

*The multi-function
machine*



 **Sumitomo**
SHI **DEMAG**

Multi



"Multi talents are not born, they are developed."

Klaus Rahnhofer, Project Manager Multi and Automation,
Sumitomo (SHI) Demag

Multi – the Sumitomo (SHI) Demag technology for a wide range of materials

The growing variety of possible material combinations in forward-looking sectors of industry demands high-performance and flexible multi-component technologies. The Sumitomo (SHI) Demag Multi is ready today to face the challenges of tomorrow.

Flexible and versatile

- Suitable for all common multi-component injection-moulding processes: bi-injection, composite injection-moulding and sandwich technology, positioning and turning of shaped components
- Combination of a wide range of plastics, metals and semi-finished products into homogenous and heterogeneous compounds
- Direct connection of adhesion-compatible materials and mechanical combination of adhesion-incompatible materials
- Production of mobile, non-connective components with adhesion-compatible materials

Individual extension capability

- Modular design for individual machine configuration
- Optionally two to four injection units in the closing force range of 500 – 13,000 kN
- Multi-plug kits for retro-fitting of existing standard machines
- Wide range of additional packages for multi-colour and multi-component injection-moulding

Economical

- Fast and convenient setup of the machine
- Simplified production processes and reduced cycle times
- Low installation requirement
- Low energy consumption and space requirement

Powerful and accurate

- Two injection units, each with their own hydraulic regulating pump
- High rotation speeds and self-optimising rotary movements with integrated and modified rotary plates
- Saving of individual rotary drives for multiple indexing tools by means of adaptable indexing drives with rotary distributors
- Accurately calculable injection and plastification by separately controlled injection units with hydraulic regulating pumps

Ergonomic

- Intuitive control of process steps by means of pictograms on the Ergocontrol operating terminal
- Pre-defined standard sequences for simplified programming



An overview of processing techniques

- **Bi-injection** – simultaneous or sequenced injection of two components into one cavity
- **Core-back technique** – injection of two components into one cavity one after the other, the space for the second component being accessed by shifting a valve
- **Transfer technique** – the preform is transferred manually or by means of a robot into the second cavity or second machine
- **Rotary technique** – transfer is by axial or vertical rotation with the rotary function provided for in the machine or in the mould
- **Sandwich technique** – different plastics are laminated together to produce a skin-and-core structure.



For a wide variety of solutions

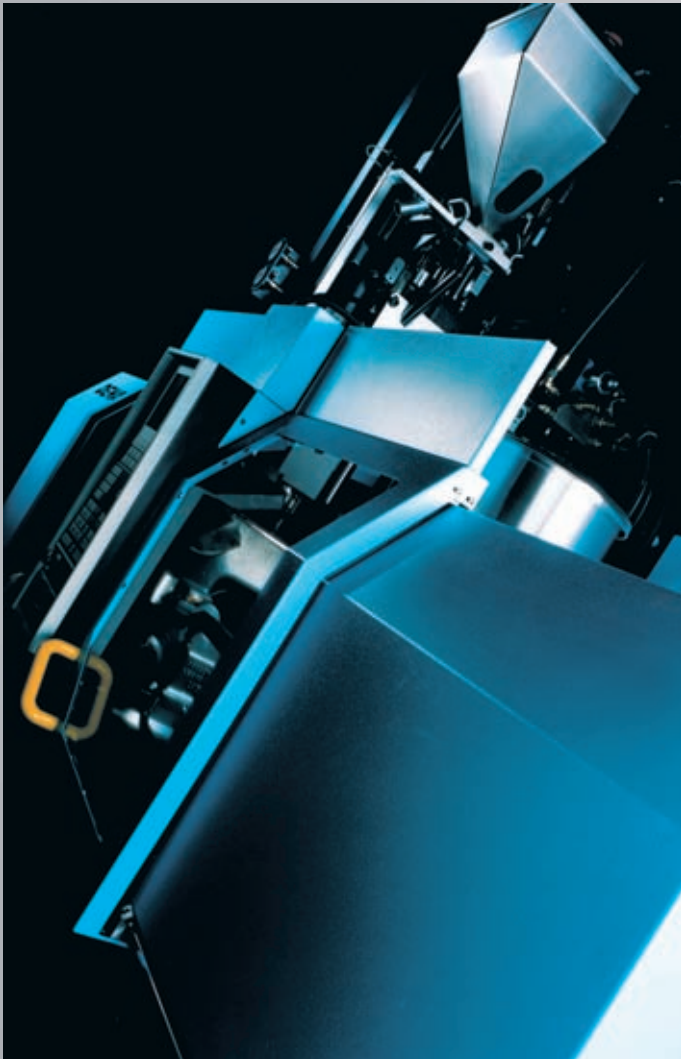
High-grade multi-colour styling, complex mouldings with two or more components, decoration, printing, back injection of textiles and foils, injection moulding with assembling... multi-component technology has undergone rapid development in recent years: ever new variants of the processes, plastics and material combinations have been added for ever new applications in automotive, medical and communication technologies, in the electronics, packaging and sports industries. New applications have emerged that were unthought-of only a few years ago. We in Sumitomo (SHI) Demag take the credit for having made important contributions: The Multi has proved its mettle in hundreds of manufacturing facilities: With innovative, user-specific solutions that combine a high standard of moulding quality with a high level of productivity.

The range of applications

The term "multi-component technology" denotes a variety of methods employing specially designed mould and machine features. Basically, they all use two or more injection units to inject two or more materials onto each other or in between each other. If injected onto each other, the components will either form an integral moulding (say an automotive taillight) or a split moulding (say, a closure with a seal ring). If injection is with a shot in between the other shots, referred to as the sandwich technique, a "laminated" structure is obtained, for instance, with a soft skin and a hard core (typically, regrind may be used for the core and virgin material to provide a high-quality surface).

MATERIAL COMBINATIONS

Material combinations		ABS	ASA	CA	EVA	PA 6	PA 6.6	PBT	PC	PE	PET	PMMA	POM	PP	PPO mod.	PS	PSU	Plasticised PVC	SAN	TPE-A	TPE-E	TPE-S	TPE-U	TPE-V	EPDM	NR/SBR	SBR	LSR
Thermoplastics	ABS																					M						
	ABS/PC																					M						
	ASA																											
	CA																											
	EVA																											
	PA 6																					M					M	
	PA 6 (mod. + 25 % GF)																					M						
	PA 6.6																					M					M	
	PA 6.6 (mod. + 25 % GF)																					M						
	PA 6.12																											
	PA 12 (mod. + 25 % GF)																					M						
	PBT																					M					M	
	PC																					M						M
	PC/PBT																					M						M
	PE																					M						
	PET																					M						
	PMMA																					M						
	POM																					M						
	PP																					M						M
	PPO mod.																						M					
	PPE mod.																									P	S	S
	PS																					M						
	PSU																											
	PVC-hart																											
	SAN																					M						
	TPE	TPE-E																										
		TPE-U																										
D	BMC																											
Elastomers	EPDM																											
	NR																											
	SBR																											
	LSR																											
		Thermoplastics																		TPE					Elastomers			
		Good adhesion M Adhesion modified																		Poor adhesion P Peroxide cross-linkage					No adhesion S Sulphur cross-linkage			



The advantages

However different they may be, most multi-component techniques offer similar advantages:

- Cycle times are significantly shorter
- Setting-up of the machine is simpler and faster compared to two "mono-material" machines
- Operations are simplified
- Assembly effort is reduced
- Quality assurance and reproducibility are enhanced
- Less floor space is required
- Energy consumption is lower

Possible material combinations

Basically, the following combinations of materials are possible:

- Plastic-to-metal, for instance, with plastic injected around a metal insert
- Plastic-to-semi-finished material, for instance, using direct backing injection of foils or textiles with thermoplastics
- Plastic-to-plastic using the same plastic or different plastic materials

Plastic-to-plastic combinations

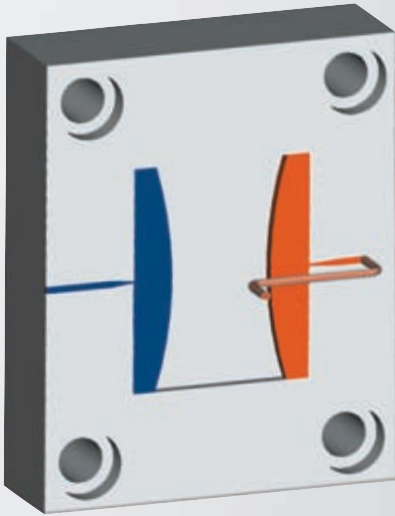
A key factor in moulding the large variety of thermoplastics, thermosets and elastomers that can be combined on the Multi – aside from part geometry and the processing method – is the degree of bond required between the components:

- If an intimate bond is specified, it is necessary to combine adhesion-compatible materials or, alternatively, where plastics are adhesion-incompatible, a physical bond is required. Examples include automotive taillights (adhesion-compatible, integral) or sealing action-plus-mechanical grip (hard-and-soft construction; adhesion-incompatible; split construction).

