Plasdan

MOULD ROBOTICS & MODULAR ADD-ON SYSTEMS

LEADER IN FULL ELECTRIC MULTI-COMPONENT SOLUTIONS

www.plasdan.pt

Plasdan
MOULD ROBOTICS & MODULAR ADD-ON SYSTEMS

Plasdan has been designing and manufacturing equipment for the plastic industry for more than 28 years and have a number of patented products. We are looking towards the next decade and its challenges and focusing our creative energy in developing new concepts and moulding systems to keep our customers one step ahead of their competition.

Innovation that Creates Value

The products that we've created and developed are an extension of the mould, this allows an enormous flexibility and mobility of Plasdan moulding systems and solutions.

PLASDAN **GOALS**

1	Increase the production capacity of existing machines. (Productivity)	2	Install new features on existing moulding machines (Investment cost reduction).
3	Production cells.	4	Enable flexible and competitive operation in a global market environment.
5	Innovative automation and mould robotics. (Assembly cost reduction)	6	Innovative moulding technologies (value added production).
7	Efficient logistics process.	8	Environmental friendly (energy saving).

PLASDAN **TOOLS**

ADD-ON EQUIPMENT

Rotary table
C-Frame
Lift & Turn
Cube plate

MOULDING TECHNOLOGIES

- Multi-shot
- Injection Welding
- Injection Compression
- Co-Injection
- Blowmolding

MOULD ROBOTICS AUTOMATION

PLASDAN'S VISION

Developing and manufacturing the most efficient and innovative "Add-On" systems for the injection moulding industry.

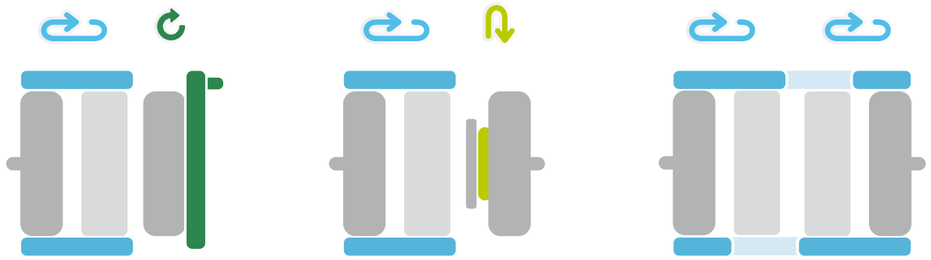
PLASDAN'S MISSION

Enable our customers, in particular, and the injection moulding industry in general, to be profitable, efficient and sustainable.

MOULD ROBOTICS

Innovation and creativity applied to mould design using modular add-on systems are key factors to create new possibilities in an emerging field that we call in-mould assembly or mould robotics. This is a fundamental step to increase sustainability and productivity in the injection moulding industry, as well as in a global market environment through innovative mould systems.

Using automation and add-on rotary features to existing mould concepts will create endless innovative possibilities to produce multi-shot parts with more flexibility whilst reducing production and equipment costs.



Rotary table + C-frame | Lift & Turn + C-Frame | C-frame + C-Frame

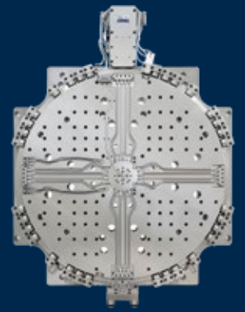
Conventional Mould + Add-on + Extra Axis = MOULD ROBOTICS

INSPIRATION - INNOVATION

REVOLUTION

Plasdan is the world leader in providing technological rotary equipment solutions with our huge range of rotary tables and index plates.

Our patented C-Frame system has consolidated this leadership providing the market with flexible solutions for rotary cube mould applications.



