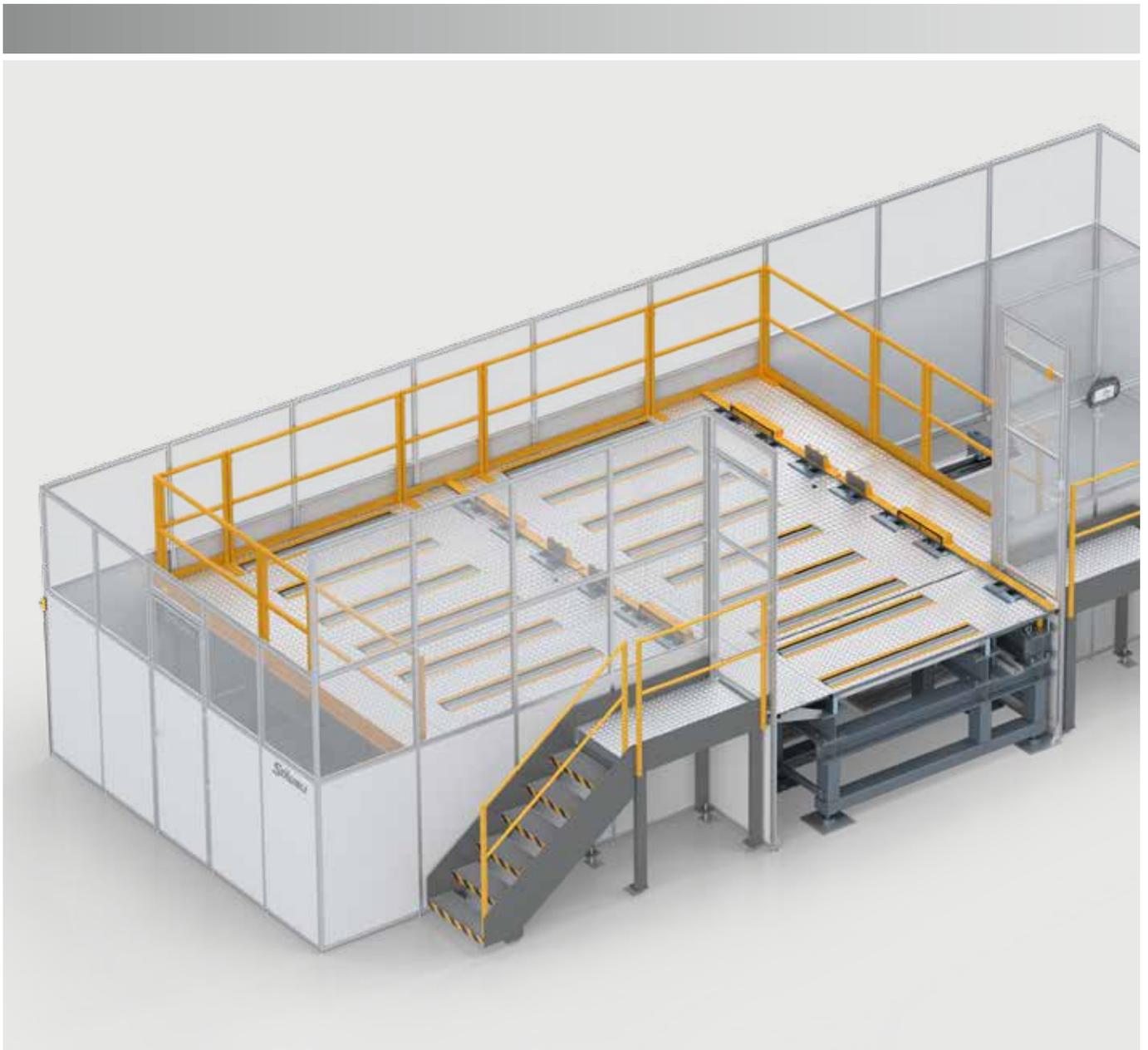


FAST MOVING TECHNOLOGY

STÄUBLI

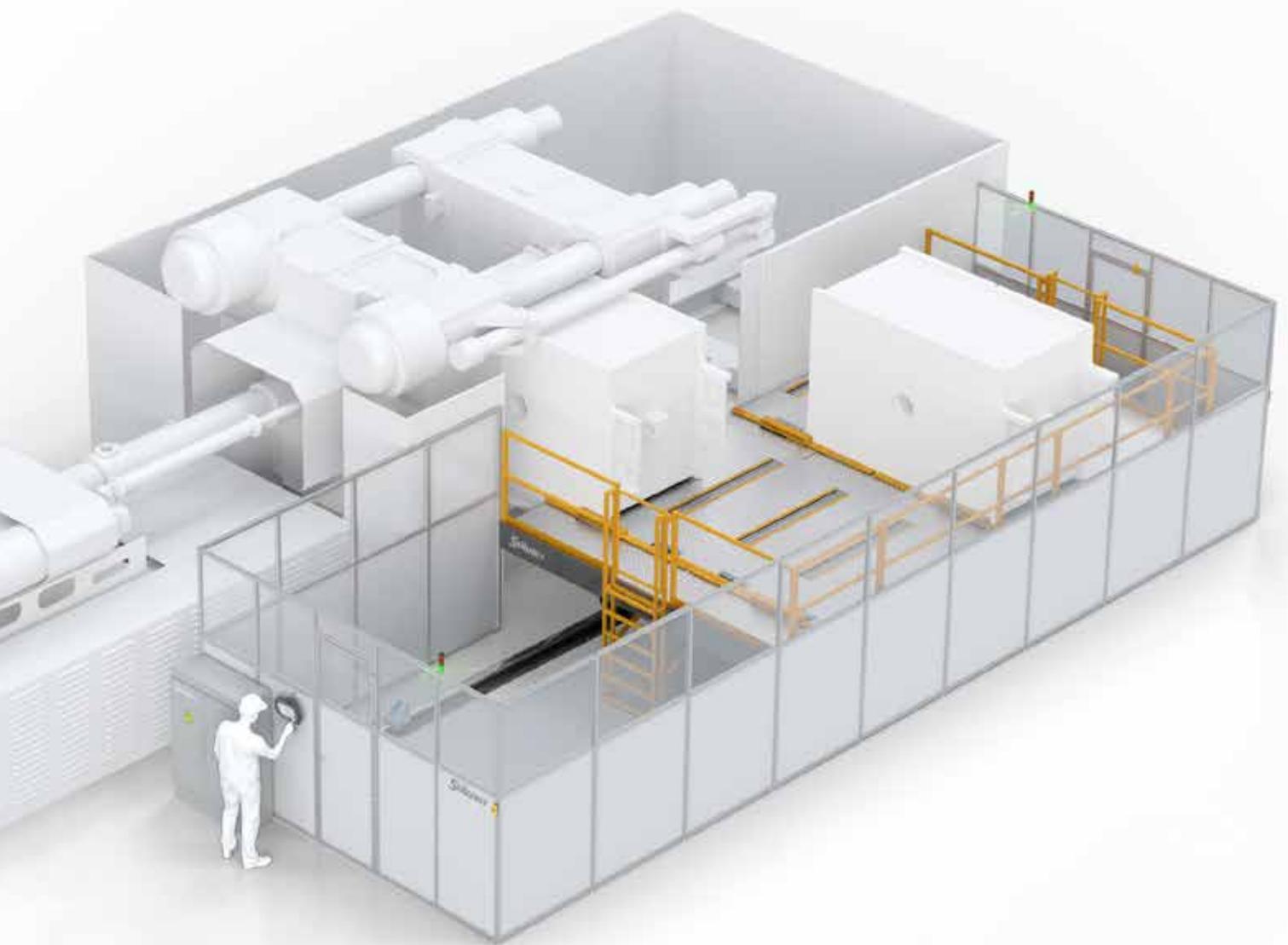
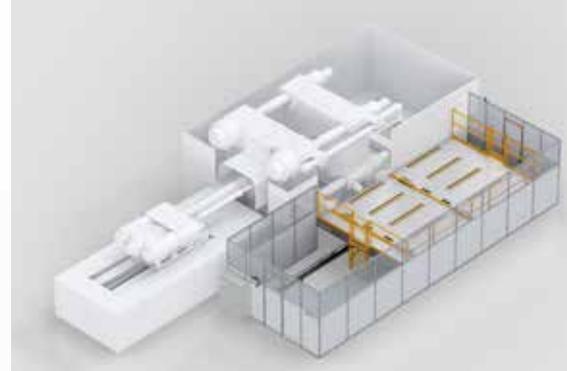
MLT Mould Loading Tables

Higher productivity | Plastics industry

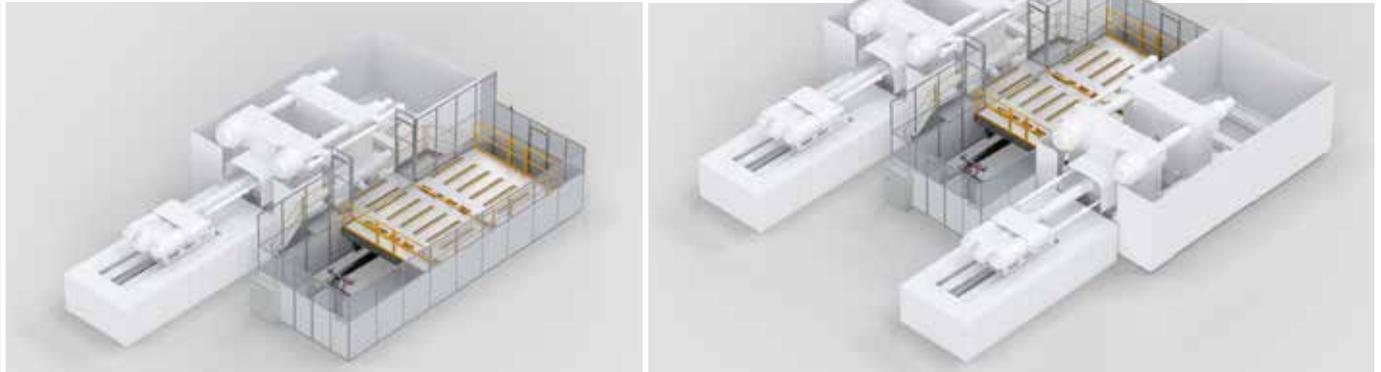


FOR EVERY REQUIREMENT

Efficiently change moulds up to 60 T



Discover Stäubli's full range of solutions for the plastics industry at:
www.quick-mould-change.com



A range of system sizes up to 60 T and modular combinable extension options

The MLT product allows for simple and fast configuration of a system that ideally meets your requirements. A gangway, mould preheating and RFID mould detection are just some of the available options.

Stäubli's MLT mould loading tables are a key component in automatic mould loading. They make an important contribution to set up time optimisation and significantly reduce the time required to change the moulds. The ease of integration, high process reliability and cost-effectiveness, together with the components' long service life, reduce downtime and increase overall equipment effectiveness (OEE).

Future-proof modular concept

Stäubli is the only manufacturer worldwide to offer a standardised range of rail-guided mould loading tables in a modular design. This ensures quick and efficient project implementation.

The modular design also offers you important advantages for future development. Many options can be retrofitted easily, from supplementary location stops to the addition of a second injection moulding machine to an existing MLT.

Ready for immediate use

The controller for the MLT mould loading tables can be seamlessly integrated with the Euromap 71 interface. The software is already available as an option for a wide range of machine types equipped with a Euromap 71 interface so that no adaptation is required.

Customised designs

For complex applications requiring a special, non-series design or separate additional equipment for moulds weighing up to 130 T (see page 18):

- All dimensions are optimally adapted to your applications.
- A system that is perfectly tailored to your needs for performance data, material quality and connectivity options.



- **Simple integration** with the Euromap 71 interface
- **Process reliability** through extremely precise mould positioning
- **Long service life** due to robust component design
- **Sustainability** with modular extension options
- **Cost-effective** due to increase overall equipment effectiveness (OEE)

SIMPLE OPERATION WITH HIGH-LEVEL EFFICIENCY

Software with real user support



The software and the control panel for Stäubli's MLT mould loading tables ensure seamless integration into system processes and user-friendly control for mould changing operations.