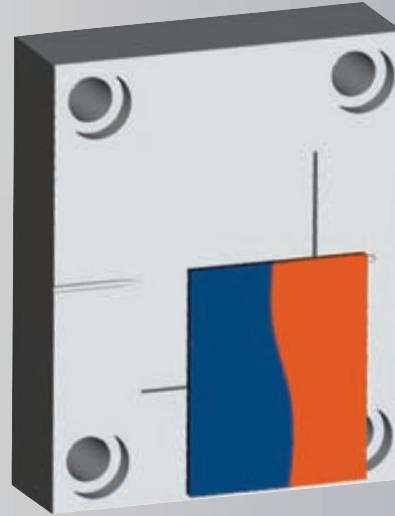
- If no bond is to be produced between the components, e.g. in order to ensure movement of the parts relative to each other, the user will select some adhesion incompatible materials.

Whatever the material/plastic combination, it is necessary to make a detailed study in each individual case to reconcile the requirements of geometry and quality of the moulding and the processing method. We will advise you here in detail.

BI-INJECTION-TECHNIQUE



Bi-injection – simultaneous injection through two gates



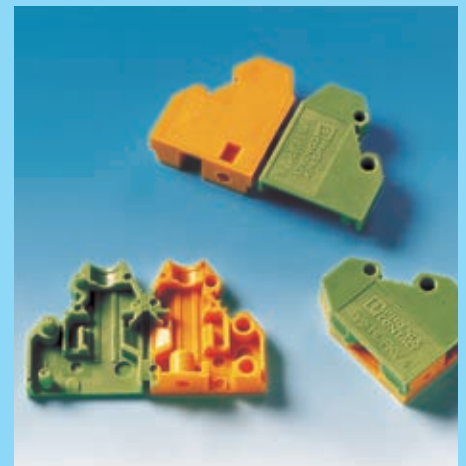
Indistinct border line on finished part



Yarn bobbins (PE/PE)



Symbol washer (PS/PS)



Earthing terminals (PA/PA)

The process

This is the simplest variant of two-component moulding from the machine and mould point of view: The components are injected simultaneously or in sequence into a cavity through two independent gates, to meet in the cavity with a more or less defined border line.

Special features

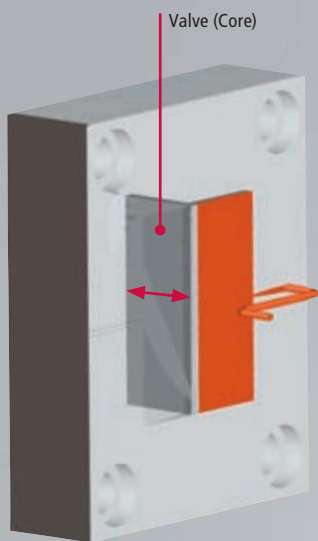
No additional equipment required; mould with one cavity

Machine configuration

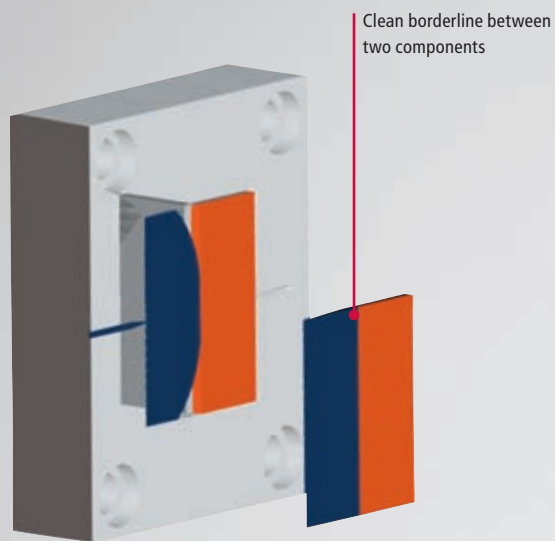
Multi-component machine with injection unit in V-, L-, R-, or P-position



CORE-BACK TECHNIQUE



Core-back technique – closed valve separates space for first shot



The valve changing state permits second shot to bond to first shot



Trim (PP/TPE)



Cap for cosmetics product (PP/PP)



Closures for shampoo (PP/PP)

The process

The core-back method is the simplest multi-component process for injection into a cavity with a high degree of reproducibility. The moulds used are designed with a retractable core (acting as a valve) to separate the cavity into two spaces. After the first shot and cooling down of the preform, the valve is opened to admit the second shot into the second space in the cavity. The process is suitable also for three or more components, but this will considerably increase the complexity of the mould.

A prerequisite for the core-back technique is that the geometry of the part should permit accessing of the space for the second shot by means of a simple axial core pull movement.

Advantages

- Good component bond thanks to the rapid shot sequence
- No additional equipment required

Special features

Optional equipment: hydraulic valves

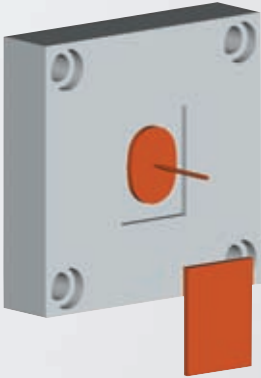
Machine configuration

Multi-component machine with injection unit in V-, L-, R-, or P-position



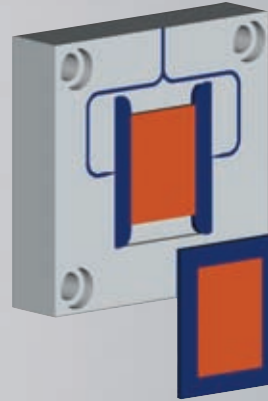
TRANSFER MOULDINGS

Transfer between two IM-machines



The first machine produces the preform

Next the part is transferred by hand or a robot to a second machine



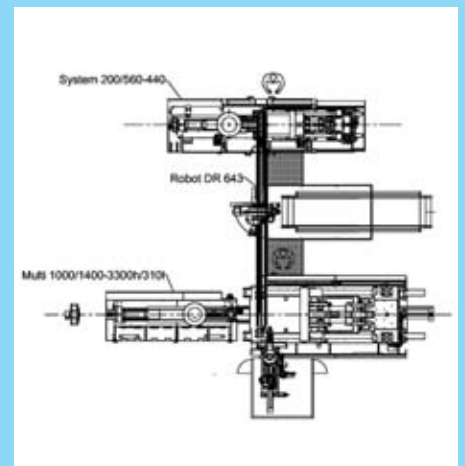
The second shot around the preform is applied in the second machine



Housing for automotive taillight (ABS/TPE)



Taillight (PMMA)



Transfer between two machines by means of robot

The process

A most versatile and widely used technique is to transfer a preform by hand or a robot into a second cavity or a second mould. Users can choose between two variants:

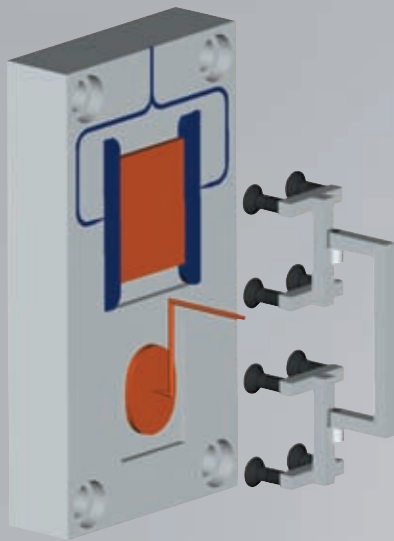
Variant No. 1: Transfer of part from one injection moulding machine to another

This is mostly used on one-component machines. Here the parts can be placed at the centre and any unequal opening forces acting on the mould are avoided, nor is there any need to correct the clamping force setting. Another advantage is in the low mould costs. This variant is profitable for small batch, prototype or pilot production applications.

