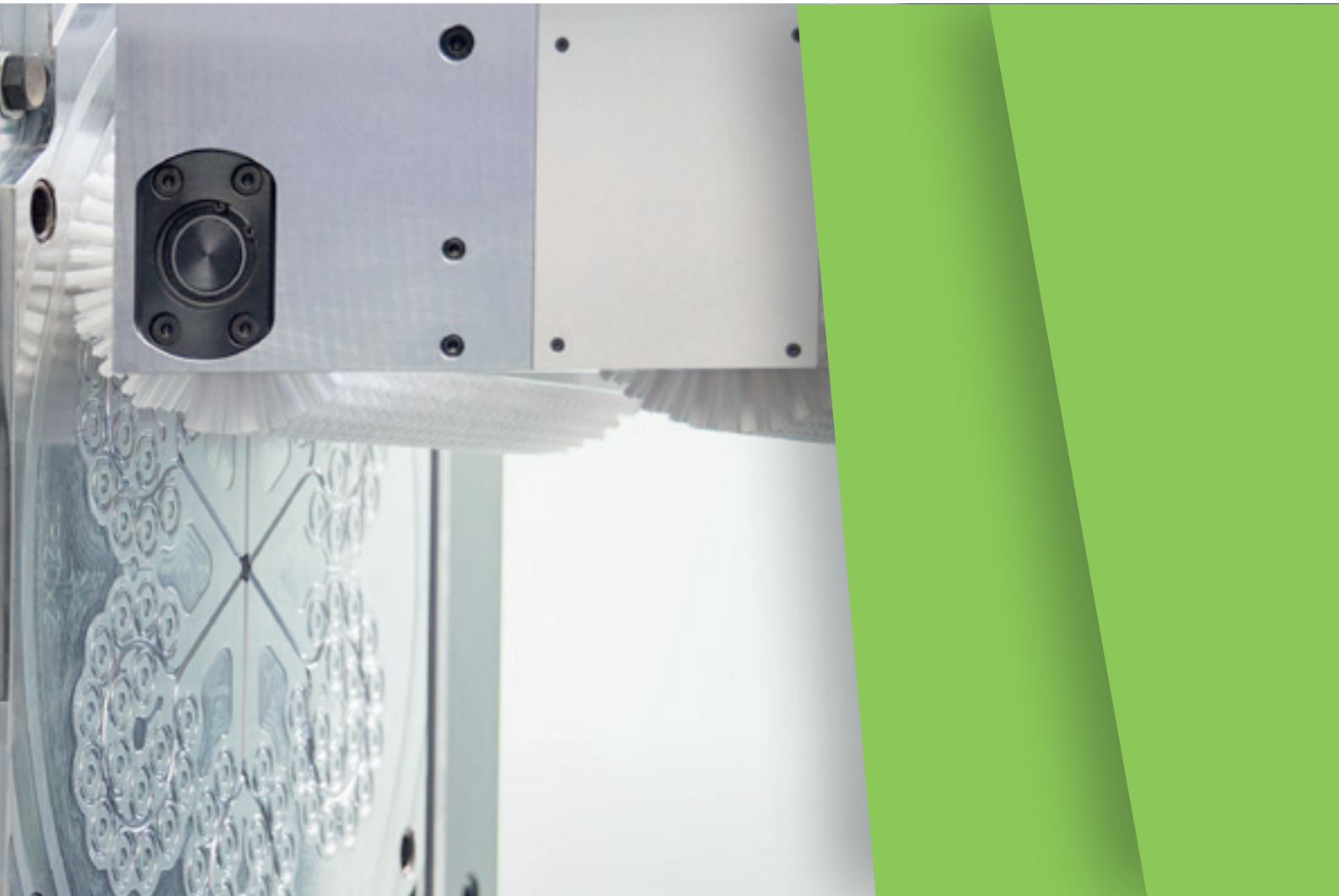


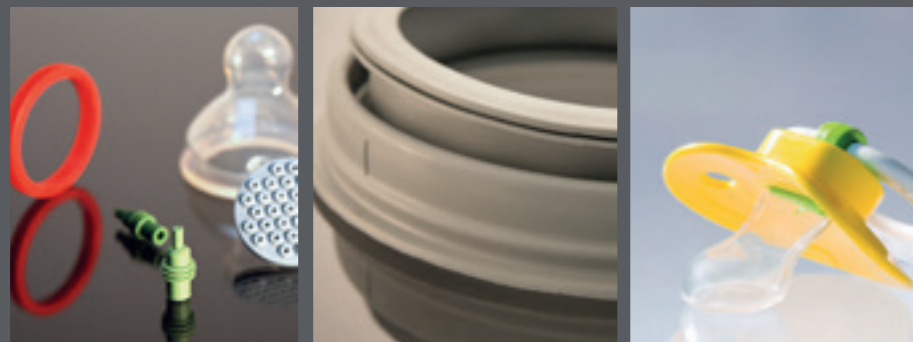
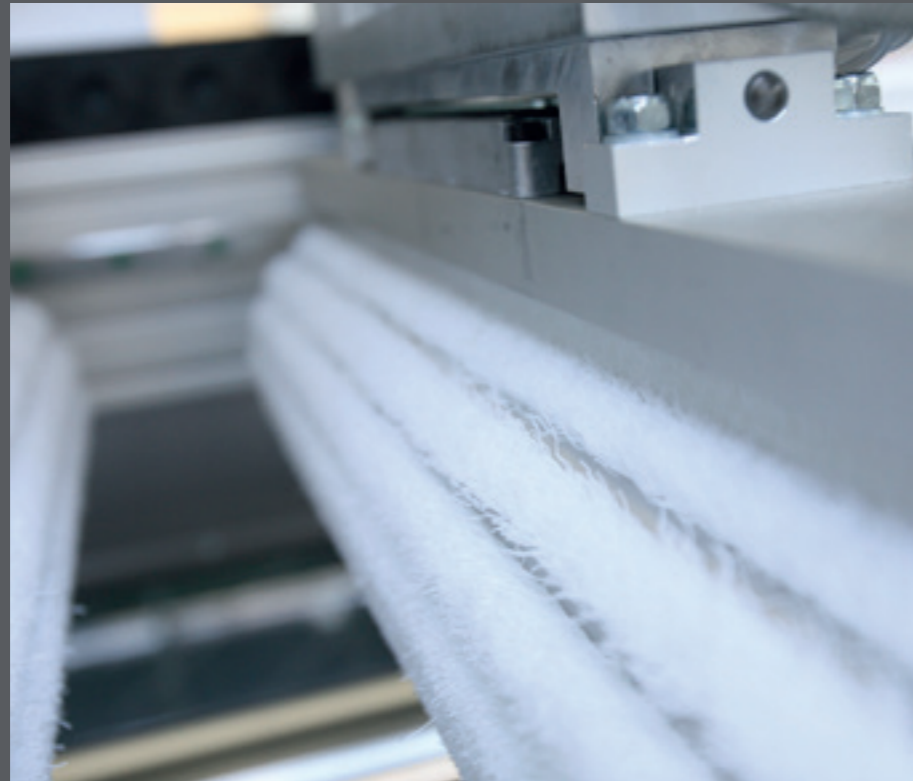
elast

Processing elastomers precisely, efficiently & reliably



ENGEL
be the first

ENGEL **elast**



the elastomer injection moulding machines **for special requirements**

Whether your elastomer products are designed to seal, dampen or provide protection: the ENGEL elast and the ENGEL flexseal are flexible and powerful packages for elastomer applications of all types. These complete series of machines and automation solutions are perfectly suited for highly-efficient, process-assured processing of rubber, solid and liquid silicone or thermoplastic elastomers.