Efficient process control with high transparency

The movements of the mould and the mould loading table are dynamically displayed on the MLT control panel. All the real signal states are visualised. A message log with a filter function completes the optimised overview.

No interface adaptation required

The control software for Stäubli’s MLT mould loading tables has already been adapted and tested for use with a range of common machine types.

The software can be integrated into the processes, through to full integration into the machinery, by the OEM provider.

This means that no additional interface adaptation is required to integrate an MLT mould loading table with the Euromap 71 interface, which minimises both investment and project duration.

Ideal user support

The sensors with antivalent switching technology increase the process reliability of the MLT mould loading table and ensure diagnostics options are available.

All sensors are graphically visualised on the control unit. Detailed information about the selected sensor, as well as links to log messages, are displayed by tapping the screen.

Password protected user levels are available for the software. This ensures that defined processes cannot be changed either accidentally or intentionally by unauthorised personnel.

The control panel of the MLT mould loading tables is the central operator/machine interface for controlling all functions. An animation visualises all the movements of the mould loading table and the moulds on it. The operator can see at a glance which part of the process the table and moulds are, at any time. It also features a help function for the displays and commands.

The comprehensive support and safety functions of the MLT software contribute to the system’s process reliability.

Message log with filter function

Despite every precaution, factors can always occur in complex processes that bring the system to a standstill. The advantage of the MLT software is that the cause of a stoppage can be easily identified.

All system messages are stored in chronological order and classified. Filter functions can be used to quickly isolate the source of the stoppage at the control panel. Possible causes are listed for each message code in the operating manual.

The Stäubli service team can provide further support by remote access to the system. In addition to remote access via the network connection or a wireless modem integrated into the control system, the message log can be read out using an easily accessible USB service interface. This extensive support minimises downtime.

COMPREHENSIVE SERVICE PACKAGE

High-level performance mould changing

Stäubli's MLT mould loading tables incorporate a wide range of extremely practical equipment and design details.

This offers a unique combination of high-level efficiency, comprehensive process reliability and genuine flexibility, which makes a significant contribution to maximising productivity in the plastics industry.

Top quality materials, processing precision and sophisticated engineering make the MLT mould loading tables an extremely sustainable solution.

The modular system design ensures quicker procurement and simple replacement of components.

The long service life and reduced downtimes increases overall equipment effectiveness (OEE). Many components do not require maintenance, which maximises availability.