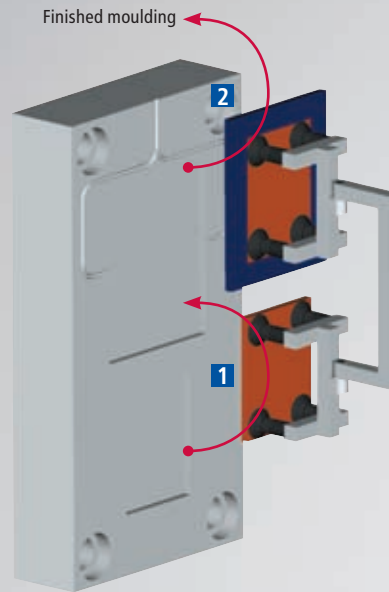
Machine configuration for transfer between two machines

One-component machines. Transfer by hand or robot using transfer gripper; conventional-design moulds are used.

Transfer within an injection moulding machine



While, in the upper part of the mould, material is injected around the preform made in the previous cycle, a preform is being moulded in the lower part.



- 1 The preform is transferred from the lower to the upper station
- 2 The finished part is removed by the gripper



Handbrake lever (PP/TPE)



Housing with sealing lip (PA-GF30/TPE), bush of TPE only

Variant No. 2: Transfer within an injection moulding machine

Transfer of the preform from the first to the second cavity is effected by a robot. In the case of many types of mouldings, this eliminates the need for a rotary plate or an indexing plate. The user benefits from a reduction in mould costs since in every cycle there are produced the preform and, simultaneously, a finished part with the robot performing both the transfer and the removal of the parts. There are certain article geometries that explicitly call for the transfer described.

Special features

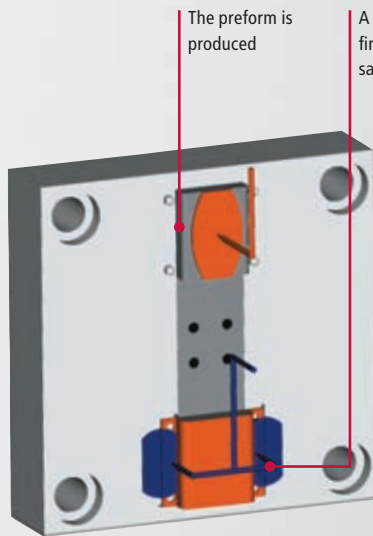
In transferring the preform that has not yet cooled down, free shrinkage is liable to occur – especially in the case of brittle or partly crystalline plastics – that has to be allowed for in the geometry of the second cavity.

Machine configuration for transfer within a machine

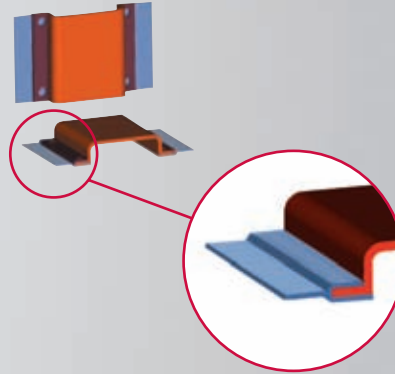
Two-component machine with injection unit in V-, L-, R-, or P-position; robot with transfer gripper; conventional design moulds.



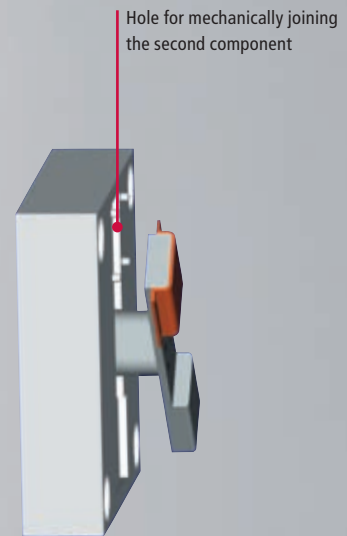
ROTATING THE MOULDINGS



Rotating the parts with an indexing plate



Ejection of the part can be effected before or after rotation



Transfer of the preform is by rotating the indexing plate



Bottle opener (PA12/LSR)



Handles for pliers (PP/TPE)



Ventilator adjuster (PC/EPDM)

The process

Contrary to the transfer technique using a robot, the rotary method provides for the part to remain in the mould – consequently, the dimensions of the preform remain very stable. In the case of two-component parts (two stations in the mould), the preform is moved to the second injection position by a 180° rotation. In the case of three or four components (three or four stations), the angle of rotation is reduced accordingly to 120° and 90°. Depending on the geometry of the part, part size and machine clamping force, different methods of rotation are used.

1. Rotation with an indexing plate

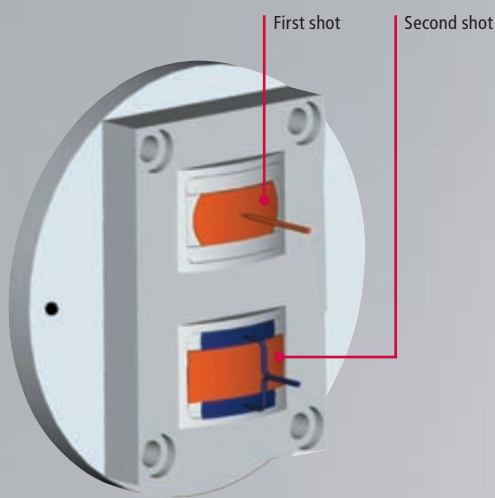
The function of the indexing plate is to transport the moulding from one station to the next. As shown in the graph, this is typically effected by turning part of the mould through 180°. This makes it possible to change the contours of the part for the second component both on the stationary platen and the moving platen (see inset above).

Advantage

The indexing plate permits backing injection without the need for complex core pull arrangements.

Rotation cycle of indexing plate

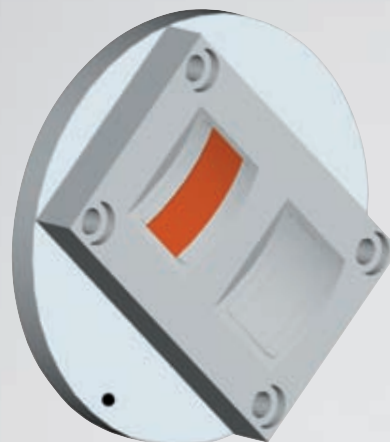
1. machine opens
2. eject finished part
3. advance axially (to clear ejector side)
4. rotate
5. retract
6. close



Rotating parts with machine-integrated rotary plate



Finished part removed by robot or by gravity



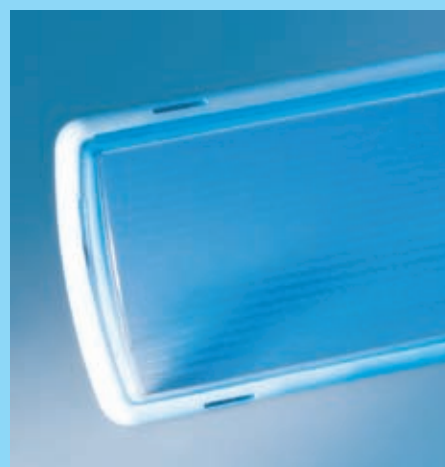
The mould half is rotated by means of the rotary table of the IM machine so that the preform can be finished-moulded in the bottom cavity.