- **homogenous material preparation** – thanks to FIFO or screw injection units for strip rubber or solid silicone.
- **very short cycles** – an injection moulding machine with machine movements specially designed for these tasks
- **high platen stiffness** – for the particularly stringent quality requirements in elastomer and silicone part production
- **minimal injection pressure losses** – thanks to very short nozzles
- **clamping force** – from 450 kN to 6000 kN
- **leading-edge technology** – more than 40 years of innovative solutions for the injection moulding of elastomers

Standard ENGEL machines



ENGEL flexseal 300 T

Producing flat seals and O-rings competitively

Using the new ENGEL flexseal, you can produce all kinds of flat seals and O-rings very efficiently in the smallest spaces. The newly developed hydraulic machine is suitable for all common rubber compounds and guarantees reliable and efficient processing. Thanks to the horizontal machine concept with a screw injection unit, the new ENGEL flexseal ensures very high manufacturing precision with the required small to mid-sized shot volumes. In addition, it supports fully automated processing with conventional brushing devices. Your special bonus: the ENGEL flexseal is equipped with the energy efficient hydraulic ENGEL ecodrive as standard equipment. Because of the long heating phases, you are able to achieve particularly large savings in the production of O-rings and flat seals thanks to ENGEL ecodrive.

Your ENGEL flexseal 300 T benefits

- a compact design
- precise and flexible
- injection unit can be selected individually
- compatible with existing moulds
- optimal access to the machine nozzle and strip feeder
- standardised interfaces for demoulding devices
- unobstructed discharge chute



ENGEL flexseal		330	500	650	750	1050
Injection unit						
Screw diameter	mm	30/35	35/40	40/45	45/50	50/55
Max. injection capacity	cm ³	113/154	192/251	251/318	318 / 392	422 / 510
Spec. injection pressure	bar	2400/2175	2390/2020	2400/2040	2360 / 1910	2330 / 2050
Clamping unit		ENGEL flexseal 300 T			ENGEL flexseal 300 T	
Clamping force	kN	3000			3000	
Opening stroke	mm	550			550	
Min. mould installation height (with heating platens)	mm	40			40	
Max. daylight	mm	590			590	
Heating platen dimensions (H x W)	mm	550 x 650			550 x 650	
Tie-bar distance	mm	650 x 650			650 x 650	
Drive unit						
Drive power	kW	15.2			16.9	
Dimensions						
Length	mm	4250			4750	

The flexible power pack

On request, the new ENGEL flexseal can also be delivered with larger injection units.

ENGEL elast horizontal victory

Rely on more flexibility and efficiency: the tie-bar-less ENGEL elast horizontal victory is a proven all-rounder among the elast machines. Its flexible modular system makes it extremely well suited for producing elastomer components of the highest quality with very diverse requirements. In addition, its tie-bar-less technology, which has proven itself for over 25 years, enables you to use relatively small injection moulding machines even for large moulds. You therefore only need to invest in the clamping force you actually require – and have more room for new ideas.