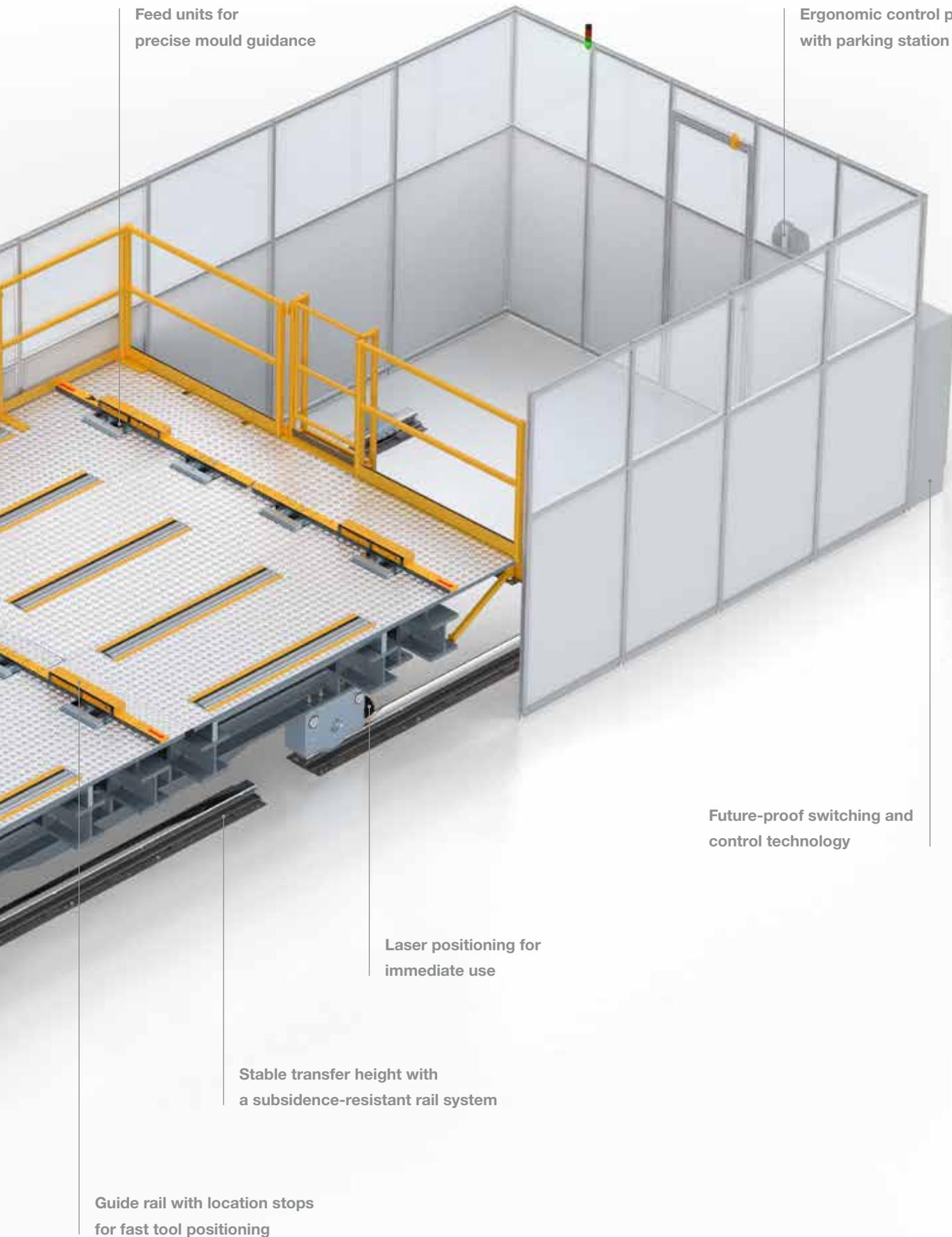


Safety railing for the
access platform

Slip-resistant walkways
for safe access

Two-sided ladder
with self-closing door

Powerful four-wheel drive
for precise movements



Feed units for precise mould guidance

Ergonomic control panel with parking station

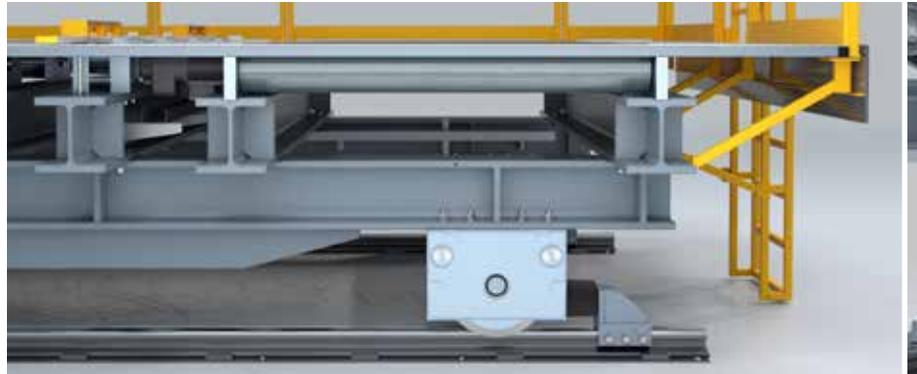
Future-proof switching and control technology

Laser positioning for immediate use

Stable transfer height with a subsidence-resistant rail system

Guide rail with location stops for fast tool positioning

SAFETY AND RELIABILITY AS STANDARD



Stable transfer height with a subsidence-resistant rail system

The MLT mould loading table's special rail system ensures that the tool transfer height remains constant throughout its service life.

Precise positioning and guidance for reliable mould handling

The moulds are transported and guided by a combination of driven feed units and free-running roller units.



MLT mould loading tables have at least four feed units per mould position which reliably insert the moulds into the machine. Each feed unit is a self-contained system with two transport rollers driven by a maintenance free asynchronous motor.

The counterpart of the feed units are the long, non-driven rollers which can freely rotate on robust ball bearings.

The moulds are automatically braked and positioned on the access platform by the

MLT controller with the aid of proximity switches. The moulds are inserted into the machine reliably, accurately and without jamming.

The length of the maintenance free precision rollers allows moulds of different installation heights to be transported.

Stable transfer height with a subsidence-resistant rail system

MLT mould loading tables travel on a rail system. During assembly, the rails are aligned horizontally and are fully back-filled with a special material which does not deform after hardening, even under heavy loads. Uneven floor surfaces are levelled out and a mechanical lock mechanism at the end of the rail enhances the safety concept.

The transfer height of the MLT mould loading tables remains constant throughout the entire service life due to the large contact surface of the rails on this subsidence-free layer.



Four-wheel drive for precise mobility

Separate motors for each wheel prevent process interruptions and reduce wear.

Laser positioning for immediate use

MLT mould loading tables are ready for immediate use without reference operation.

Safe access platform

The access platform is designed as an enclosed flat surface. The colour coded safety components in the prescribed RAL colours simplifies handling and enhances safety.

All surfaces that are intended to be walked upon are slip-resistant. Access to the platform is provided by ladders attached on both sides. Both are fitted with a self-closing door for easy and safe access.

Laser positioning for immediate use

The position of the mould loading table on the rail system is permanently and precisely determined by an integrated laser. As a result, proximity switches are not necessary for exact positioning and there is no requirement for the reference operation on start up.

The precise position enables the very time-efficient and low-wear acceleration and deceleration of the mould loading table.

Powerful four-wheel drive for precise movements

Each of the four wheels of an MLT mould loading table is driven and braked by a separate motor. Powerful and controlled movements are therefore possible at any time, even with an unbalanced load distribution on the mould loading table.

On one side of the MLT mould loading table the wheels are guided precisely on the rail by a flange on each side. The two wheels on the other side have smooth running surfaces so that material expansion due to different temperature conditions is easily compensated.

This avoids process interruptions caused by unbalanced load distributions or thermal influences. The single drive mechanism for the wheels reduces wear and avoids downtimes for maintenance work.

Flexible, future-proof switching and control technology

The ergonomically designed control panel is equipped with a touchscreen and a user-friendly GUI. The length of the control panel cable guarantees freedom of movement and prevents access to the safety area during operation. The control system for the MLT mould loading tables is compliant with “Performance Level d, Category 3”

The control cabinet and control panel of the MLT mould loading tables can be used for one or two machines. The user friendliness and the optional equipment for the system with an additional operating position (page 10) ensure optimal handling of the MLT mould loading table.

FOR YOUR SPECIFIC REQUIREMENTS

Add-ons and options for MLT mould loading tables

In addition to the very extensive standard performance package for Stäubli's MLT mould loading tables, we can offer you additional add-ons and options to customise the MLT mould loading table to meet your requirements.

System environment permitting, the modular concept of the MLT mould loading tables allows additions to be retrofitted after installation.