Rotary table

Lift & Turn

Horizontal Rotary Table
(fully electric)

C-Frame
Horizontal or Vertical

PLASDAN FLUSH ROTARY UNION

- **Low-friction design by the use of spring preloaded bearings**
- **Reduced friction of components during rotation <=> Less wear**
- **Thinner rotary table design due to integrated rotary union**
- **Optimized rotary unions**
- **Low weight**

PLASDAN FLUSH ROTARY UNION VS COMMON ROTARY UNION

ROTARY TABLE

The conventional rotary table is a positioning device, fixed on the machine platen. It is equipped with an electrical servo-motor for fast, precise mould rotation, having PLC control with various possibilities of interfacing with the host machine. Shared PLC and controls for rotary table and Plasdan supplied injection unit when supplied as a set.

MAIN CHARACTERISTICS:

- Lock pin to ensure correct position before the mould closing with 3-way redundancy
- Mould mounting bolt pattern and knock-outs per customer request
- Air, oil and water connections on the sides of the rotary table
- Can be used for 180° (2-shot), 120° (3-shot), or other moulding scenarios
- Standard components and electronics (service parts available worldwide)

Dimensions	Units	PR4.0420	PR4.0450	PR4.0500	PR4.0550
Number of cooling circuits		2W+2O	2W+2O	2W+2O	2W+2O
Max. tool dimensions [X x Y x Z]	mm	[330X330X351]	[330X330X351]	[400X400X400]	[400X400X440]
Max. tool weight	kg	285	285	477	525
Rotary table weight	kg	289	321	388	453
Rotation time	sec	2.0	2.0	2.0	2.0
Thickness	mm	160.0	160.0	160.0	160.0

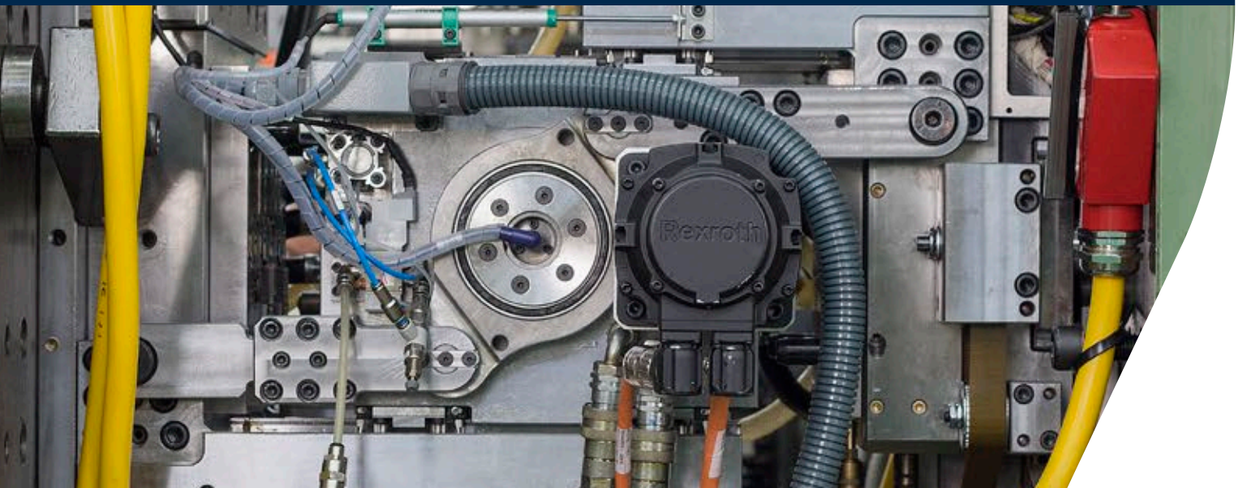
Dimensions	Units	PR4.0650	PR4.0700	PR4.0750	PR4.0800
Number of cooling circuits		2W+2O	2W+2O	2W+2O	4W+4O
Max. tool dimensions [X x Y x Z]	mm	[550X550X360]	[640X640X345]	[670X670X400]	[750X750X430]
Max. tool weight	kg	812	1054	1339	1804
Rotary table weight	kg	577	672	760	1195
Rotation time	sec	2.0	2.0	2.0	3.0
Thickness	mm	160.0	160.0	160.0	215.0