Advantages

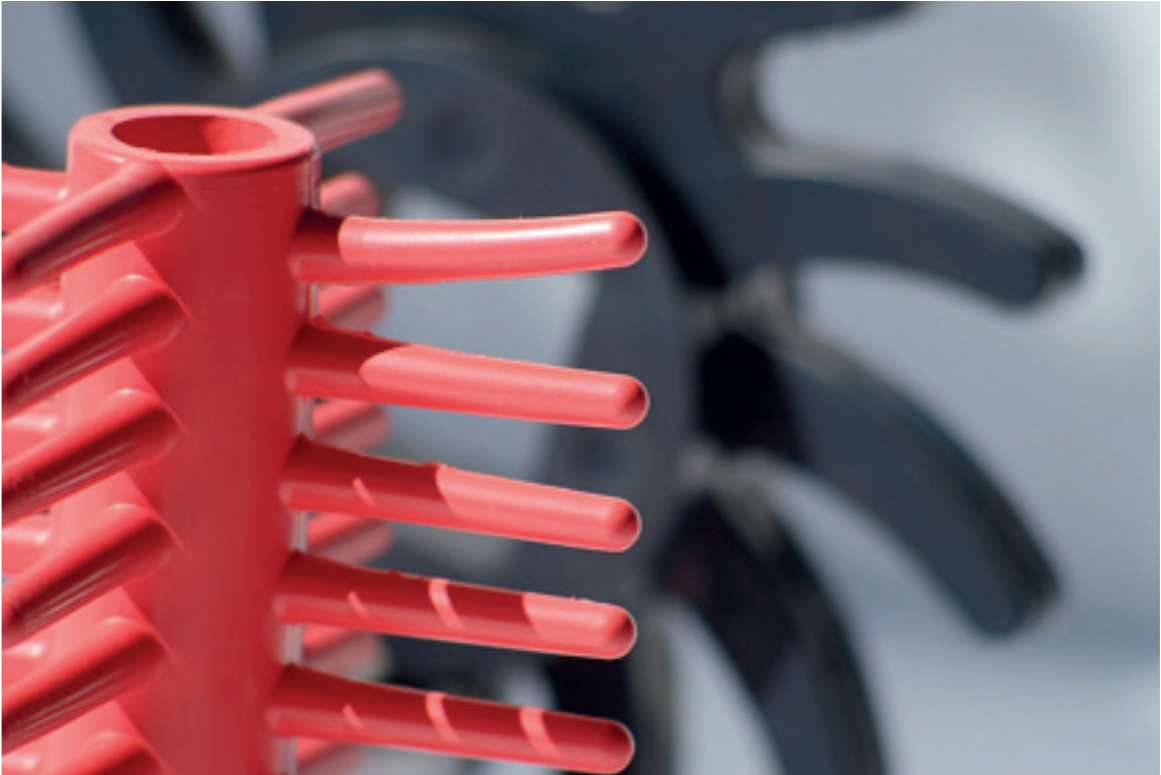
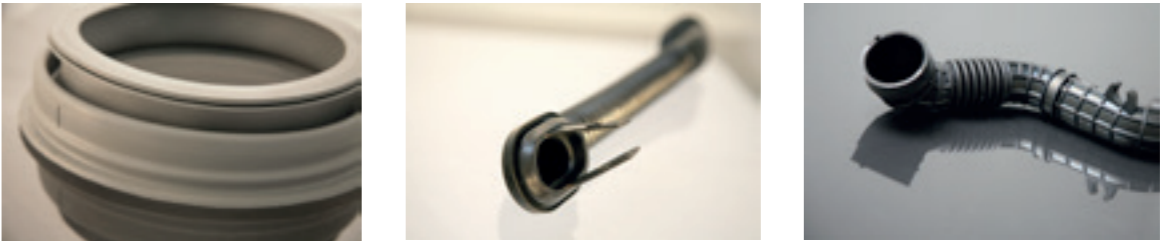
- large mould area
- excellent energy efficiency
- short set-up times
- ideal for automation
- optimal mould protection
- consistent party quality
- complete cleanroom compatibility

ENGEL elast horizontal H

Large moulds on a small footprint: the ENGEL elast horizontal H is always the right choice when you are producing components with large shot volumes in large moulds. The low operating height of the nozzle provides optimal access to the mould mounting area. This horizontal machine is easy to use for all common materials and can be equipped with automation at any time, even retrofitted at a later date.

Advantages

- large mould area
- excellent energy efficiency
- ideal for automation
- optimal mould protection
- consistent party quality
- complete cleanroom compatibility



ENGEL elast horizontal victory + H	Clamping force	Injection volume	Heating platen dimensions		Machine chute width
	kN	cm³	Standard mm	Maximum mm	mm
ENGEL elast100 - 120 VC	1000-1200	280-570	360 x 500	440 x 550	tie-bar-less
ENGEL elast 160 VC	1600	430-1000	440 x 550	500 x 550	tie-bar-less
ENGEL elast 180 - 220 VC	1800-2200	430-2000	500 x 550	550 x 650	tie-bar-less
ENGEL elast 260 - 300 VC	2600-3000	750-3600	550 x 650	650 x 650	tie-bar-less
ENGEL elast 400 H**	4000	750-8000	710 x 920	810 x 1020	820 x 820



ENGEL elast vertical

More flexibility for elastomer production: thanks to their modular design, the ENGEL elast vertical is well-suited for a wide variety of applications. Whether you intend to overmould inlays, must perform diverse tasks manually or have products that require the use of repositioning systems: this vertical machine provides you with an optimal operating height and is ideally suited for small and large shot volumes. Your ENGEL FIFO injection unit ensures optimal homogenisation of the material in preparation and prevents unnecessary injection pressure losses thanks to the short, fixed-contact injection nozzle.

