Plastics Industry:
From Quick Mould Change
to Process Automation
Individual components or fully automated systems – Stäubli QMC solutions optimise your productivity
Stäubli has been working directly with plastics manufacturers for over 50 years. As a customer, you have our proven expertise and innovative technology at your disposal.

Our Research and Development teams provide you with customised solutions for your standard applications as well as your most specific requirements.

Changing moulds quickly is key for productivity in the plastics industry – and Stäubli has developed Quick Mould Change (QMC) solutions for every step of your process:

- Mould transfer and loading
- Mould Clamping systems
- Energy connections
- Production automation

Proven reliability - Stäubli QMC technology and automation solutions are designed for seamless integration with your existing equipment. For added assurance, Stäubli solutions and designs meet international standards.

Stäubli brings high performance to your applications and reliability that you can count on.

With teams across the globe, we have plastics experts nearby to maintain close communication with you and provide on-going support as your production needs change.
Optimise your mould loading whatever your installation

**Save time. Boost productivity.**
Stäubli solutions for mould handling and loading significantly reduce changeover times - a decisive advantage when you have frequent production changes.

**Work safety**
Ease of mould handling, even with very large or extremely heavy moulds, ensures that your operators work safely. During loading operations, your equipment and tooling are protected from damage.

**Streamline your production environment**
Stäubli systems allow you to optimise your productivity even in the most confined spaces - with efficient mould storage, automated workflow, shortest paths, ideal tool positioning and reduced machine downtime.

Whatever the direction of your transfers, vertical or horizontal, Stäubli has the system that best suits your setup:

- Manual or fully automated
- Stationary or mobile

Stäubli plastics experts work with you side-by-side to determine the mould loading method best suited to your moulds and machines:

- Mobile loading or loading dedicated to a single machine
- Manual or automatic loading

These solutions apply to existing installations and tooling as well as completely new automated production systems.
Stationary tables for one or more moulds

A reliable and economical solution
Loading tables serving single or multiple machines are flexible enough to be configured to suit your requirements:

- single table dedicated to one machine
- two-way table operating between two machines
- pass-through system with a table on each side of the machine (one for loading and one for unloading).

For continuous production, we recommend multiple-workstation tables. The next mould can be connected to a preheating station so production keeps moving.
Mould Loading

Shuttle carts

**Maximum mobility with complete freedom for mould transfer**
Adjustable height – The shuttle cart adjusts to each machine in any position within the production cell. During transport, cart movement and mould locking are controlled automatically.

Rail-guided carts

**One step closer to automation**
With mobile handling solutions, you can reduce setup times and increase productivity even more. Rail-guided cart systems optimise mould transport between the storage area, optional preheating station and the machines.

Safety every step of the way:
1. During transport - moulds are locked onto the handling system
2. During loading – the system is clamped to the machine

For fully automated production lines, a multiple-workstation rail-guided cart is the ideal solution for an entire line of machines. It facilitates mould flow, which can be especially crucial with larger moulds.
From the simplest case to the most complex situation, Stäubli’s Research and Development team will work with you to define your requirements and design a custom solution.

**Loading systems designed for easy mould movement**

All Stäubli tables and carts are fitted with a loading system according to your specific requirements:

- **Manual push** - Simple and affordable - the perfect solution for lighter moulds.
- **Mechanical push/pull system** - An economical solution, with no need to install a motor on the injection moulding machine.
- **Fully automated system** - Power-driven rollers are installed on both sides (machine and table or cart). They provide fast, automated mould changes.

**Maintenance stations**

Enhancing the quality and reliability of maintenance operations

Stäubli maintenance stations ensure that large and high value moulds are handled in complete safety during a range of operations:

- routine maintenance
- complete inspections
- design changes
- testing and adjustments
- mould repairs and more.
Which clamping system is best for your production environment?

- Mechanical manual
- Hydraulic automatic
- Magnetic automatic

Whichever system you choose, you benefit from the absolute safety and reliability of Stäubli mould clamping solutions.

Clamp your moulds in seconds

**Seamless integration**
Stäubli quick clamping systems can be used on any machine, new or existing, whether vertical or horizontal loading.

Our systems allow you to optimise your production capacity and improve your flexibility and response times.

**Safety is key**
Stäubli R&D teams work continuously to develop products, incorporating the latest thinking and high-tech safety features to deliver safe, high performance systems at optimal cost.

As a result, you get the fastest possible mould changes while the safety of your operators, production and work environment is always protected.

**The choice of the right solution**
Stäubli’s comprehensive product range has the right solution to match your priorities:
- Production environment: Manufacturing technology (injection, composites, waxes, Zamak, etc.); maximum service temperature (temperature allowable for contact between the mould and the clamping system); frequency of mould and tool changes, existing moulds, degree of automation, etc.
- Technical characteristics: Size and force of your machines, etc.
- Budget constraints
**Mechanical manual clamping**

Fast and simple - our manual bayonet system lets you clamp your moulds with a single action using a detachable lever.