Dimensions	Units	PR4.0850	PR4.0950	PR4.1000	PR4.1050	PR4.1100	PR4.1150	PR4.1200	PR4.1250	PR4.1350
Number of cooling circuits		4W+4O	4W+4O	4W+4O	4W+4O	4W+4O	4W+4O	4W+4O	4W+4O	4W+4O
Max. tool dimensions [X x Y x Z]	mm	[775X775X440]	[800X800X450]	[900X900X500]	[950X950X520]	[950X950X570]	[1000X1000X575]	[975X975X675]	[975X975X675]	[1025X1025X700]
Max. tool weight	kg	1971	2148	3020	3500	3836	4288	4785	4785	5485
Rotary table weight	kg	1375	1596	1749	1954	2102	2293	2486	2717	3082
Rotation time	sec	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0
Thickness	mm	215.0	215.0	215.0	215.0	215.0	215.0	215.0	215.0	215.0

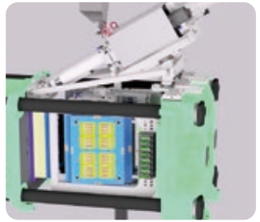
Dimensions	Units	PR4.1400	PR4.1500	PR4.1700	PR4.1750	PR4.1800	PR4.1900	PR4.2400	PR4.2500
Number of cooling circuits		4W+4O	4W+4O	4W+4O	4W+4O	4W+4O	4W+4O	4W+4O	4W+4O
Max. tool dimensions [X x Y x Z]	mm	[1085X1085X650]	[1125X1125X700]	[1350X1350X600]	[1350X1350X600]	[1400X1400X600]	[1500X1500X540]	[1650X1650X630]	[1700X1700X660]
Max. tool weight	kg	5706	6607	8155	8155	8770	9061	12791	14224
Rotary table weight	kg	3360	3922	6015	6215	6561	7329	15776	17456
Rotation time	sec	4.0	4.0	4.5	4.5	4.5	4.5	5.5	6.0
Thickness	mm	215.0	215.0	265.0	265.00	265.0	265.0	330.0	330.0

C-FRAME

The C-frame is a support system for a rotary cube mould that allows the central block of the cube to rotate through either 90° or 180° depending on requirements, transferring the previously injected parts from one processing station to another. The philosophy behind this concept is to allow simultaneous operations during the cycle, thereby obtaining very low cycle times in a standard injection moulding machine. More specifically, the cooling and the ejection of the part can occur simultaneously with the injection of the various components. The opening / closing movement of the mould also allows for simultaneous rotation of the cube mould, saving cycle time due to these parallel movements.



C-FRAME VERTICAL

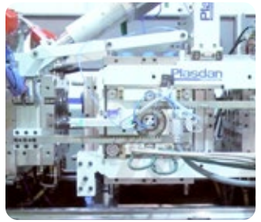


C-FRAME VERTICAL

C-FRAME HORIZONTAL

As a leader in fully electric multi-shot solutions, Plasdan is capable of evolving your injection moulding machine without a huge investment. Directly supported by the moulding machine the C-Frame is fixed on one of the machine platens, also being supported on the machine frame if necessary.

The C-Frame construction often enables the changing of rotary stack moulds while in the press.



C-FRAME HORIZONTAL

LIFT &TURN

The LIFT & TURN system is used to move a plastic part to a second cavity in the mould so that it can be over-moulded by a second type of material or colour.
This is accomplished by a linear movement of the plastic part lifting it out of the cavity where it was moulded, then rotated to a second cavity by the use of a servo-motor and then a second linear movement to place the part in the second cavity, hence the name "LIFT & TURN".

The LIFT & TURN system is used when a plastic part needs to be over-moulded on both the front and rear of the part simultaneously. The main advantages of the LIFT & TURN system are:

- **Less rejected parts as the plastic is always in contact with some part of the mould**
- **Reduction of cycle time compared to manual or robot transfer of parts**
- **Complex shaped parts can be over-moulded on both sides**
- **Can be used in combination with other technologies for in-mould assembly**
- **Easily interfaced with the injection moulding machine**
- **Easily assembled and removed from the injection moulding machine.**

INJECTION UNITS

Plasdan offers a full range of full-electric, servo-driven, mould, platen or floor mounted mobile injection units which are highly accurate, have high shot-to-shot repeatability, are quiet and energy efficient. These add-on injection units are economical solutions to upgrade standard injection moulding machines, enabling these standard machines to inject multi-coloured or multi-component parts. Having their own high-powered PLC controller, the injection units are easily integrated with the moulding machine via the robot interface.

