MACHINES.
FOR THE PROCESSING OF ELASTOMERS AND THERMOPLASTICS
Over 50 years of competence in machine development.

LWB has been manufacturing vertical and horizontal injection moulding machines and systems for processing elastomers and thermoplastics for decades now. Our many years of experience in machine manufacturing form the basis for the high performance of LWB injection moulding machines. With our highly qualified staff and valued customers we are constantly further developing technologies in all areas.

We offer profitable solutions for every application. Be it a standard or custom machine - with well-conceived designs and innovative developments, we ensure high process efficiency in the production of rubber and thermoplastic moulded parts. Every machine can be optimally tailored to the customer’s request and application, due to the modular design and numerous machine options.

Thanks to our in-house manufacturing we are highly flexible and able to react quickly to changing market requirements and specifications. With our concepts, we show new ways to our customers to produce competitively and profitably on the global market.

Peter Steini
Managing Director
KNOW-HOW IS OUR FOUNDATION.

Leading technologies in the field of elastomer and thermoplastic processing.

With over 50 years of competence and experience in the rubber processing industry, we develop systems and machines that are optimally tailored to the production needs of our customers. The focus here always lies on application-related added value and high efficiency for the production processes.

Our strengths are our process know-how and flexibility in the design and construction of customized solutions. At the same time, we offer our customers innovative methods and processes for enhancing quality and efficiency.
Renowned companies in the rubber and thermoplastic processing industry have been placing their trust in the reliability and precision of our injection moulding machines for years now.

The application areas of our machines and systems are diverse. They are found in the automotive sector, as well as medical engineering, the electrical, aerospace and construction industries, to name but a few.

Be it moulded parts in the smallest of dimensions or products a number of metres long - we offer solutions for producing seals, spring elements, rubber-to-metal parts, moulded articles, membranes, mats, couplings, 2K components and other composite parts on our injection moulding machines and presses.

LWB’s know-how builds the bridge between elastomer and plastic applications, and our customer determines the degree of automation, in order to achieve the most efficient production on LWB injection moulding machines - we have the perfect solution for your application.
MACHINES.

Our focus:
The best concept for your application.

Be it for compression or injection, with vertical or horizontal clamping units, for the production of micro through to large moulded parts - our comprehensive service and product range offers a solution for every task. As such, the LWB machine range available today is the result of many years of experience in machine and system construction, in combination with the continuous development of various injection technologies.
The right frame for every application

The ergonomics of the machine constitute an important factor in elastomer processing. The soft elastic design structure and the hot mould environment during demoulding require free and ergonomically favourable access to the mould area. Different clamping systems and press frames are available, depending on the respective requirements and part classes.

**C-FRAME DESIGN**
- Good accessibility from three sides
- Vertical C-frame clamping unit configured for maximum rigidity in two designs:
  - “t” (top) downstroking,
  - “b” (bottom) upstroking
- “t” design with two parallel clamping cylinders on the top machine plate
- “b” design with one upstroking central clamping cylinder

**FRAME DESIGN**
- Extremely high rigidity
- Slimline mounting of the press frame from plates or plate framework elements in welded design
- Large and flexible clamping and heating platen dimensions
- Optimum mould access
- Available in downstroking or upstroking version
- Available in a “wide version” with synchronised twin or multi-clamping system

**4-COLUMN DESIGN**
- Space-saving design with ergonomic operating height
- Considerably increased daylight and large clamping stroke
- Low, minimum mould height
- Fast opening and closing times
- Position of the injection unit and strip intake selectable (right/left, rear), and therefore optimum alignment with factory space requirements
- Maintenance-friendly access to the clamping unit

**PLATE DESIGN**
- Specially designed for vacuum applications
- Stable, rigid plate design
- Complete evacuation of the mould loading area
- Through the modular design, application purely as a vacuum press or as a vacuum injection moulding machine
- Access to the mould area also possible from the rear via a maintenance door
VS Performance - our standard for ergonomics and efficiency.

With our VS Performance range, we combine improved ergonomic values with enhanced performance data and therefore significantly increase the benefit of the machine.

Prepared for the future - through its excellent accessibility, the VS Performance range offers comprehensive possibilities for operation and for the adaptation of automation and demoulding stations.

An added advantage is the flexibility in your production through a slimline, variable and compact machine installation without the requirement for platforms or pits.