Razor handle (PS/TPE)



Taillight (PMMA/PMMA/PMMA)



Lamp lens (PC/PC)

2. Rotation using rotary table integrated in mould

This is preferably used on machines with clamping forces up to about 2,500 kN. A major advantage of the adaptable rotary table is: the moving half of the mould can be equipped with rotary inserts or plates so that, where permitted by the part to be moulded, the mould need not be rotated as a whole. Drive is typically by core pull, hydraulic cylinder and tooth rack.

3. Rotation using rotary plate integrated in machine

This is preferable for large mouldings and machine clamping forces upwards of 2,500 kN. It is a variant that is specially profitable where several rotary moulds are used on the same machine because the machine-integrated rotary plate is only a one-time investment.

Drive

Mostly by means of a hydraulic motor and peripheral ring gear on the moving clamp end. An electric motor is provided on the El-Exis.

Technical features

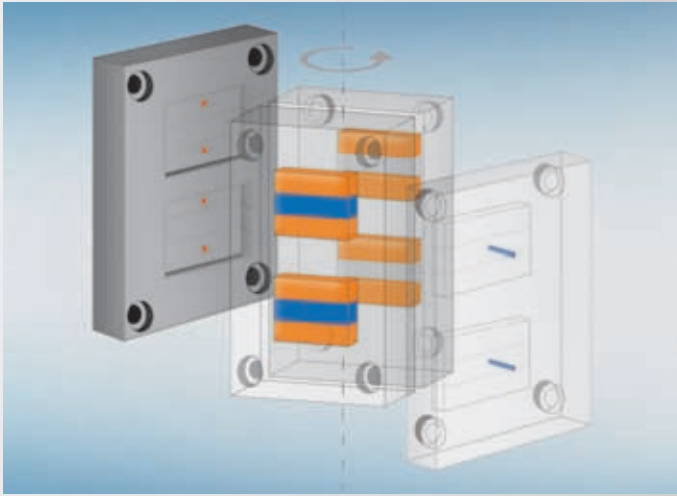
Rotary table solutions can also be combined with the transfer technique using standard machines; an example is a 3-component automotive taillight where the first and second shots are applied in a Multi two-component machine and, after fully automatic transfer, the moulding is finished in a System machine.

Machine configuration

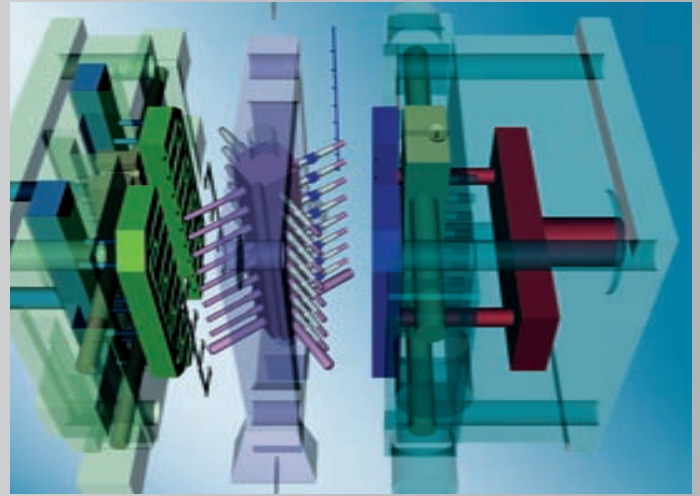
Multi-component machine with injection unit in V-, L-, R-, or P-position



ROTATING THE MOULDINGS



Principle of horizontal transfer technique using a turning plate



Gram technology with a three-component mould on a Multi h/h/v, 90° rotation and de-moulding in four stations



Screw caps (PE/PE)



Reclosable spouts for drink cartons (PE base with PP cap)



Cross valve (PP/PP)

4. Rotation with a turning plate

An alternative to the transfer by means of a machine-integrated rotary table or indexing plate is the horizontal rotation technique. Here, the mould concept provides for a stack mould with two parallel parting lines in tandem in which are located the cavities for the first shots and second shots. Transfer of the preforms is by turning a centre plate ("turning plate") about its vertical centre axis. For a given machine size, the use of the turning plate, because of double the number of cavities, provides almost double the output or, conversely, a smaller injection moulding machine will be sufficient for the same number of cavities.

5. Rotation with Gram technology

The Gram technology is a special, patented transfer for multi-component injection moulding. The mould is similar to a stack mould and incorporates two parting lines. As the mould opens, the centre plate is rotated about its vertical axis, indexing being possible in steps of 90° and 180°. Once opening is completed, the centre plate is rotated about its vertical central line. The preforms remain in the centre plate and are turned to face the moving platen. The mould then closes again and the second component can be delivered. Key advantages: the Gram technology shortens opening strokes and cycle times. Since the projected moulding area is halved, there is a reduction in the size of the clamping unit.

Technical features

Drive of the centre plate is by a hydraulic or electric motor. The second unit must be capable of travelling through to ejector end.

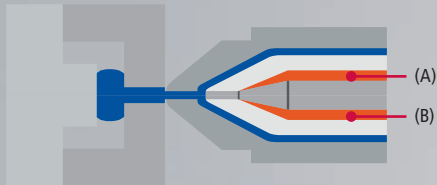
Machine configuration

Multi-component machine with injection unit in V-, L-, or R-position

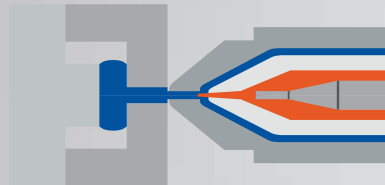


SANDWICH TECHNIQUE

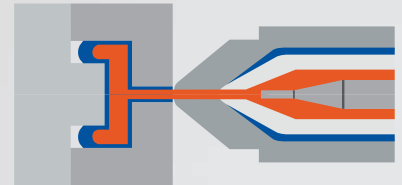
Filling phase in sandwich process



1. Start. Filling of skin component (A)



2. Parallel filling (A + B)



3. Filling of core component (B)



Defined and reproducible marbling (PS/PS)



Lavatory seat (PP/PP)



Telephone housing (ABS/ABS)

The process

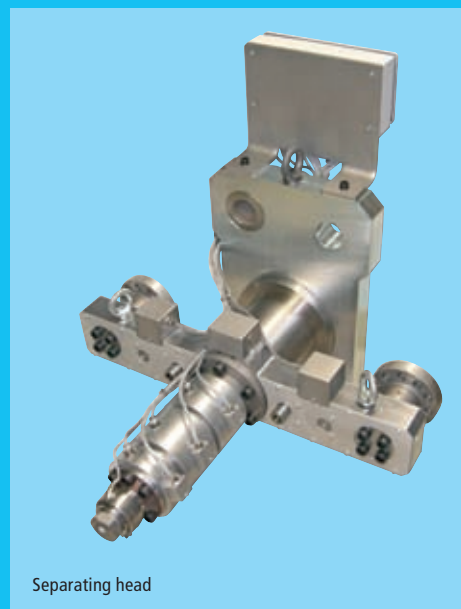
Sandwich-moulded parts are characterised by three-layer construction using two components; the plastic melts are controlled by a separating head so that the first component forming the skin is injected around the second component which forms the core. Rigid-and-flexible or flexible-and-rigid combinations and the cost-saving use of recycled materials for the core are possible, as are precisely reproducible marble and zebra patterns.

Special features

Separating head: a heated melt guiding system to merge and exactly control the two melt flows to form an annular skin component and the core component inside. Machine configurations in V-, L-, R- and P-positions.