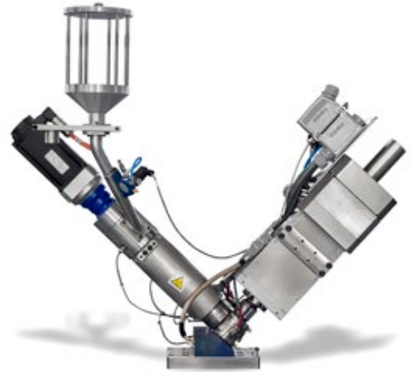
The injection unit is operated via a remote 8.4" colour portable touch screen controller, with features as found on injection moulding machines.

The operation of a Plasdan rotary equipment can be incorporated into the injection unit controller, minimising the space required around the injection moulding machine for control cabinets.

Direct drive

Standard unit

Plate



Shot-pot micro

INJECTION UNIT SPECIFICATIONS STANDARD UNIT

Injection Unit	Units	EL.0028			EL.0120			EL.0300			EL.0600		
Screw diameter	mm	16	18	20	22	25	30	30	35	40	40	45	50
Swept volume	cc	16.1	22.9	31.4	41.8	61.4	102.5	106.0	168.4	219.9	251.3	357.8	490.9
Max. injection pressure	bar	2100	1650	1350	2200	2000	1600	2000	1800	1400	2130	1700	1400
Screw stroke	mm	80	90	100	110	125	145	150	175	175	200	225	250
Screw torque	Nm	37.9	52.1	69.3	89.6	126.5	207.0	207.0	313.8	450.0	450.0	618.5	822.0
Nozzle sealing force	kN	28.5	28.5	28.5	30.0	30.0	30.0	40.0	40.0	40.0	40.0	40.0	40.0
Max. nozzle retract stroke	mm	100	100	100	100	100	100	200	200	200	200	200	200
Max. injection speed	mm/sec	112	112	112	150	150	150	155	155	155	150	150	150
Max. injection rate	cc/sec	22.5	28.5	35.2	57.0	73.6	106.0	109.6	149.1	194.8	188.5	238.6	294.5
Screw speed range, standard drive	r.p.m.	320	320	320	300	300	300	300	300	300	300	300	300
Electrical supply	V	400/480	400/480	400/480	400/480	400/480	400/480	400/480	400/480	400/480	400/480	400/480	400/480
Maximum current	A	32	32	32	32	32	32	80	80	80	125	125	125

INJECTION UNIT SPECIFICATIONS DIRECT DRIVE

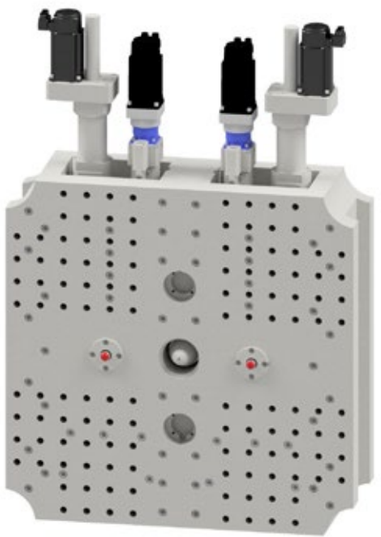
Injection Unit	Units	EL.0310			EL.0610			EL.1520		
Screw diameter	mm	30	35	40	40	45	50	55	60	65
Swept volume	cc	106.0	168.4	219.9	251.3	357.8	490.9	653.4	848.2	1078.4
Max. injection pressure	bar	2000	1800	1400	2130	1700	1400	2100	1800	1530
Screw stroke	mm	150	175	175	200	225	250	275	300	325
Screw torque, standard	Nm	207.0	313.8	450.0	450.0	618.5	822.0	1063.2	1344.8	1669.2
Nozzle sealing force	kN	40.0	40.0	40.0	40.0	40.0	40.0	70.0	70.0	70.0
Max. nozzle retract stroke	mm	200	200	200	200	200	200	500	500	500
Max. injection speed	mm/sec	155	155	155	150	150	150	140	140	140
Max. injection rate	cc/sec	109.6	149.1	194.8	188.5	238.6	294.5	332.6	395.8	464.6
Screw speed range, standard drive	r.p.m.	300	300	300	300	300	300	255	255	255
Electrical supply	V	400/480	400/480	400/480	400/480	400/480	400/480	400/480	400/480	400/480
Maximum current	A	80	80	80	125	125	125	200	200	200