- Clamping force ........................................... 1,600 to 8,000 kN
- Injection volumes ........................................ 1,000 to 8,500 cm³
- Daylight .................................................. 850 to 1,350 mm
- Heating plate size .......................... 560 x 630 mm to 1,000 x 1,200 mm

Variable selection of the injection unit

Low strip intake height

Increased daylight and larger clamping stroke

Ergonomic working height

Maintenance-friendly access to the clamping unit
We know about different requirements - modularity is the answer.

For many years now, we have been developing a modular system that is applicable to every machine, which builds upon the proven base components and facilitates the configuration of individual machines in combination with other design variants. So that individuality becomes the standard.

The various possibilities of the equipment offer you cost advantages through optimum compatibility with your product. The machine concept is the initial basis - everything else is variable.

**ERGONOMICS AND INSTALLATION AREA.**

**COMPACT FOOTPRINT**

The clamping system of the VS Performance offers the best ergonomic conditions with a significantly reduced working height with increased daylight and large clamping stroke, and with access to the operating area and strip intake without platform or pits.

**INSERT LOADING AND DEMOULDING STATIONS**

- Kit ejector, top
- Kit ejector, bottom
- Middle plate ejector
- Middle plate slider
- Separator with mechanical synchronisation
- Sliding table version with stroke of 60 % and 100 %
- Optimum machine safeguards through modular protection concept
- EFE injection unit at the rear, optionally with EFD injection technology
- EFD injection unit at the side, optionally also with EFE injection technology
- Servo-hydraulic drive design, also possible with dual hydraulics
- Rapid clamp cylinder for fast movements
- Quick latch system for fastest machine set-up times
- Column frame with maintenance-friendly access from all sides
VC Performance - our standard for limitless free space.

Our VC Performance range offers enlarged mould loading areas for highly complex injection and press moulds.

The VC Performance is ideal for profile processing due to its tiebarless configuration, because this design guarantees optimum accessibility from three sides.

We offer the tiebarless C-machines with up to 1,600 kN clamping force in a downstroking design. This is a particularly important aspect when profiles are to be joined, in order to avoid an unwanted movement during the closing process.

- Clamping force .................................................. 300 to 2,500 kN
- Injection volumes ........................................... 56 to 622 cm³ (RS)
  100 to 1,000 cm³ (E)
- Daylight .......................................................... 630 to 850 mm
- Heating platen size ................................. 500 x 400 mm to 1,100 x 700 mm

Elastomer or thermoplastic injection units

Free access from three sides

Extremely rigid of the tiebarless frame

Enlarged mould loading area combined with large clamping stroke

Compact design with small footprint

EXAMPLES

Optimum for corner moulding

Demoulding with sliding table and separator

Shuttle for easy handling

For processing rubber or plastic

Sliding table with stroke 100 %

Rotary table for glass encapsulation

Energy-saving due to servo-hydraulic drive

Quick latch system on separator and heating platen

MOULDED PARTS
Flexible fulfilment of customer requests with the LWB modular system.

Modularisation, standardisation and variant management are not contradictory terms for us, but rather fulfill the requirements of customers and the market with predetermined, modular system designs.

Due to the comprehensive options and the modular design of our machines, it is possible to realise a tailored solution specifically aligned with the application case. We support you from initial concept right through to realisation.

**COMBINABLE DIVERSITY**

The machine concept is the initial basis. Everything else is variable and modular, for example the number of injection units, the equipment of the mould area with insert loading or demoulding stations, or the design of the safety equipment.
Flexibility combined with maximum stability and rigidity.

The VR range impresses as an universal concept for the optimum design of the machine for special article and production requirements.

The high rigidity of the frame in conjunction with one or more fully hydraulic clamping cylinders guarantee optimum pressure distribution in the clamping level.

The design of the frame provides room for manoeuvres in terms of the alignment of the clamping surfaces, which are difficult to realise with other machine types.

- Clamping force ............................................................... 1,100 to 8,000 kN
- Injection volumes ............................................................. 630 to 8,500 cm³
- Daylight ............................................................................. 495 to 1,000 mm
- Heating platen size .................................................... 400 x 500 mm to 900 x 1,100 mm

EXAMPLES

MOULDED PARTS
Horizontal machines for automated production.

We offer machines in a horizontal design either in a traditional column version (HS) or with a tiebarless C-frame clamping unit (HC).

An outstanding feature of the HC range, with its up to 100 ton clamping force, is the tiebarless design of the clamping unit. This is based on the proven C-frame clamping unit and offers free access to the mould area for rapid mould change of the integration of automation devices.