Compact and transparent safety fence

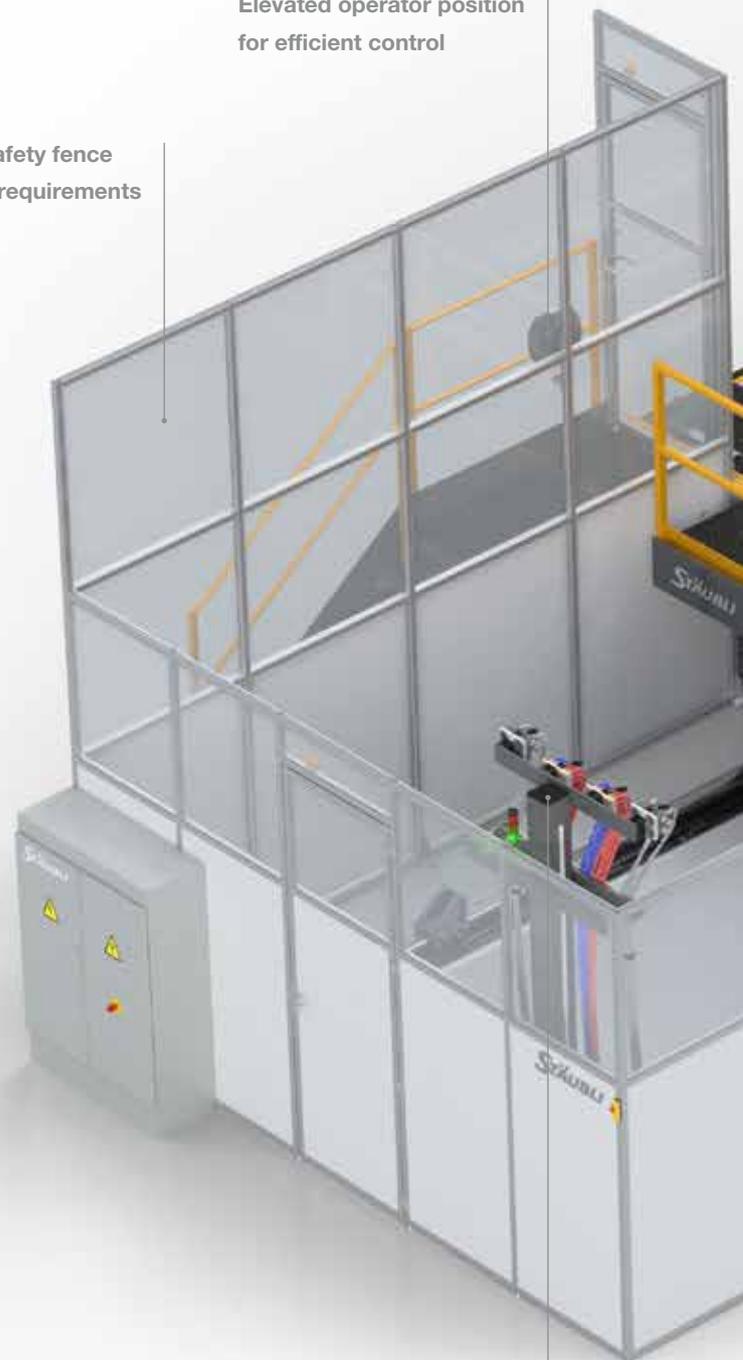
The surfaces between the safety fence frame elements are fitted with transparent impact-resistant polycarbonate. The closed surface and the height of the safety fence allow it to be positioned directly around the MLT, which maximises valuable production space.

The fully transparent visible surfaces without grids or nets ensure the best-possible view of the entire system.

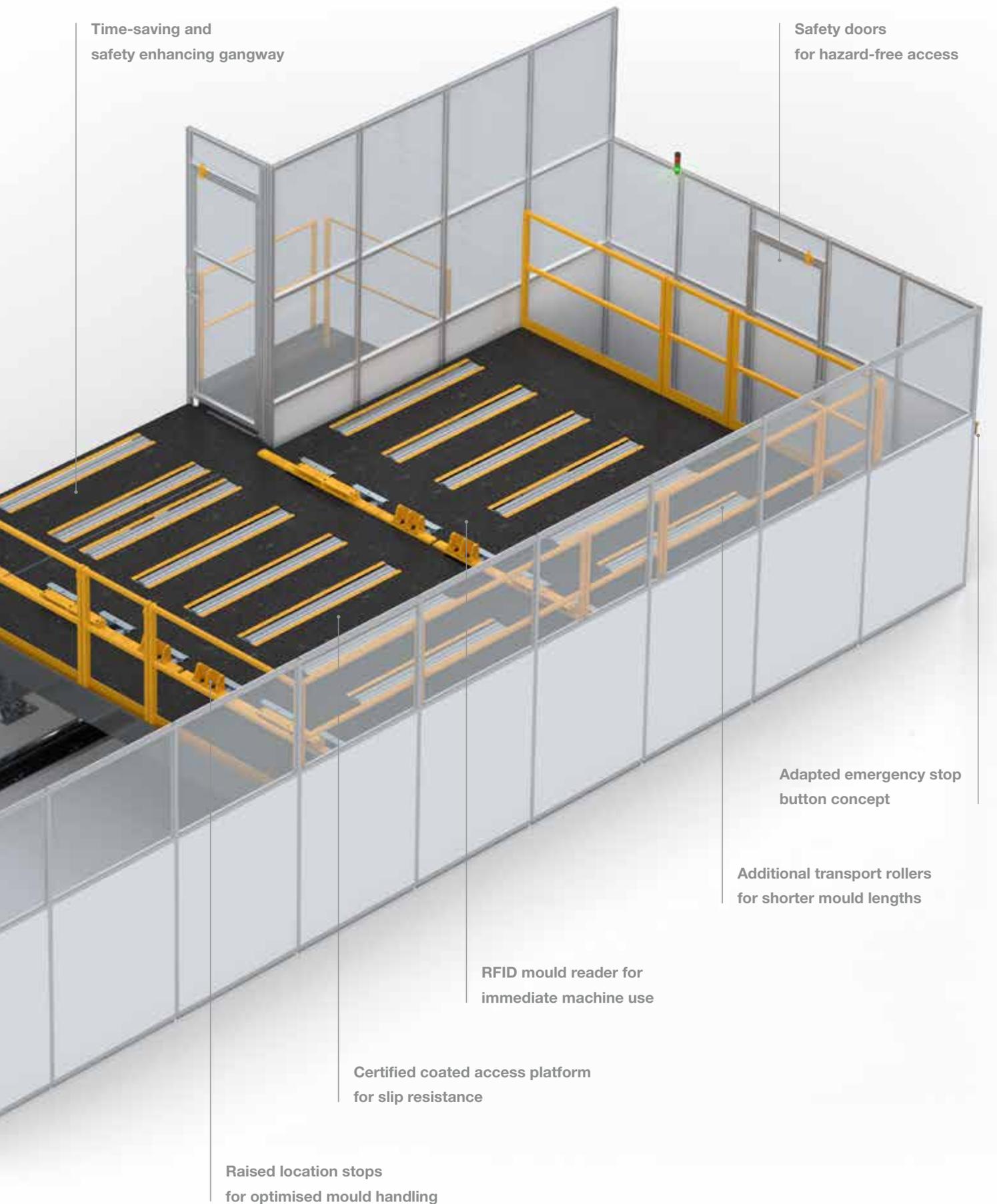
An individual mechanical lockout system and the electronic sensing of the safety fence doors prevent the system from starting up when there are operators inside

Elevated operator position for efficient control

Transparent safety fence for low space requirements



Mould preheating station for shorter set-up cycles



INDIVIDUALITY AND ECONOMIC EFFICIENCY



Mould preheating station

The optional mould preheating station facilitates the simple integration of Stäubli MCS connectors to the system.