Advantages

- small footprint
- high platen stiffness
- optimal energy efficiency
- many options for adding sliding platen or shuttle systems
- flexible shot volumes

ENGEL elast vertical	Clamping force	Injection volume	Heating platen dimensions		Tie-bar distance
	kN	cm³	Standard mm	Maximum mm	mm
ENGEL elast 160 V	1600	430-2000	500 x 550	550 x 650	590 x 295
ENGEL elast 260 V	2600	750-3600	550 x 650	650 x 750	660 x 320
ENGEL elast 400 V compact	4000	1500-6000	710 x 920	810 x 1020	820 x 500
ENGEL elast 600 V	6000	2700-12000	800 x 1100	900 x 1200	940 x 620

ENGEL elast v-xs

More flexibility for insert moulding: the ENGEL elast v-xs is ideal for the corner moulding and/or overmoulding of inserts. It is versatile and can be used for processing all common materials such as rubber, solid and liquid silicone and TPE. This vertical machine constructed with a C-frame design closes and injects from above and ensures maximum safety for your production thanks to its 2-hand operation controls.

Advantages

- small footprint
- ergonomic operating height
- unobstructed access to the mould mounting area
- optimal energy efficiency
- maximum precision

ENGEL elast v-xs	Clamping force	Injection volume	Heating plate dimensions
	kN	cm³	mm
ENGEL elast 45 v-xs*	450	49-570	320 x 400

ENGEL special applications

ENGEL duo 700 and 800

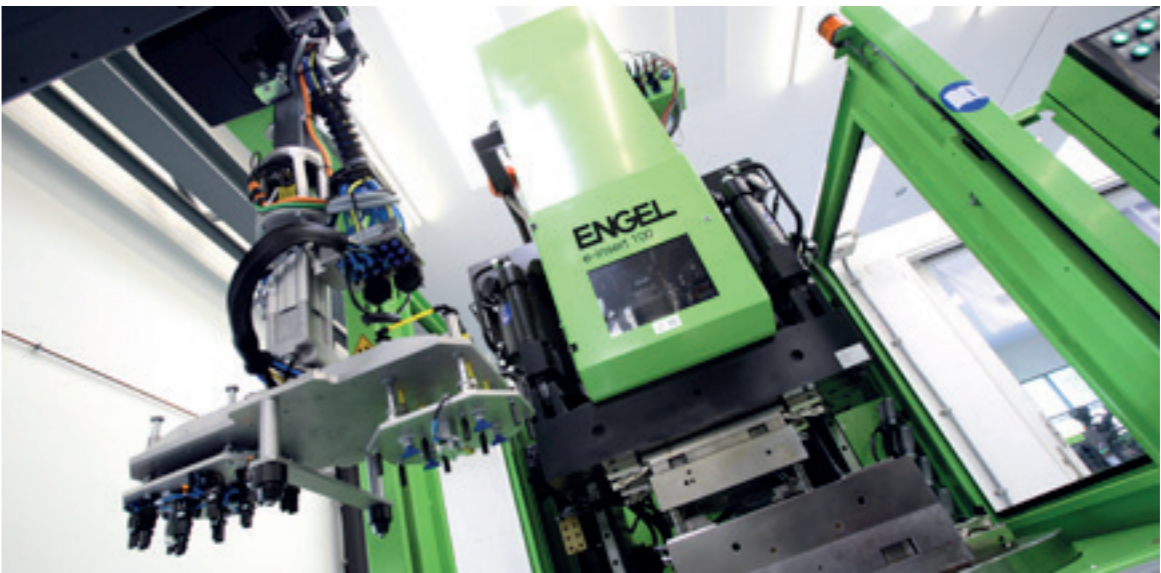
More power in less space: the ENGEL duo stands out with its sophisticated, compact machine concept and optimal automation options. It makes it possible to use large moulds on a comparatively small footprint and is therefore ideal for the production of elastomer components with large shot weights. Its proven two-platen technology, the perfectly designed variable injection unit and the flexible drive concept allow for particularly fast, safe, reliable and energy-efficient production and optimal part quality.