Highly demanding industries, such as medical, electronics and packaging, are requesting an extremely accurate and repeatable injection process. Plasdan developed a new line of fully electric injection units, capable of injecting below 1cm³.

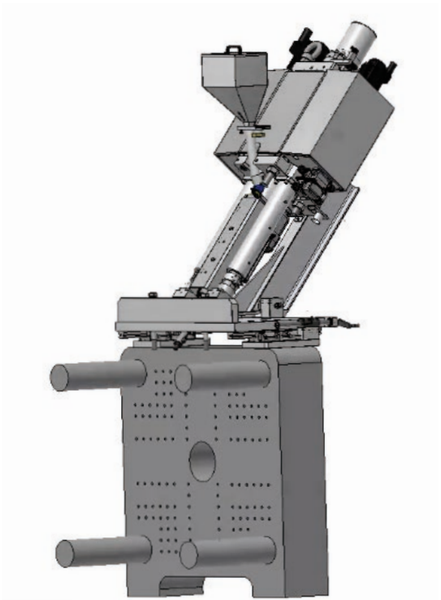
We can offer these injection units as stand-alone devices or integrate them into a completely automated production line.

INJECTION UNIT SPECIFICATIONS SHOT-POT AND PLATE

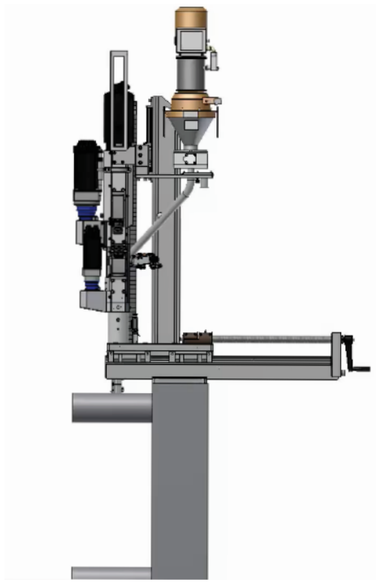
	Units	ELM.0003			ELM.0030		
Screw diameter	mm	14	14	14	20	20	20
Piston diameter	mm	4.0	5.5	6.5	10	12	14
Swept volume	cc	0.9	2.9	4.3	11.8	17.0	23.1
Max. injection pressure	bar	2400	2000	1800	2400	2000	1450
Injection stroke	mm	70	120	130	150	150	150
Screw torque, standard	Nm	26.4	26.4	26.4	69.3	69.3	69.3
Nozzle sealing force	kN	25.0	25.0	25.0	40.0	40.0	40.0
Max. nozzle retract stroke	mm	140	140	140	150	150	150
Max. injection speed	mm/sec	500	500	500	400	400	400
Max. injection rate	cc/sec	6.3	11.9	16.6	31.4	45.2	61.6
Screw speed range, standard drive	r.p.m.	320	320	320	450	450	450
Electrical supply	V	400/480	400/480	400/480	400/480	400/480	400/480
Maximum current	A	32	32	32	32	32	32