Mould preheating station

The correct mould temperature has a decisive influence on the speed of the production of compliant parts. Preheating the moulds significantly shortens the entire set-up cycle and increases the OEE factor.

MLT mould loading tables can be optionally equipped with a mould preheating station. The multi-couplings required for preheating are included in Stäubli's MCS standard product range and can be ordered separately.

Gangway: saves time and improves safety

The optional gangway can have a one or two-sided staircase with doors. A driven feed unit together with two other roller units and reliably guide the mould into the machine.

Quick access to an elevated workstation, where the control panel is also located, gives the operators a much better overview for controlling the process.

When using long moulds or a mould preheating station, the addition of a gangway is ideal for moving around quickly and safely from one side of the mould to the other.

Coated access platform for certified slip resistance

A special anti-slip coating can be applied to the access platform for certified slip resistance (slip resistance class R12).

The additional enhanced slip resistance of the access platform provides even greater work safety. The coating ensures a secure grip, especially in wet and oily ambient conditions such as those that can occur when preheating the moulds.



Gangway

The gangway optimises the operation position for efficient process control.



Raised location stops

The raised location stops improve and speed up the process of placing the moulds on the loading table.

Raised location stops

The raised location stops facilitate the precise placement of the moulds on the MLT mould loading table. Oscillating movements caused by the crane are also better controlled.

Mould transportation is safer and wear and tear on the driven feed units is minimised.

Additional operating position

To meet the individual handling and safety requirements on site the standard control panel on the control cabinet or the gangway can be supplemented by an additional operating position.

Several operating positions extend the view of the mould changing procedure, which simplifies process control and monitoring. As a result, the operator can always see the system for effective and efficient process control. This option guarantees that site-specific handling and safety requirements are met.

Additional transport rollers for shorter mould lengths

Extending the system with additional roller units reduces the weight load on each roller for safe transportation of even very short moulds. As a result, an even greater variety of moulds can be processed.

With customised system designs (see page 18) it is also possible to combine several mould lengths.

RFID mould reader for immediate system use

The optional RFID mould reader for the MLT mould loading tables makes automatic mould changing even safer and more efficient.

This means that RFID transponders integrated into the moulds can be read out immediately after the mould has been placed on the MLT mould loading table. This allows the machine to start loading the mould specifications and adjust the machine parameters at the first stage of the process.

The mould ID is transmitted to the machine via an additional interface cable.

Adapted emergency stop button concept

The number and locations of the emergency stop buttons can be adapted so that the MLT mould loading table complies with site-specific operational and safety requirements.

Preconfigured spare parts packages

Two preconfigured spare parts packages ensure that the availability of the system can be quickly restored in the event of a malfunction. The modular concept of the MLT mould loading tables allows all the components to be easily and quickly replaced.

AT A GLANCE

MLT: solution with a greater ROI

The future-oriented modular concept of the MLT loading tables, as well as the standardised software interface, ensure usability and system flexibility. The robust components guarantee a long service life, high efficiency and easy maintenance. In addition, the safety functions on the Stäubli MLT loading table fulfil Performance Level d, Category 3.

Standard equipment

Euromap 71 interface, prepared for all common types of machine	<input checked="" type="checkbox"/>
Control cabinet and control panel prepared as standard for two injection moulding machines	<input checked="" type="checkbox"/>
Ergonomic control panel with 10" touchscreen and dynamic animation of all process stages	<input checked="" type="checkbox"/>
Available help function on the control panel	<input checked="" type="checkbox"/>
Chronological message log with filter function on the control panel for easy troubleshooting	<input checked="" type="checkbox"/>
Password protected user level with login on the control panel	<input checked="" type="checkbox"/>
Remote access for remote maintenance by the Stäubli service team	<input checked="" type="checkbox"/>
Non-equivalent design of the proximity switches for many diagnostics options	<input checked="" type="checkbox"/>
Stable transfer height with a subsidence-resistant rail system	<input checked="" type="checkbox"/>
Exact laser positioning of the mould loading table for immediate system use	<input checked="" type="checkbox"/>
Powerful four-wheel drive on the mould loading table for precise mobility	<input checked="" type="checkbox"/>
Guide rail with location stops for fast mould positioning	<input checked="" type="checkbox"/>
Non-jamming mould positioning and guidance	<input checked="" type="checkbox"/>
Directly driven feed units without chains for mould transportation	<input checked="" type="checkbox"/>
Free-running ball bearing roller units for mould transportation	<input checked="" type="checkbox"/>
Precise positioning of the moulds with the aid of proximity switches	<input checked="" type="checkbox"/>
Safely accessible, flat access platform with slip resistance	<input checked="" type="checkbox"/>
Simple safety fence design	<input checked="" type="checkbox"/>
Two access doors including mechanical lockout and electronic sensing	<input checked="" type="checkbox"/>
Two-sided ladder to the access platform with self-closing access door	<input checked="" type="checkbox"/>

Selectable add-ons and options

Gangway with one or two-sided staircase, access doors and elevated operating position for efficient control	<input type="checkbox"/>
Mould preheating station for shorter set-up cycles	<input type="checkbox"/>
RFID technology for early mould identification and immediate system use	<input type="checkbox"/>
Additional operator position for efficient control	<input type="checkbox"/>
Preconfigured spare parts packages	<input type="checkbox"/>
Raised location stops for optimised mould handling	<input type="checkbox"/>
Adapted emergency stop button concept	<input type="checkbox"/>
Coating for certified slip resistance	<input type="checkbox"/>
Additional transport rollers for shorter mould lengths	<input type="checkbox"/>
Compact safety fence requiring little space and with transparent viewing areas for optimum space utilisation	<input type="checkbox"/>

MLT SOLUTION COMPETENCE

Stäubli's global competence and local presence



Stäubli has subsidiaries at major industrial hubs around the world. Their experienced engineers have detailed, product-specific know-how and application expertise to provide the highest quality of advice to customers and to guarantee fast response times worldwide.