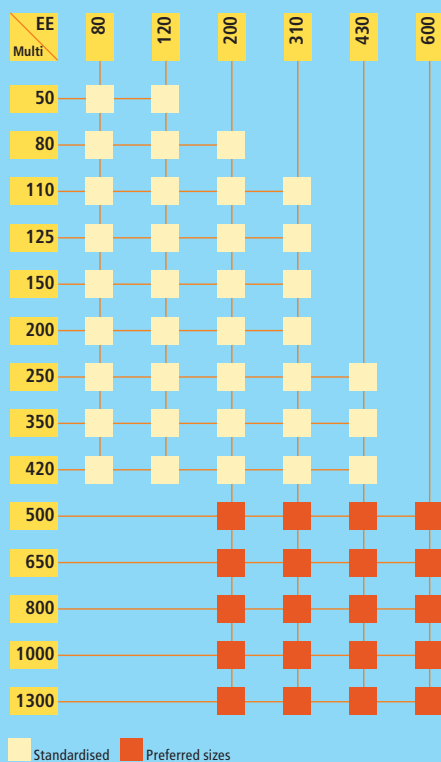
Machine configuration

Multi-component machine with injection unit in V-, L-, R-, or P-position

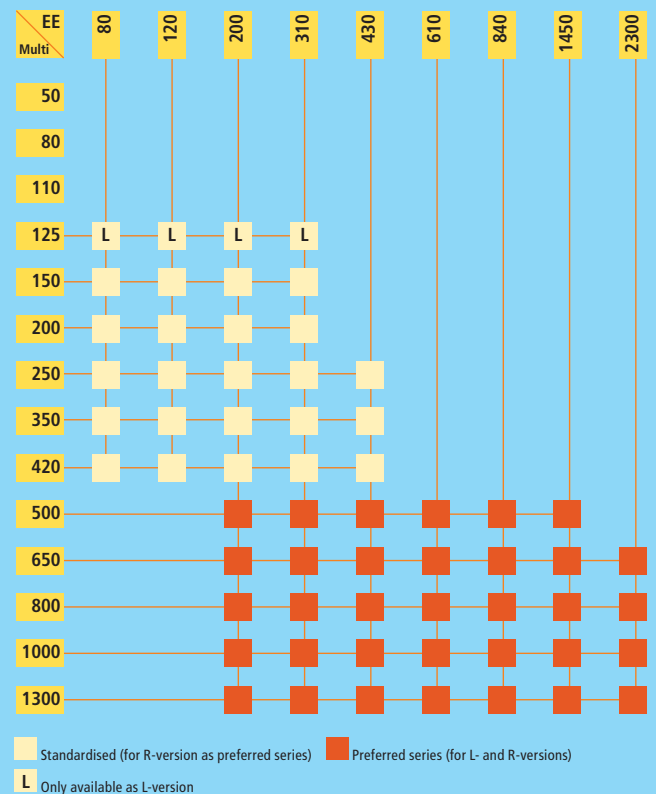


Separating head

Second unit in V-version



Second unit in L- and R-version



Machine technology tailored for the job

All Multi machines extend from the proven technology of the Sumitomo (SHI) Demag building-block system. Aside from the attractively priced, standardised series from 500 to 4,200 kN clamping force with two injection units in three alternative configurations, Sumitomo (SHI) Demag's offering includes the wide range of Multi machines to meet users' specialised requirements:

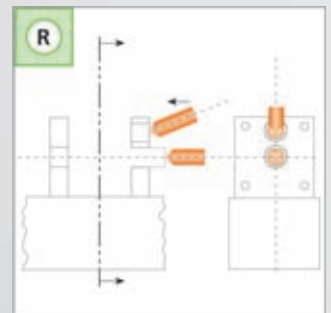
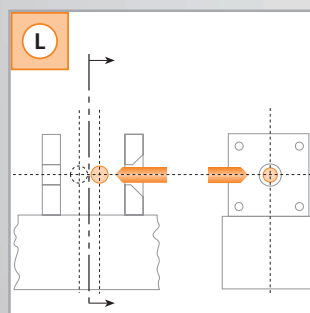
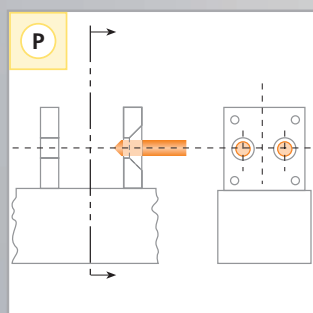
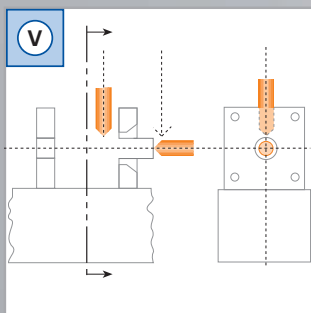
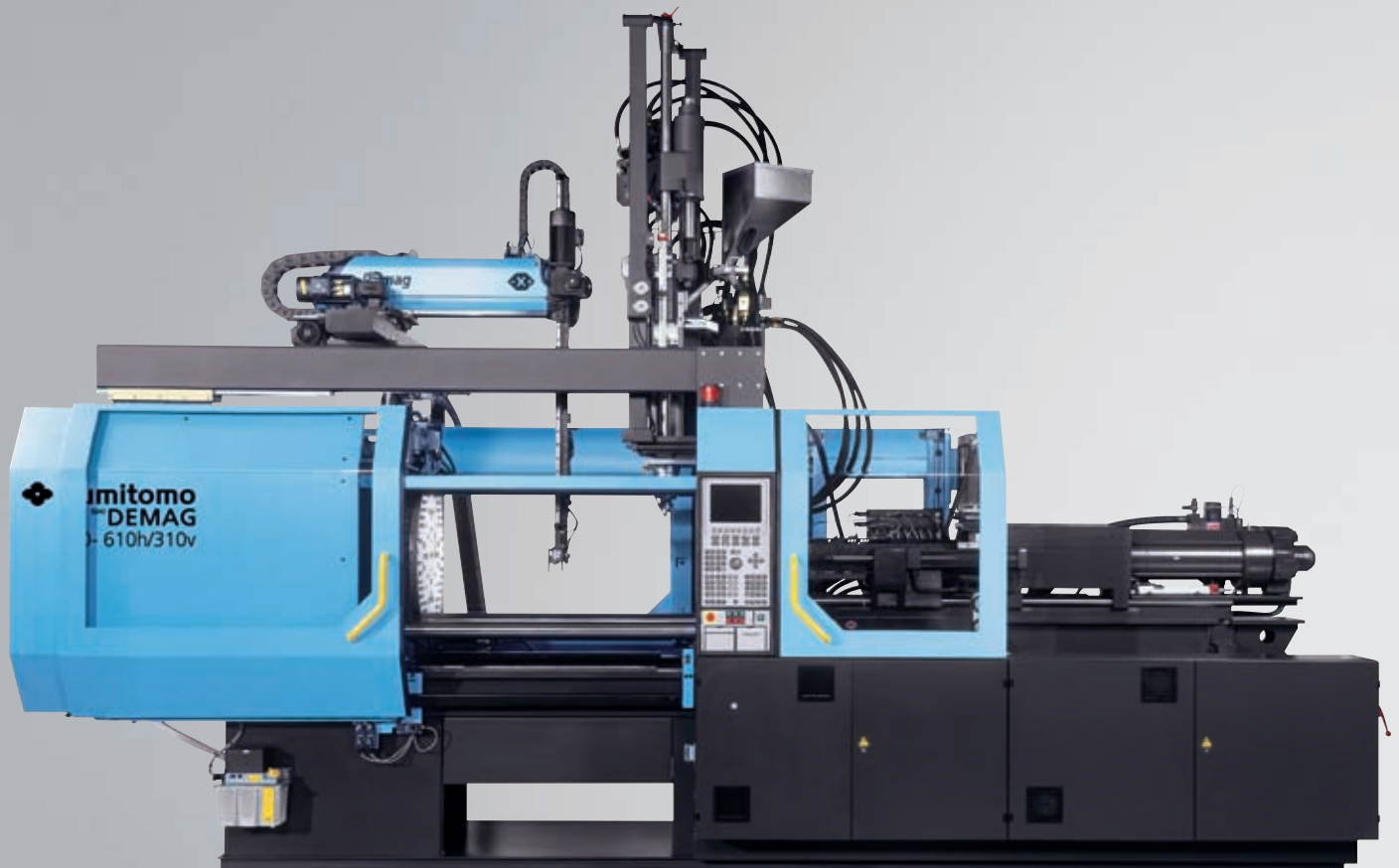
- Sumitomo (SHI) Demag manufactures Multi machines with two, three or four injection units in a clamping force range of 500 to 13,000 kN on the basis of the time-tested toggle series.
- Where the usual tiebar distances are not sufficient, the multi-component machine is also available on the basis of a wide-platen machine with a very generously dimensioned mould space.