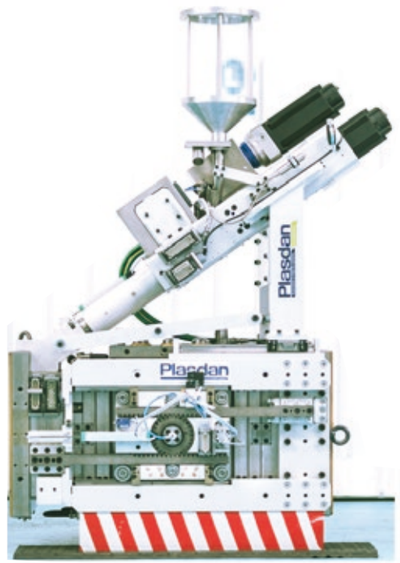
INJECTION UNITS MOUNTING OPTIONS



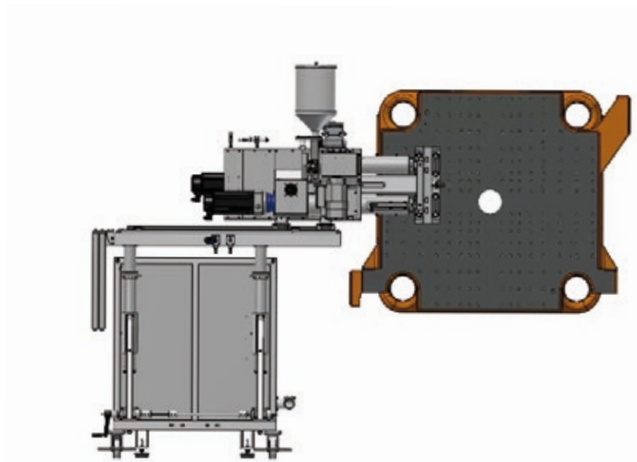
Angular



Vertical on fixed platen

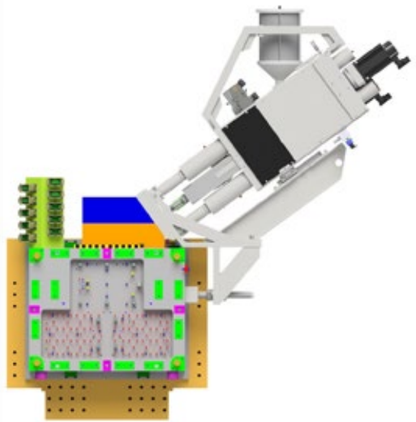