Mould loading tables are variable systems that have to be efficiently integrated into production processes, therefore advice to customers on the correct basic and special configurations, adaptations and optimisations is essential. Our global warehousing concept ensures that components and spare parts are quickly delivered to customers around the world.

Global service network

Wherever in the world, users receive specialist advice on applications. This guarantees the best possible implementation of the mould loading processes at your production site. Customers have access to our global know-how so that you can maximise the productivity of new plants and achieve optimum results in retrofit and maintenance situations.

One-stop solution provider

Single point of contact: we designate one customer consultant to you for the entire duration of your project. This makes the cooperation more efficient and reduces the complexity of project coordination and implementation. Customers also benefit from our consulting expertise directly at your premises when you implement mould loading systems.

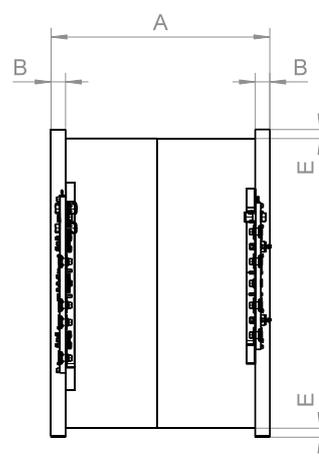
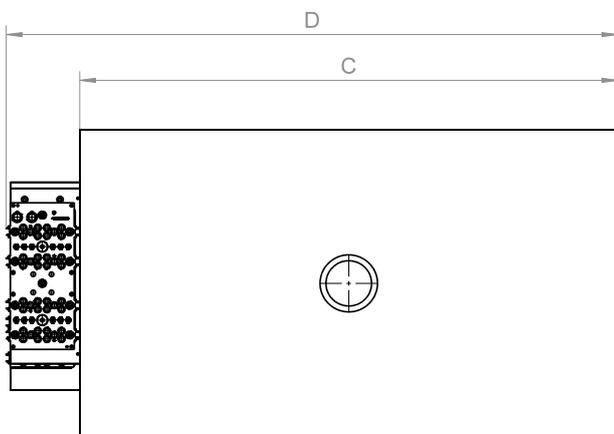
International implementation concepts

Users receive solutions that comply with all country-specific guidelines and standards. Thanks to our global network customers can easily implement multi-national production concepts.