ENGEL victory / e-victory / e-motion

The right machine concept for any requirement: the proven and flexible machine concepts from ENGEL provide the full spectrum of application possibilities. For example, the universal tie-bar-less ENGEL victory for the efficient production of technical components. Or the tie-bar-less ENGEL e-victory that is ideal for fabricating precision technical parts with its high-precision servo-electric injection unit. The strengths of the all-electric ENGEL e-motion, on the other hand, come to the fore above all in high-end applications such as for medical technologies and multi-component solutions.

ENGEL insert / e-insert

Perfect inlay overmoulding: the ENGEL insert is ideal for special applications with rotating or sliding table systems. This extremely compact injection moulding machine is available with a vertical or a horizontal injection unit to suit the requirements of your mould. The horizontal mould parting line guarantees easy and precise insertion and holding of parts in the cavities. For particularly high demands on precision, it is available with a servo-electric injection unit and the innovative ENGEL ecodrive hydraulic drive system in the ENGEL e-insert variation.



ENGEL elast special applications

ENGEL elast duo 700 / elast duo 800

Horizontal large-sized machines with flexible injection volume for fully automatic production of rubber parts

ENGEL victory / e-victory / e-motion

The ideal machine for any application with "rubber" technology package, small to medium injection volume

ENGEL insert / e-insert

Vertical machine for economic overmoulding of insert parts with "rubber" technology package

ENGEL **FIFO** injection unit

The FIFO principle

First in, first out: this specially-developed injection unit ensures optimal processing for all elastomers. The principle is that the first material that is plasticised is also the first to be injected into the mould. In this way, the thermal state of the entire shot volume is kept constant and the injection can take place directly and without having to be redirected or take a circuitous route. In addition, almost all of the preselected injection pressure is available for mould filling thanks to the extremely short injection nozzle.

The injection unit

The short injection nozzle makes it possible to select the melt temperature so that vulcanisation sets in immediately after the mould has been filled. In this way, you can quickly achieve a very high and constant melt temperature.