Angular on mould / C-Frame



Horizontal on non-operator side

Plate injection units



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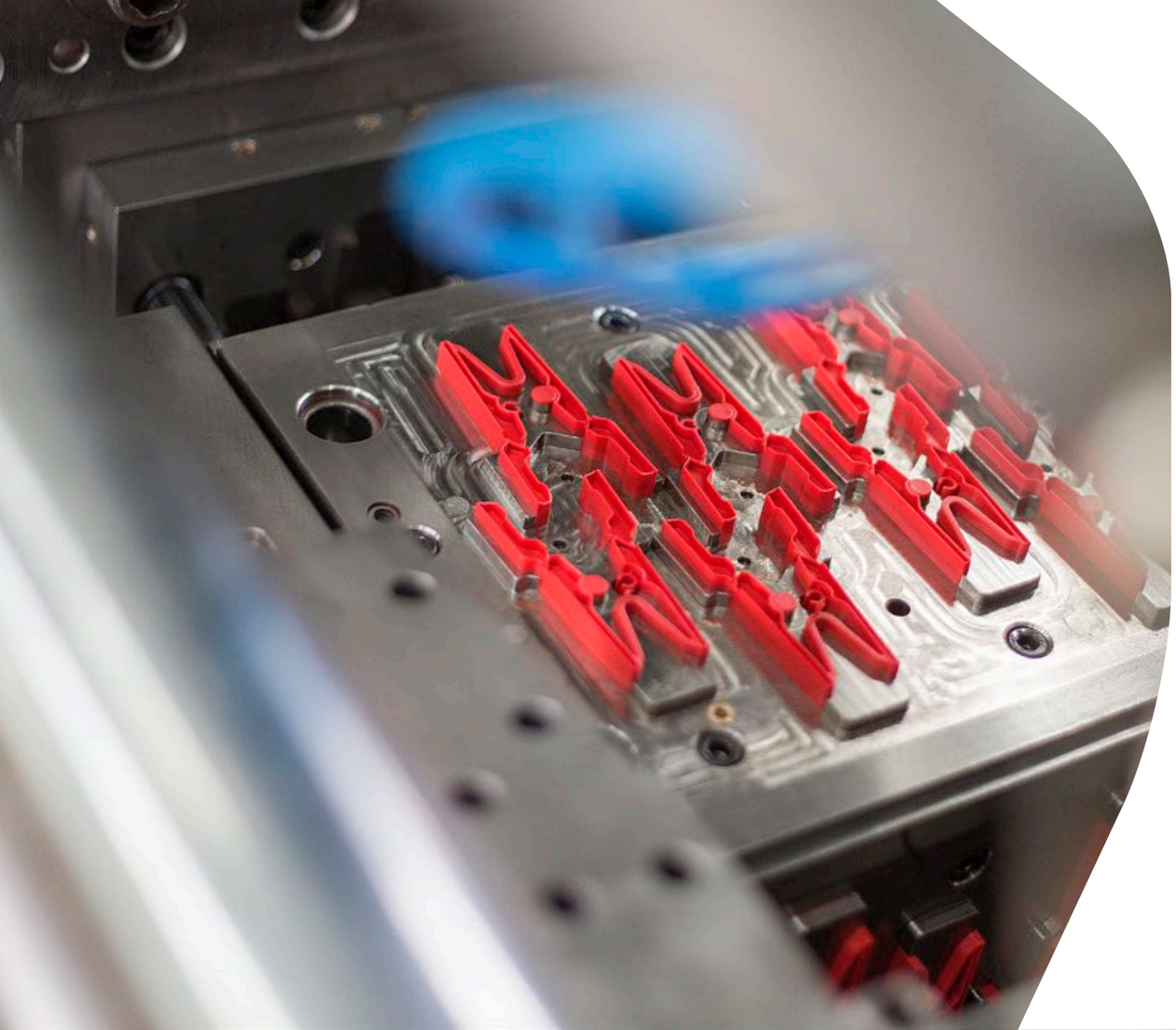