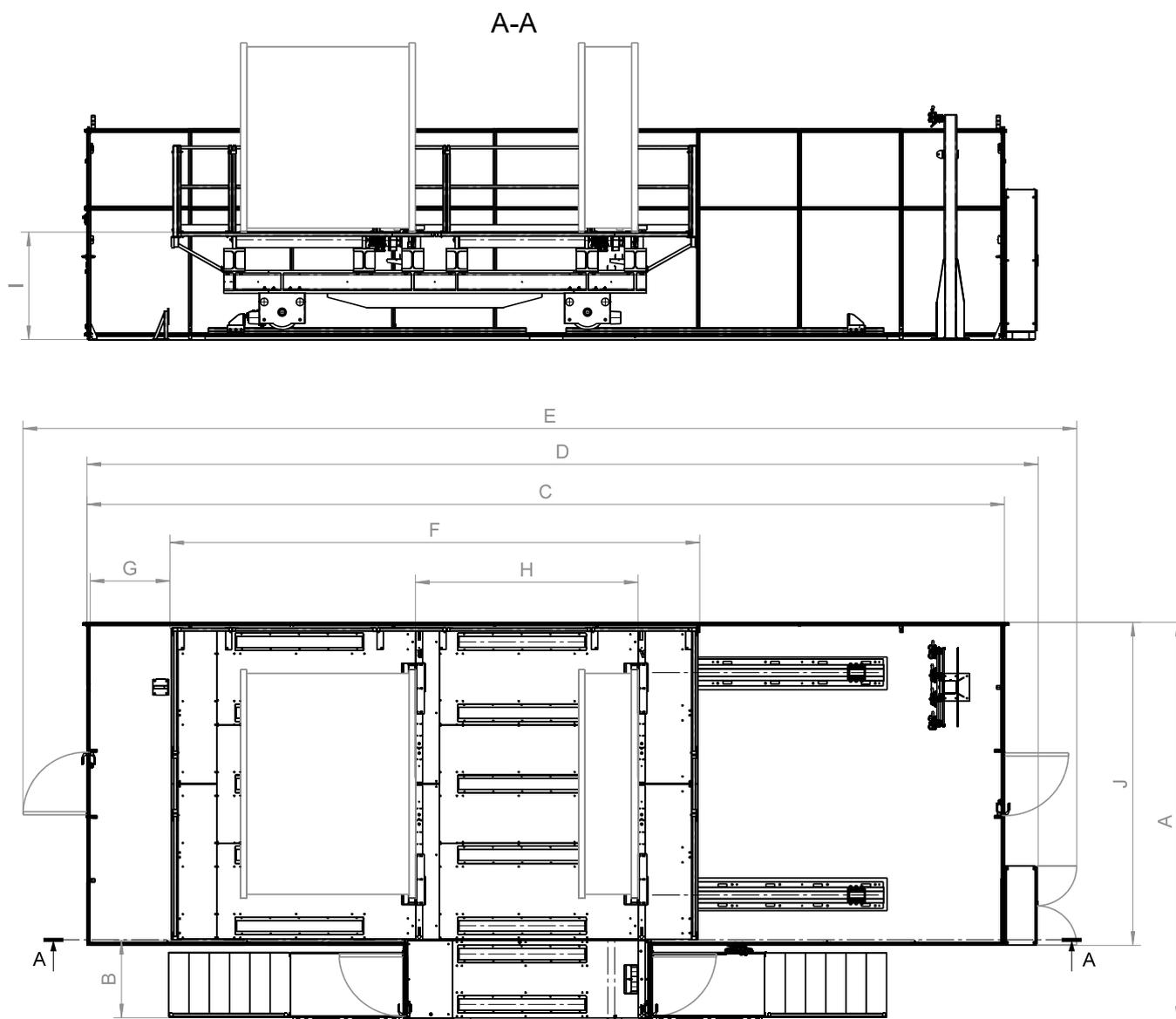
TECHNICAL SPECIFICATIONS

Technical specifications

Technical specification, MLT	MLT 2030	MLT 2050	MLT 2060
No. of platforms	2	2	2
Max. load per platform	30 t	50 t	60 t
Assigned IMM clamping force	800 t - 2000 t	2000 t - 4000 t	2000 t - 4000 t
Max. occurring point load	15 N/mm ²	15 N/mm ²	17 N/mm ²
Max. occurring imposed load	53 kN/m ²	52 kN/m ²	58 kN/m ²
Power input Can be adapted to country specific power supply voltages	15 kW	15 kW	15 kW



Technical specification, mould	MLT 2030	MLT 2050	MLT 2060
Max. mould weight	30 t	50 t	60 t
A	500 mm - 1600 mm	750 mm - 2200 mm	750 mm - 2200 mm
B	80 mm	80 mm	80 mm
C	1830 mm - 2400 mm	2000 mm - 2900 mm	2000 mm - 2900 mm
C Option extended length range	1300 mm - 2400 mm	1400 mm - 2900 mm	1400 mm - 2900 mm
D Incl. multi coupling	max. 2400 mm	max. 2900 mm	max. 2900 mm
E	min. 50 mm	min. 50 mm	min. 50 mm

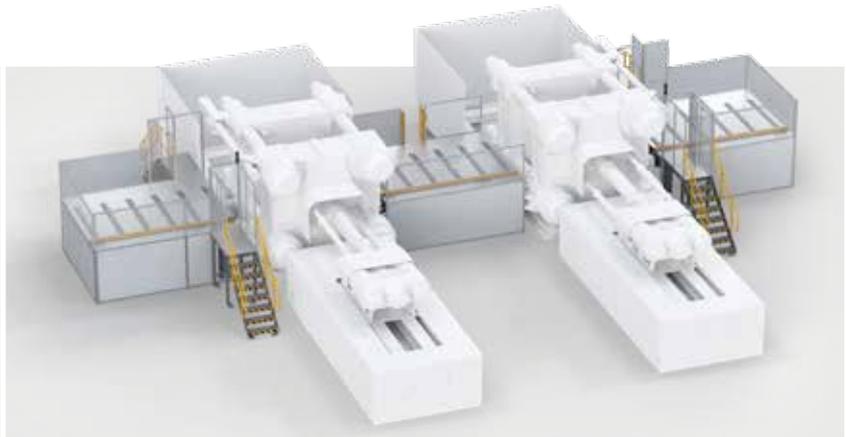


Configuration with compact safety fence, gangway with two staircases and mould preheating station.

Dimensions, MLT		MLT 2030	MLT 2050	MLT 2060
Selectable fixed transfer height in the range	I	1060 mm - 1360 mm	1262 mm - 1662 mm	1388 mm - 1788 mm
Width of gangway	B	1100 mm	1100 mm	1100 mm
Width with gangway	A	4760 mm	5160 mm	5160 mm
Width without gangway	J	3690 mm	4092 mm	4092 mm
Length safety fence to safety fence	C	9660 mm	11541 mm	11541 mm
Length incl. control cabinet	D	10060 mm	11964 mm	11964 mm
Total length	E	11370 mm	12353 mm	12353 mm
Length of table	F	5255 mm	6664 mm	6664 mm
Length safety fence to table	G	1000 mm	1000 mm	1000 mm
Offset movement	H	2200 mm	2800 mm	2800 mm

MLT CUSTOMISED

Customised designs



From compact single tables, feed-through systems and rail-bound carts, to entirely free-moving AGV solutions: Stäubli's customised designs are completely tailored to your individual requirements.

Over 125 years of commitment to innovation and our extensive expertise in all industrial sectors are reflected in our individual solutions for customers around the world. We liaise closely with our customers to develop custom-made systems that are precisely and flexibly adapted to their requirements.

As a pioneering developer of mould loading systems, Stäubli has consistently implemented the highest precision and quality standards as well as maximum safety aspects with innovative, sustainable and variable technologies. Reflecting these high standards, the modular mould loading systems have an open architecture that makes the customer-specific design of perfectly matched systems possible.

Global cost efficiency and quality standards

Companies and corporations rely on standard global production processes ensuring they maintain their own quality standards. This optimises the costs along

the entire production resource supply chain. Stäubli consistently supports this approach by developing its own standards for customers with mould loading systems.

Design expertise from a single source

All components of the mould loading systems are developed and manufactured by Stäubli:

- Only proven and certified technologies are used, based on decades of experience, for the comprehensive portfolio of transfer modules and electrical connectors.
- All design, production and quality inspection activities take place within Stäubli.



Worldwide, individual, on-site advice

- Specialist personnel are available for individual consultations from all their worldwide locations.
- Our technical consultants analyse the production and operating conditions with you on your site.
- Our project planning and construction specialists design an efficient mould loading system to meet your requirements.

Optimum system customisation for maximum productivity

Whether you need single platforms, a pass-through concept or a free-moving AGV solution: Stäubli implement specific requirements in optimally adapted and technologically sophisticated systems.

This individual customisation is possible with almost all product parameters:

- Individual addition of further components to the product portfolio.
- Custom integration of Stäubli MLT systems into your production planning processes to meet your Industry 4.0 requirements.
- Precise integration of MLT solutions into the production hall layout.
- Implementation of the routing and access options for your MLT system that are adapted to the specific situation.
- Individualised safety technology with optimal integration into your overall safety concept.

Solutions for all mould weights

Stäubli provides standardised MLT series tables for moulds weighing between 10 and 60 T. Customised MLT solutions for mould weights from 0.5 to 130 T have already been implemented. Please contact us if you would like to discuss a customised solution.