The plasticising unit

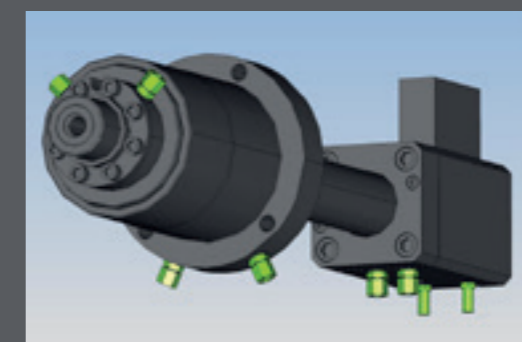
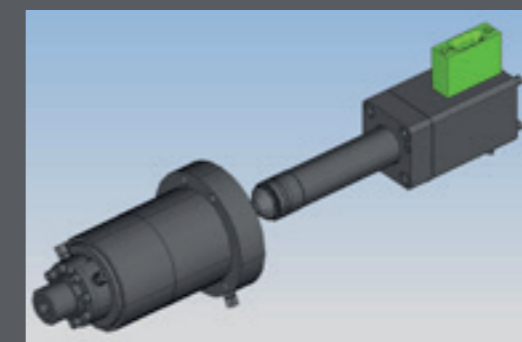
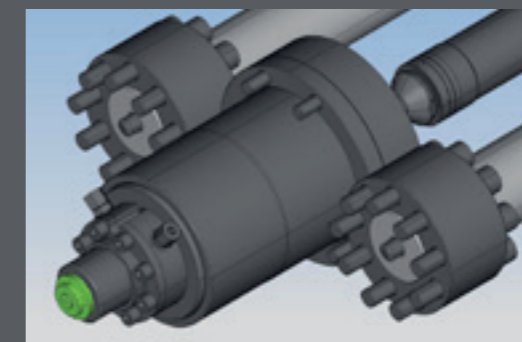
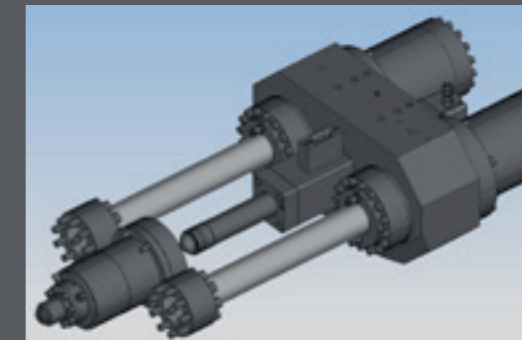
Easily process mixtures that are difficult to feed: the strip feeder of the plasticising unit is supported by a tangential intake bag in the plasticising barrel. Because the complete length of the screw is available throughout the plasticising process, a uniform temperature profile is achieved for the entire shot volume.

Temperature control

Optimal temperature control: the ENGEL FIFO injection unit is equipped for heating and cooling via two external temperature control units. During the injection moulding process, you can monitor the temperature in the injection nozzle at all times via the ENGEL CC300 machine control unit. Optionally, the temperature control for the intake block, the plasticising barrel and the injection chamber can also be integrated.

The screw injection unit

Greater precision for small and mid-sized shot volumes: the optimal accessibility as well as the very short, temperature-regulated nozzle prevent pressure losses during injection of shots up to 500 ccm in volume. The extra bonus: these injection units can be adjusted in height to perfectly accommodate varying mould insertion depths.



ENGEL roto feeder

The roto-feeder **for stable processes**

Achieve top quality without interruptions: the ENGEL roto feeder provides optimal process reliability for feeding material to the plasticising unit. A rotating hopper with counter-rotating screw transports the material continuously, without inclusions and at a constant pressure to the plasticising barrel. The gap between the screw and the hopper can be adjusted variably and a self-cleaning mechanism ensures clean results and extra operator friendliness.

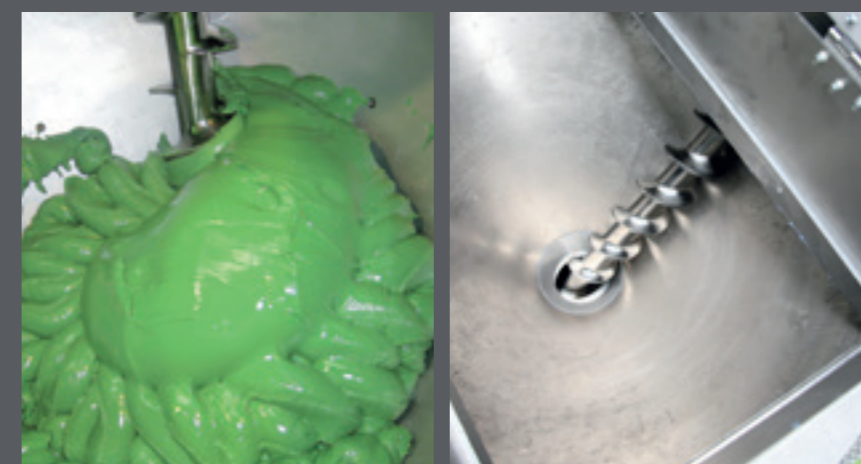
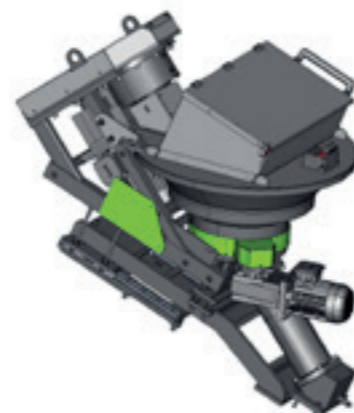
The variants