Without interfacing, this type of mechanical clamping system can be used in a wide range of configurations:
- any small- or medium-sized machines (up to 200 tonnes)
- all temperatures (up to 200°C)
- any mould, including those with complex shapes.

Installation does not require prior training or a hydraulic or electrical connection.

Two models:
- QMC 105 for moulding machines up to 100 tonnes and moulds up to 1,500 kg
- QMC 106 for moulding machines up to 200 tonnes and moulds up to 2,000 kg

**Hydraulic clamping**

Compact and robust, our hydraulic clamping systems are suitable for a wide range of moulding machines

This system is designed to meet all of your mould change needs, even in harsh conditions, for a wide range of injection moulding machines, at a maximum service temperature of 80°C standard (higher temperature options available).

Proximity switches monitor the “clamped” and “unclamped” positions during operation.

The hydraulic system can be supplied by an independent hydraulic unit. Contact us to learn more.

Two models:
- QMC 100 with single acting cylinder
- QMC 101 with double acting cylinder
Mould Clamping

Magnetic clamping

Innovative and safe mould clamping at the push of a button. Magnetic technology is particularly well suited to frequent mould changes and unusually shaped moulds.

Benefits of the QMC122 system:
- No modifications to existing machines/moulds
- Modular design - each plate includes the specifics of the press and moulds
- Ability to monitor process and safety points through an interactive interface
- Unique design allows on-site changing of the magnetic modules making up the plate
- Low energy consumption - energy is used only during magnetisation and demagnetization phases.

Safety for production, staff and the work environment
Designed to meet the highest safety standards and regulations, the QMC 122 system protects your entire production line. The interactive IMAG interface keeps your operators well informed during every moment of the clamping/unclamping process.

Safety-focused features
- real-time display of the clamping force
- display of the temperature of each half-mould,
- mould movement detection,
- procedure validation,
- safety alerts, and more.
Stability and strength

Stäubli manages the entire development of the QMC 122, from the design of the electronic controller and the IMAG interface to the manufacture of the magnetic plate. The exclusive manufacturing process enables a great measurement precision. In this respect, the system detects even minor fluctuations in flow and guarantees precision, safety and reliability.

Automatic ejector couplings

The QMC 400 system allows a simple, automatic connection between the ejection mechanism, which is specific to each mould, and the cylinder or the ejector plate of the injection moulding machine. Proximity switches monitor the “coupled” and “uncoupled” positions.

Available in pneumatic or hydraulic versions, this Stäubli product line works with all types of injection moulding machines.

www.staubli-imag.com
Stäubli’s teams will guide you

From quick-release couplings to automated centralised multi-connections, Stäubli’s diverse range of solutions ensures that you have the best solutions for all of your applications:

- Connection of all temperature control, hydraulic, and electrical circuits
- Numerous sizes and options
- A variety of different locking and shut-off systems

All of our products are enhanced by continuing innovation to keep pace with the changing technologies and demands of the plastics sector.

Manage the connection of all of your circuits

Just push – and it’s connected!
Stäubli’s couplings are known and appreciated for their thoughtful ergonomics. Always easy to grip, they enable the user to make quick connections and disconnections.

Safety at every point
Foolproof color coding (blue, red, etc.) allows your operators to identify different circuits at a glance.
For multiple energy connections, a keying system prevents cross-connection between circuits.
With recessed configurations, the couplings and components prevent damage to the injection moulds and provide safer handling.

The non-spill technology of Stäubli’s flat face couplings ensures perfect tightness even during connection and disconnection - which protects your operators, production and work environment.

Speed and consistency in production
Stäubli couplings boost your production with optimal flow, a smaller footprint, and stable temperatures maintained throughout the manufacturing process.

Quality and sustainability
Our consistent quality ensures reliable equipment. Only the use of Stäubli original parts for your complete connection set (male and female parts) assures, under the operating conditions stated by Stäubli, the manufacturer’s warranty and the sustainability and safety of your facilities.
Stäubli experience and expertise for all of your connections

Cost effective: Full flow (1)
A simple, effective solution for cooling water circuits and hot water circuits up to 90°C, with a selection of more than 300 full-flow couplings.

Choice of shut-off and other options (2)
Depending on your applications and the fluids being used (cold water, glycol water, hot water or other heat transfer fluid from -20 to 200°C), you can choose from a variety of options:
- single or double shut-off
- multiple coupling diameters
- a range of different seal materials.

Flexible modular solutions (3)
Distribution manifolds can greatly simplify your temperature control systems by grouping connections and streamlining circuits.

Non-spill design and performance (4)
Flat face technology eliminates spillage, ensuring operator safety and maintaining fluid integrity. Stäubli’s durable and reliable couplings also provide outstanding resistance to mechanical stress (vibrations, oscillations, etc.). Automatic locking enables blind connections in recessed locations.

All of your connections made in a single motion (5)
Quick and efficient manual systems let you centralise your connections and connect all fluid and energy supplies simultaneously.

Temperature control
High pressure hydraulics

Stäubli’s anti-pollution solutions for hydraulic systems: connect core pulling circuits, ejectors, sequential injection machinery and more.