- Based on the fast-cycling series El-Exis, the Sumitomo (SHI) Demag range also includes the two-component machines El-Exis Multi.
- Vertical injection moulding machines are also available as two-component machines.
- For users wishing to upgrade their existing standard machines, Sumitomo (SHI) Demag also offers retrofit kits dubbed the Multi-plug (for details see page 19).

Powerful twin pumps

Sumitomo (SHI) Demag's standard range of Multi machines between 500 and 4,200 kN clamping force and two injection units meets most requirements of multi-moulding. All machines are equipped with two powerful hydraulic variable volume pumps. During mould filling, each injection unit is served by

a variable pump. Consequently, both injection capacity and plasticising capacity are clearly defined and amenable to exact calculation. Control of the injection speed, hold pressure, back pressure and screw speed during plasticising is independent on each of the two units. Thus, Multi machines satisfy all conditions – even in their basic design – to operate the sandwich process with the necessary degree of precision.

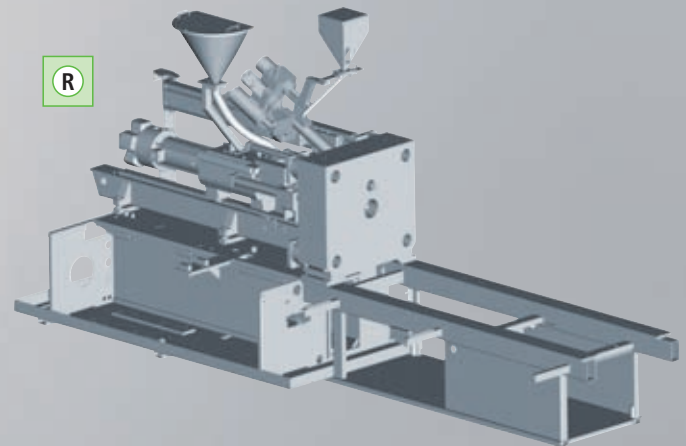
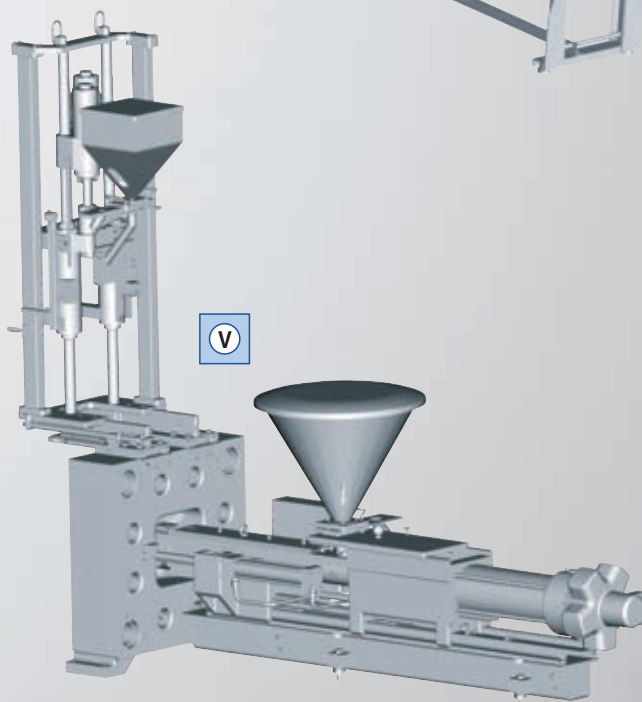
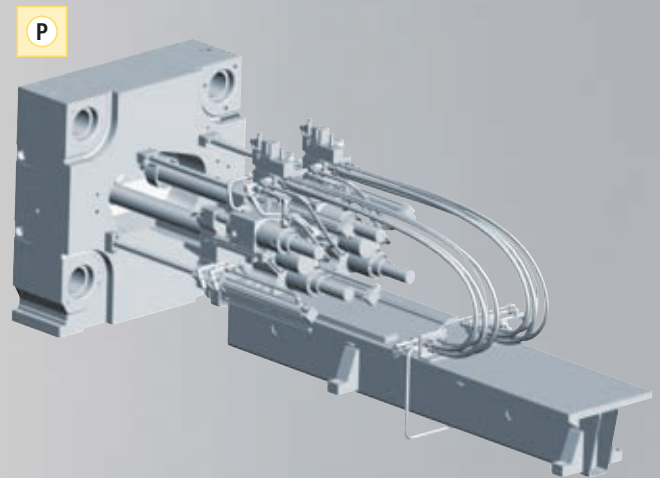
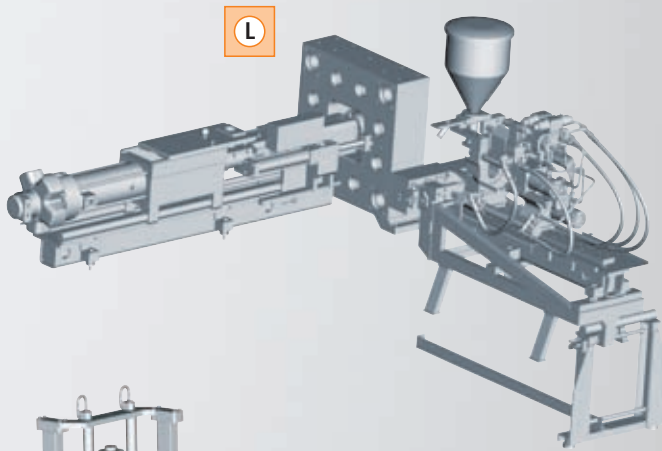


During the opening and closing movements, the clamping unit is fed by one of the pumps. The other pump provides power for the secondary movements, ejectors and cores, and also for the rotary drives, if any. This concept enables parallel movements to be performed on Multi machines with very simple means. If only the horizontal injection unit is used on the Multi machine, the added power of both pumps will be available for this unit.

Flexible configuration

To provide flexible configurations tailored to the needs of specific applications with respect to clamp force, shot weight, and plasticising capacity, the different injection units can be exchanged at little cost by Sumitomo (SHI) Demag Service.

All sizes of the Multi series are equipped with the 20 D long cylinder of the Sumitomo (SHI) Demag modular range. A large number of accessories and equipment packages for multi-colour and multi-component injection moulding are available to complement the Multi machine offering.



Generally, all production techniques described can be carried out with the injection unit in any of the four positions. And: whichever position the user prefers, the Multi can always be operated as a one-component machine, too.



Advantages

- High mechanical stability
- Lends itself well to large injection units
- Ready access for linear robots
- Injection is possible into parting line
- Permits use as single-colour, one-material machine



Advantages

- Small footprint
- No additional machine bed
- Ready access to mould
- Injection possible into parting line
- Permits use as single-colour, one-material machine



Advantages

- Small footprint
- Ready access to mould
- Ready access for linear robots
- Ideal as sandwich machine with large shot weights