MULTI-SHOT TECHNOLOGY

SAVING TIME, SPACE AND ENERGY ADDING – VALUE & FLEXIBILITY

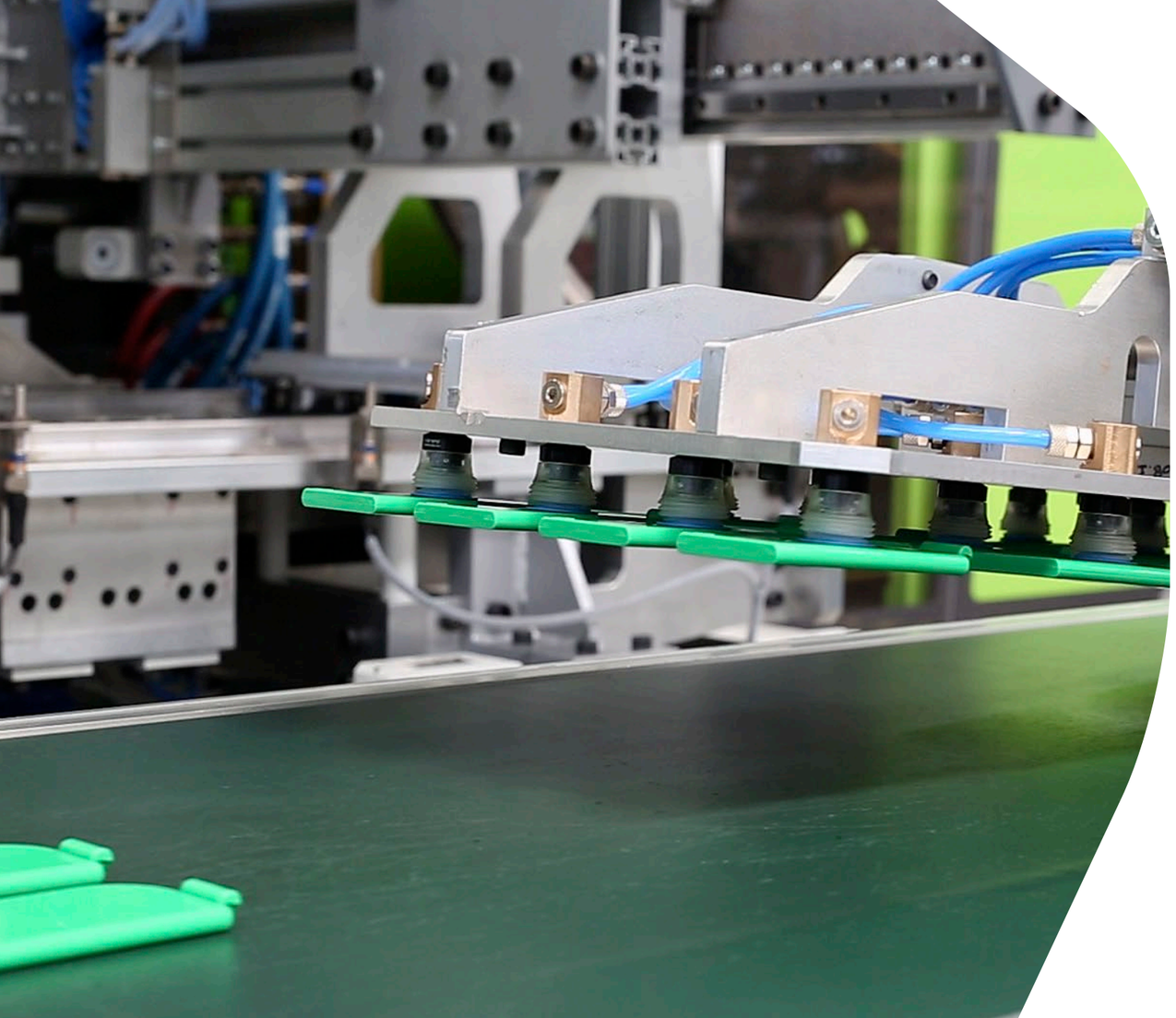
3 COMPONENT PART WITH CO-INJECTION

- Compact 2K Cube mould with C-Frame and Co-injection: 8 + 8 cavities with 32 cores.
- 2 injection units: EL.0120.22 and EP.0020.10 + machine injection unit
- Cycle time of 8 seconds:
- Rotation around horizontal axis

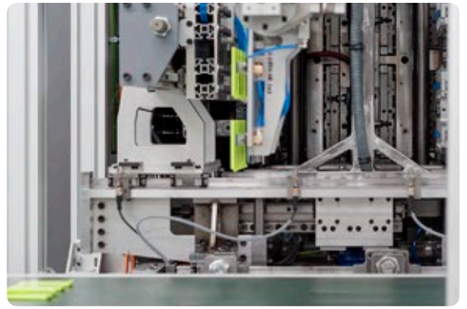
Mould Robotics

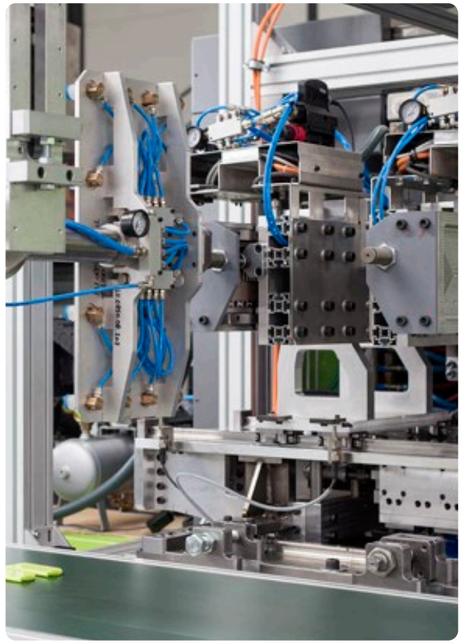
Example of a production cell, producing a 4-component part, fully assembled, working in a standard injection moulding machine.

The cell consists of 3 add-on injection units, a C-frame and a rotary table, showing the combination of technologies to create a complete production cell.



AUTOMATION
COMPLETE PRODUCTION CELLS





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