Designed for the demands of high pressure hydraulics, Stäubli’s quick release couplings guarantee secure, leak-proof connections. Automatic and easy to handle, they are designed for easy maintenance and prolonged service life.

Designed specifically for the plastics industry...
- high pressure-resistant steel construction
- seals adapted to high temperatures
- optimal flow without pressure drop at end of the line
- robust locking mechanisms

...and the requirements of your applications
- self-centering of the plug for blind connecting
- panel equipment for two-way circuits
- instant identification of circuits by ring or plate color
- protective caps, etc.

Efficiency in a single action
Our manual multi-coupling system centralises high pressure hydraulic circuits and permits very fast connection and disconnection with a single action, while consistently high flow rates optimise production.

Centralised connections dedicated to sequential injection
Multi-coupling plates are recommended for centralised supply to sequential injection circuits. This ensures completely automated and safe opening and closing of injection nozzles on hot runner systems. The extremely quick response time of the hydraulic control circuits optimises opening and closing of the nozzles during production.
Fully automatic connection of all circuits

Guiding, connecting, locking - using standard Stäubli components, our Research and Development teams design comprehensive customised solutions.

Save time and improve safety
Fully automatic systems let you connect and disconnect your hydraulic, pneumatic, electrical and regulation circuits simultaneously.

Two options:
- Multi-coupling integrated into your process
- Independent multi-coupling plate fitted with cylinders
Stäubli’s products meet all of your automation needs:
- Tool changers for robots and handling devices
- Industrial robots and software solutions

Manage production flow
Stäubli tool changers, robots and software solutions for automation demonstrate optimal efficiency under any conditions. Wherever speed, precision and reliability are required, Stäubli systems provide the best solutions in terms of automation and operational flexibility.
Fast tool changes with Stäubli MPS

Interfacing between the robot and the tool, the multifunctional MPS system enables automated and efficient tool changes on your machines.

Designed according to your tooling and application requirements, they perform a dual function:

1. Locking the tool onto the robot
2. Simultaneous transfer of all energy supplies: compressed air, cooling water, electric signals, power transmission, control data

Time saving

Stäubli tool changers are designed for fast, repetitive tasks, delivering several benefits:
- Less operator intervention
- Optimal cycle times
- Minimal downtime during production
- Facilitates multitasking...

Adaptable and compact

Stäubli tool changers can handle loads from 20 to 1530 kg.

The satellite tool changer design allows flexible component positioning, according to space constraints.

Safety

Internal safety interlock prevents accidental disconnection, while energy can only be transmitted when the MPS robot side and tool side are fully locked.

Optimise cycle times and minimise downtime during production and maintenance

Our specialism in both energy connection and robotics enables Stäubli to design and manufacture innovative MPS systems for robotic tool changers.
Plastics and robots

Stäubli offers a complete range of robots to meet all of the plastics industry’s automation needs.

**Speed, precision, cleanliness, dexterity and more…**

for all your manufacturing processes

Stäubli robots contribute measurably to your highest productivity goals:

- High speed de-moulding
- Over-moulding
- Two-shot moulding
- Final machining of injection moulded parts
- In-mould decoration and labelling.

6-axis robots are being used more and more for downstream tasks such as:

- Trimming
- Parts inspection
- Cutting
- Glue application, joint sealing
- Product assembly
- Palletising and packaging.

**New specific kinematics**

In response to recent developments in the plastics industry, we have expanded our line to offer you:

- 6-axis plastics robots: The fastest on the market in terms of speed and acceleration (time to strip the mould of 0.8 seconds for an overall cycle time of 4 seconds)
- 4-axis ultra-high speed robots: Pick and place robots capable of more than 200 picks per minute
- Shelf-mounted robots for heavy loads up to 165 kg, designed to handle applications in harsh environments
- Precision machining robots: Ideal for large composite material parts

**A robotic solution designed for your application**

From the ultra-compact robot installed within the injection moulding machine enclosure to a robot with a large work envelope working in a hostile environment, Stäubli can provide the ideal automation solution for your operation.
Individual components and complete systems

Our expertise in plastics gives Stäubli the capability to develop solutions for other sectors and applications such as wax injection, composites manufacturing, aluminum, Zamak and magnesium foundries, metal forming and many more.

We welcome you to call our team of specialists to discuss creating systems for your current and future projects.

Programming and customising
Stäubli Robotics offers three levels of programming to meet all of your industrial plastics manufacturing needs:

- **VALplast plug-and-play interface:**
  Super-fast programming using predefined subroutines.

- **VAL3 high-level programming:**
  Specific and complex robotic languages.

- **uniVAL drive application software:**
  Ready for machine manufacturers to install.

Flexible design for your working configuration:

- Variety of configurations for floor, wall and ceiling mounting.
- Compact design for ease of integration into your facility.
- Prewired electrical boxes designed to Euromap (Europe) and SPI (USA) standards.

Working as your partner
Stäubli can work with you to design a customised robotic system. Depending on your needs, your system could include integrated robots equipped with vision systems for conveyor monitoring, tool changers, and any other options for a complete solution.