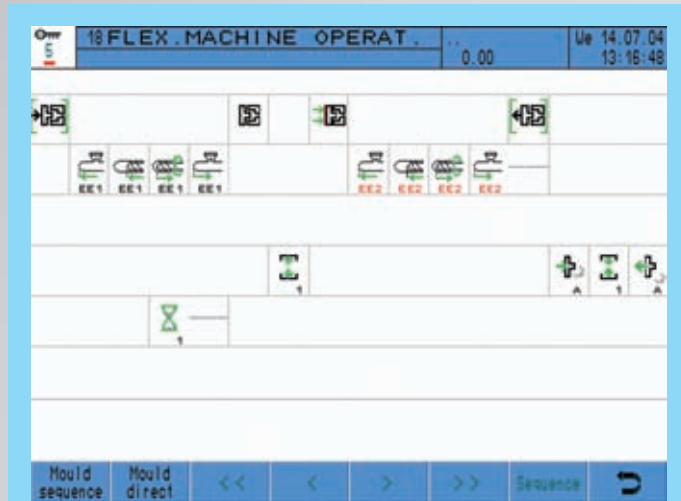
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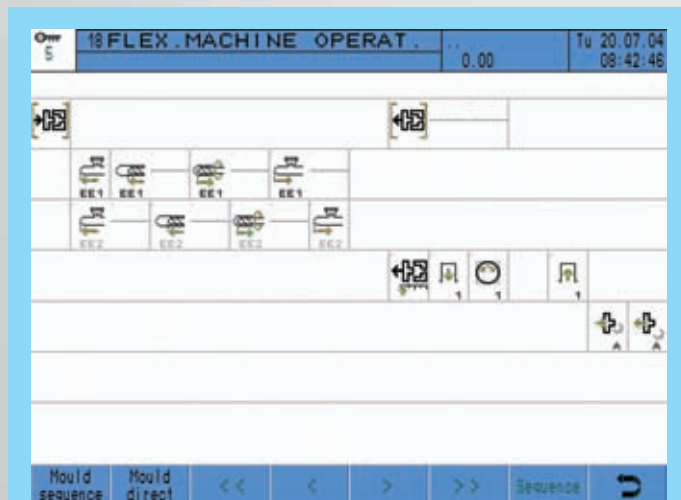
TALENT FOR SMART CONTROL

Ergocontrol for the Multi

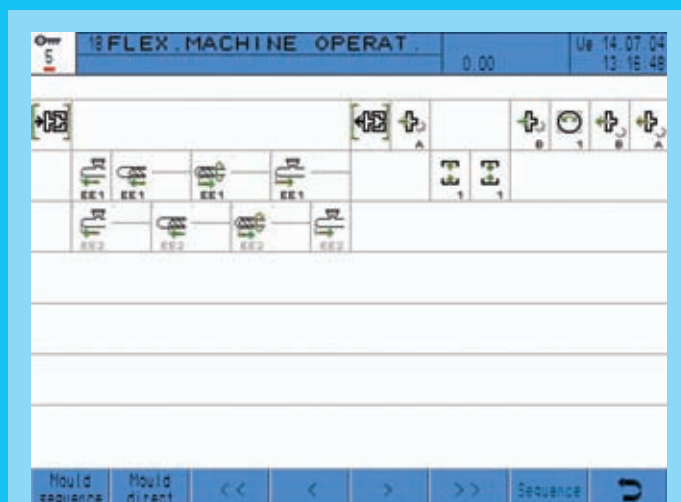
One of the aspects that characterises multi-component technology is the large number of different function sequences for the moulds. With this in mind, Sumitomo (SHI) Demag has developed the screen page 18 "Flexible machine sequences" on its Ergocontrol operator terminal. This page facilitates the selection of the timed sequences of all necessary operations and process steps and provides a clear display in the form of pictograms. In order to simplify the programming of the machine for new moulds, standard sequences of the injection units are predefined to be called up from a selection menu. All further functions, specifically the sequences on the clamp end, are called up individually. With these functions being presented in logic groups on the selection menu, even inexperienced operators will be able after a very short time to navigate through the program levels – a maximum of four – by means of the figures displayed next to the clear text legends.



Machine sequence for core-back process



Machine sequence for transfer by means of a rotary table



Machine sequence for transfer by means of an indexing plate

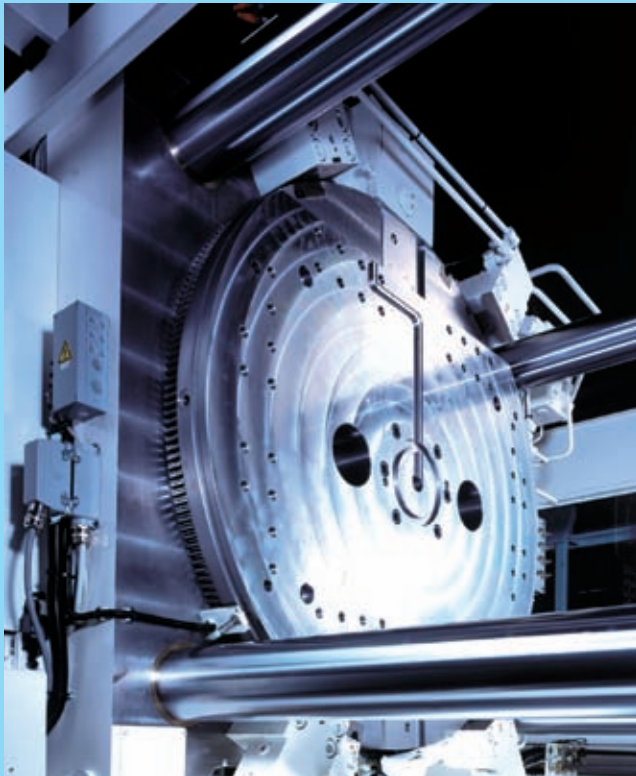


Ergocontrol with enhanced function key pad

THE SMART TWIST

1 The machine-integrated rotary table

- High speeds of rotation
- Self-optimising rotary movement
- Ejector holes to Euromap or freely selectable
- Compact, low-silhouette design
- High carrying capacity for heavy moulds
- Hydraulic, or, alternatively, electrical drive
- Available for integration into all Sumitomo (SHI) Demag machines from 500 kN to 13,000 kN



Over 5	112TURN MOULD	0.00	08:33:45
M.rotary table		Set	Actual
Turn mould -position [°]		0	0.0
Turn mould -turning time [s]			0.00
Turn mould parallel			
Start position [mm]			0.1
Control position [mm]			
Mould turning direction			
Turn mould -pressure [bar]	120	120	
Turn mould -V [%]	80	80	
Turn mould only to the right			
Turn mould -setting mode	V	P	
Mould sequence	Mould direct	Centring rot.table	

Rotary tables and drives for the Multi

1 The rotary table integrated in the machine

Sumitomo (SHI) Demag's self-optimising, machine-integrated rotary table is designed to access 120° and 180° positions. The self-optimising function eliminates the need for times and travels to be set manually. All the operator has to do is to enter the desired maximum speed via the controller. Over a few cycles, the machine then optimises the speed of rotation plus acceleration and deceleration phases – allowing automatically for the mould weight and ensuring a gentle approach to the end position. Optimisation reduces the times for rotation – down to as little as 0.8 seconds. Moreover, the rotary table movement, which takes place in parallel with mould opening movement, provides speed advantages for the transfer and shortens cycle time.

The cooling galleries in Sumitomo (SHI) Demag's machine-integrated rotary table feature large cross-sectional areas in order to ensure low pressure losses in the feed lines for cooling media. The rotary flow divider can be removed from the front of the clamping platen in order to gain sufficient space for a central ejector bar when using a standard mould.

2 The rotary table adapted to the machine

A machine-adaptable version is preferred where the rotary table is used only for a short period of time on the same machine and the moulder frequently uses core back, indexing plate, or standard moulds for that matter, on the machine. Removal of the rotary table permits the total clamping area on the moving platen to be

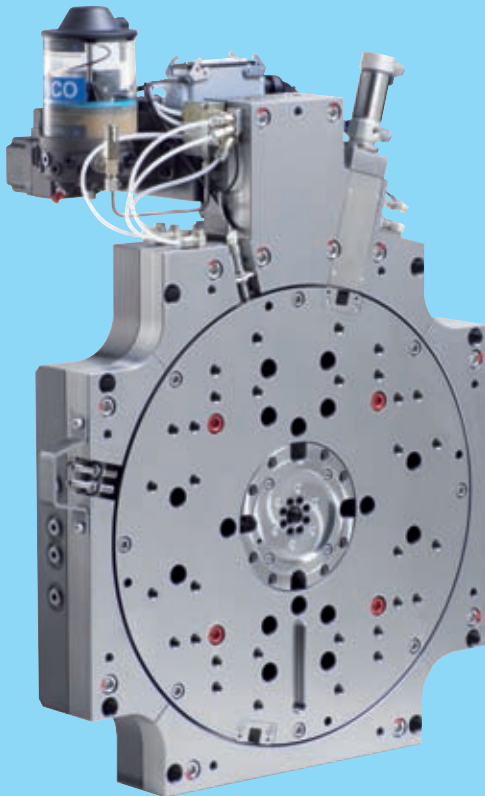
better utilised, and increased mould space is obtained, too. The ease of removing the adaptable rotary table makes Sumitomo (SHI) Demag machines fast and flexible (for example, for contract moulders). The switch-over points for speed change is controlled in the case of adaptable rotary plates via limit switches. Unlike the self-optimising, integrated variant, the speed and pressure parameters have to be entered manually on the Ergocontrol operator terminal.