For solid silicone: **ENGEL roto feeder HCR 50 + HCR 105**

For duroplastics: **ENGEL roto feeder BMC 50 + BMC 105**

The benefits for your production

- encapsulated system
- constant feed pressure thanks to a pressure sensor
- optimal air evacuation
- interruption-free material feed
- low material warning via sensor
- swivel-mounted for easy cleaning upon material changeover
- electric drive
- speed control via frequency inverter (screw)
- retrofittable down to ENGEL EC 100 control unit generation



ENGEL **ecodrive**

efficient, clean, durable

uses up to 70% less energy compared to conventional hydraulic machines
uses up to 100% less cooling water to cool the oil



the benefits of the revolutionary hydraulic concept:

- **low energy consumption**
matches the level achieved by all-electric machines
- **no oil cooling**
reduced investment costs and less energy consumed for cooling water
- **hydraulics on board**
high energy efficiency levels even in the case of moulds with hydraulic core pulls
- **ideal for cleanroom applications**
no air turbulence and low thermal emissions
- **"silent" machine**
pleasant working conditions and extremely low noise levels
- **low maintenance costs**
robust fixed displacement pumps with very long lifespans

ENGEL **CC300**

Ready for smart operation of machine and robot

Fully integrated manufacturing cells are as easy to navigate through the production process as a smartphone. The simple, safe and comfortable operation is done directly at the injection moulding machine via the innovative operating panel or via the lightweight C70 hand-held touch terminal.



intuitive operation: uniform, clear and logical operation & relevant information without screen page change

simple process adjustments: operators can easily carry out adjustment tasks with the ENGEL wizard quickly and without difficulties

variable operation possibilities: direct, safe and continuously variable control of all movements with e-move on the panel or via the ergonomic and lightweight C70 hand-held touch terminal

greater productivity: get started straight away with perfectly synchronised movements

greater safety: perfectly optimised joint data management for machine and robot – no EUROMAP 67 interface necessary

ergonomic design: individually configurable, functional, attractive and robust hardware with a modified user interface

top readability: displays with excellent contrast under all lighting conditions and at all angles

ENGEL automation

Automation competence **at all stages**

ENGEL designs and delivers complete system solutions in which all the components interact in perfect harmony with each other, from the injection moulding machine to the robot and to specialised part-removal modules and other peripheral automation equipment. Thus excellent part quality, stable processes and maximum productivity are guaranteed, regardless of whether the production task is simple or highly complex.



ENGEL **brush and ejector modules**

Simply connect, switch on and get started: the ENGEL brush and ejector modules make it possible for you to retrofit your manufacturing cell individually and flexibly with multiple brush modules or ejector devices via a standardised interface. A blowing or spraying module are also available.



ENGEL **viper**

The high-performance linear robot: the ENGEL viper perfectly complements your efficient production cell and its innovative design gives you improved load-bearing capacity with a low deadweight. Smart software packages ensure that all movements are perfectly harmonised.



ENGEL **easix**

Work with ease in all three dimensions: the ENGEL easix robot and its integrated control unit are ideally equipped for current and future tasks so you can make your production even more efficient with the multifunctional six-axis robot. No matter whether you need a particularly flexible automation solution or face special requirements, such as cleanroom production.



ENGEL **conveyor systems**

The whole is more than the sum of its parts. ENGEL conveyor systems ensure a trouble-free production process thanks to smart conveyor belt solutions which carefully and quickly transport your high quality injection moulding parts from insert and removal all the way to dispatch-ready cargo management. Whether with or without a robot, whether free-standing or as an integrated solution, and for handling everything from bulk material to boxes, pallets or trays.

