needs. Over the decades, we have developed multiple solutions that have been successfully used across different industries and applications.

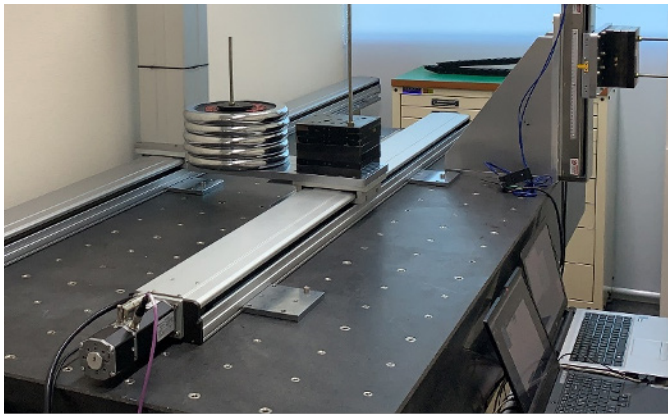
Our various designs and features are suitable for virtually all machine applications regarding cost, size, accuracy and motion patterns. Ewellix's expertise in standard and custom linear systems is based on engineering and design know-how of processes and precision parts.

Tested for your environment

Ewellix's expertise in mechanics and electronics and specific application requirements contribute to developing solutions to meet customers' expectations. In addition, we verify our products by a comprehensive test plan to guarantee performance.



CTU shock testing machine



SLIDEKIT testing

Tools available to customers

Digital tools

Ewellix has developed numerous online tools to help customers select and calculate the most suitable Ewellix product for their application.

Ball and roller screws

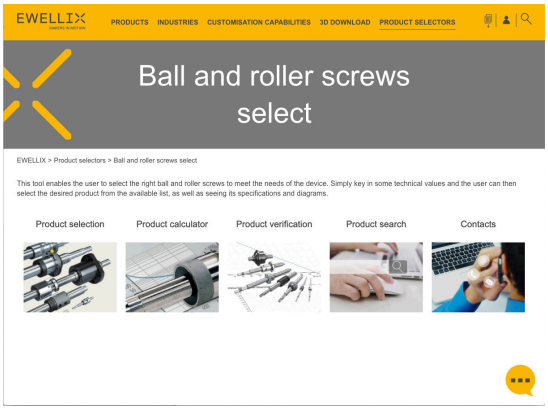
- Product selection
- Product calculator
- Product verification

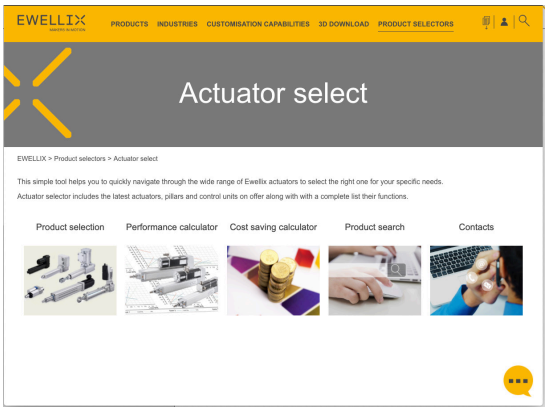
Actuators

- Product selection
- Performance calculator
- Cost-saving calculator

Linear guides

- Product selection
- Product calculator
- Cross reference





Publications

Supporting documents are available for downloading on ewellix.com on each product page under the technical data section:

- Operating manual
- Mounting instructions

CLSM	**CPSM**	**L/HCTU**
SLIDEKIT	**LIFTKIT**	**Profile rail guides**
Precision rolled ball screws	**CASM-32-40-63**	**CASM-100**

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