The adaptable drive for indexing plates

If several indexing moulds are used on a Multi machine, the use of an adaptable indexing drive is recommended in order to eliminate the need for individual rotary drives in the individual moulds. Adaptable indexing-plate drives come with a rotary flow divider and are supervised by

2 The machine-adapted rotary-table

- Gain in flexibility
- Simple removal
- Total clamping area can be utilised with the rotary table removed
- With the rotary table and indexing drive removed, extra mould space is gained
- Hydraulic drive (enquiries invited for electrical drives)
- Integration possible in all Sumitomo (SHI) Demag machines



Over 5		113 MOULD ROTARY FUNCTION		0.00	12:58:07
Mould turning function		Set		Actual	
Turn mould -turning time [s]				0.00	
Turn mould parallel				0.1	
Start position [mm]					
Control position [mm]					
Mould turning direction					
Turn mould -pressure [bar]		100	100		
Turn mould -V1/-V2 [%]		30	10	10	0
- Start V2 after time [s]		1.80	1.80	0.00	0.00
Turn mould only to the right					
Turn mould with braking cont.					
Turn m.switching off in end posit.					
Turn mould -setting mode		V		P	
Mould sequence	Mould direct			Centring rot. funct	U

limit switches. The flow divider is attached to the mould-mounted indexing bar and permits the passage of coolant into the indexing insert.

We offer machines both for integrated direct drives (horizontal rotary plates) as well as the necessary actuators and mechanical machine components for turning plates integrated into the mould. Our expert engineering team will be happy to advise you.

Sumitomo (SHI) Demag's Multi-plug range

Do you want to extend your existing injection moulding machine quickly and without any complications to be able to use multi-component technology? Do you want to be able to manufacture flexibly and profit from the growing market for multi-component parts? Then it's the Multi-plug you would wish to consider. Aside from the purpose-engineered, multi-moulding machine, the Multi, Sumitomo (SHI) Demag provides standalone injection units for retrofitting on standard machines. The Multi-plug enables every injection moulding machine to be extended for multi-moulding. Even two-component machines can be extended with the Multi-plug to operate as three-component or three-colour machines – saving costs, space and time. If you want to produce multi-component

parts occasionally on different-size machines without insisting on utilising each one to its full capacity, a machine-side unit involving a moderate amount of retrofit expense provides a distinct advantage in improving your flexibility. A machine that lends itself extremely well for such jobs is the V-position Multi-plug. The Multi-plug is adaptable to every injection moulding machine. For the V-configuration, there are five injection units available between the EE 80 and EE 430 whereas, for the L-configuration, there are seven injection units available between the EE 80 and EE 840.

Installation, commissioning and service are handled by Sumitomo (SHI) Demag's world-wide operating Service Division. Please contact your Sumitomo (SHI) Demag Service!

Brazil
 Sumitomo (SHI) Demag do Brasil
 Comercio de Máquinas para Plásticos Ltda.
 Av. Ceci, 608 – Galpao B14
 Tamboré
 06460-120 Barueri (SP)
 Tel.: +55-11-41 95-41 12
 Fax: +55-11-41 95-41 13
 E-Mail: brasil@demag-ergotech.com.br

China
 Demag Plastics Machinery (Ningbo) Co., Ltd.
 No.669, Kunlunshan Road, Beilun District, Ningbo,
 315800, Zhejiang Province, P.R.China
 Tel.: +86-5 74-86 18 15 00
 Fax: +86-5 74-86 18 15 18
 E-Mail: sales.cn@dpg.com

Shanghai Office
 6F, No. 1221, Hami Road,
 Shanghai 200335, China
 Tel.: +86-21-52 19 50 00
 Fax: +86-21-52 19 62 50
 E-Mail: shanghai@demag-ergotech.com.cn

CIS
 OOO Sumitomo (SHI) Demag Plastics Machinery
 Prombaza OAO "Stroitransgaz"
 d.Ascherino Leninskiy raion
 142717 Moscow region
 Tel.: +74-95-9 37 97 64
 Fax: +74-95-9 33 00 78
 E-Mail: info.plastservice@dpg.com

France
 Sumitomo (SHI) Demag
 Plastics Machinery (France) S.A.S.
 Zac du Mandinet
 9, rue des Campanules
 77185 Lognes
 Tel.: +33-1-60 33 20 10
 Fax: +33-1-60 06 28 89
 E-Mail: detf@dpg.com

Germany
 Sumitomo (SHI) Demag Plastics Machinery GmbH
 Altdorfer Str. 15
 90571 Schwaig
 Tel.: +49-9 11-50 61-0
 Fax: +49-9 11-50 61-2 65
 E-Mail: info-dpde@dpg.com

Italy
 Sumitomo (SHI) Demag
 Plastics Machinery (Italia) S.r.l.
 Torre 5 - Strada Anulare
 Quartiere S.Felice
 20090 Segrate - MILANO
 Tel.: +39 02 70309311
 Fax: +39 02 70309325
 E-Mail: marco.pizzi@dpg.com

Japan
 Sumitomo Heavy Industries, Ltd.
 Plastics Machinery Div.
 Head Office (Overseas Dept.)
 2-1-1, Osaki, Shinagawa-Ku,
 Tokyo 141-6025
 Tel.: +81 3 6737 2576
 Fax: +81 3 6866 5176

Poland
 Demag Plastics Group Sp. z o.o.
 ul. Jagiellońska 81-83
 42-200 Częstochowa
 Tel.: +48-34-3 70 95 40
 Fax: +48-34-3 70 94 86
 E-Mail: info@demag.pl

Spain
 Sumitomo (SHI) Demag
 Plastics Machinery (España), S.L.
 Pol. Ind. Can Calderón
 Avd. Riera de Fonollar
 Esquina C/Murcia, nº37-A, Nave F
 08830 – Sant Boi de Llobregat (Barcelona)
 Tel.: +34-93-6 52 95 30
 Fax: +34-93-6 54 78 10
 E-Mail: angel.lozano@dpg.com

United Kingdom
 Demag Hamilton Ltd.
 Accent House, Triangle Business Park
 Wendover Road
 Stoke Mandeville - Bucks HP22 5BL
 Tel.: +44-12 96-73 95 00
 Fax: +44-12 96-73 95 01
 E-Mail: salesUK@dpg.com

USA
 Demag Plastics Group Corp.
 11792 Alameda Drive
 Strongsville, Ohio 44149-3011
 Tel.: +1-4 40-8 76-89 60
 Fax: +1-4 40-8 76-64 38
 E-Mail: info-dc@dpg.com

The responsibility to ensure that everything runs smoothly

Many moulders today operate three shifts, some on 365 days of the year – this calls for a maximum of availability of the machines, spare parts, and service support.

Backed by highly skilled service teams, advanced spare parts logistics, and multiple service levels to address a customer's specific needs, we provide total support world-wide: from straightforward inspections through comprehensive maintenance, and extended warranties for high capacity utilisation levels to emergency hotline support, and training of your personnel.

Full documentation and a digital catalogue ensure that spare parts are delivered to you in a minimum of time, usually within a few hours. Users of older machines can have them upgraded by our retrofit service at fair prices, for instance, by state-of-the-art control software or for specialised injection-moulding processes. In short, the Sumitomo (SHI) Demag Service provides you with whatever support you need to complete your jobs efficiently and to schedule.