The machines from the HS range, from 160 ton clamping force, are based on a clamping unit in 4-column design, equipped with a fully-hydraulic clamping system. Through the use of a large pressure piston, force will be brought evenly into the mould.

Large distances between the bars offer good access to the mould for rapid mould changes and the use of large heating platen. The increased daylight is particularly well-suited for the use of brush units and other handling devices.

- Clamping force ............................................................... 500 to 6,300 kN
- Injection volumes ............................................................ 50 to 8,500 cm³
- Daylight ................................................................. 475 to 915 mm
- Heating platen size ...................................................... 400 x 400 mm to 810 x 1,000 mm

Examples

HS machine frame with EFE injection technology for cure time reduction

Optimum access to the mould area with HC machine frame for low clamping forces of up to 100 ton

Brush modules for automated part removal and mould cleaning

Horizontal C-frame machine for the production of isolators of liquid silicone

Moulded parts

- C-frame, tiebarless clamping unit
- Brush and/or handling system
- Production for automated processes
- Variable selection of the injection units
Small, smaller, micro-class.
Machines in the smallest of sizes.

The Micro-Class injection moulding machines are equipped with a C-frame clamping unit with 100 kN clamping force and are available in both vertical and horizontal designs.

The machine concept is highly compact by design and is optimally suited for combination with handling equipment due to the accessible mould area. With the design of the machine, the focus was on maximum compactness, so that a space of about one square metre accommodates not only the machine itself, but also two temperature control units.

The precision injection unit is designed for the smallest volumes and guarantees highest repeatability and is optionally available for processing rubber or plastic.

- Clamping force ........................................... 100 kN
- Injection volumes .................................... 4.5 / 6 / 10 cm³
- Daylight .................................................. 300 mm
- Heating platen size ................................... 150 x 150 mm

<table>
<thead>
<tr>
<th>EXAMPLES</th>
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<tr>
<td>Vertical tiebarless design</td>
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<tr>
<td>- Smallest footprint</td>
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<td>- Optimum accessibility</td>
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<td>- Ergonomic moulding of inserts</td>
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| Horizontal tiebarless design     |
| - Automatic production           |
| - Maximum shot volume consistency|
| - Hot or cold runner equipment   |
VP CLASS

The specialists in vacuum applications.

The VP machine range with integrated vacuum chamber is specifically designed for evacuation possibilities across the entire mould area.

The clamping unit consists of a bolted plate structure, the vertical side plates of which simultaneously act as walls for the vacuum chamber.

A vacuum system consisting of vacuum pump(s) and a vacuum tank ensures rapid and effective evacuation. Alternatively, other combinations can also be used if required.

- Clamping force ........................................ 1,100 to 6,300 kN
- Injection volumes ........................................ 160 to 8,500 cm³
- Heating platen size ................................. 400 x 500 mm to 810 x 1,000 mm

Integration of a complete demoulding station
Vacuum pump on the machine
Easy access to the vacuum chamber for maintenance and mould loading
VP clamping unit in combination with a sliding table
Vacuum tank
Complete evacuation of the inner area
Sliding table
Shortest evacuation time
EXAMPLES
MOULDED PARTS
INJECTION TECHNOLOGY.

Different injection systems - perfect solutions for every application.

The injection technology for processing elastomers is our core competence. We offer a whole range of specific injection units across a broad size and performance spectrum. Our range also includes optimum solutions for the processing of thermoplastic elastomers.

We have introduced process innovations for a large number of processing fields, such as the E-injection system for maximum repetition accuracy and the EFE-injection system, which enables cure time reduction of up to 50%.
Diverse requirements need individual solutions.

The result of concentrating all resources on the processing of rubber is a whole host of innovations, with which we have achieved remarkable productivity advances in elastomer processing.

We offer a comprehensive selection of different injection systems for different applications and tasks. The ongoing development of the injection systems reflects our competence in rubber processing and has contributed to making the injection systems more efficient, more precise and more controllable.

Specially developed for processing thermoplastics.

Due to the requirements in the automotive sector for high-quality visible surfaces, increased cost-efficiency and recyclable materials, the use of thermoplastic elastomers (TPE) has grown in importance in recent years.

Originally developed for this application, today our RS injection technology covers a broad spectrum in a range of thermoplastic areas.
Our standard FIFO injection unit.

- Injection volumes ...................... 1,000 to 8,500 cm³
- Injection pressure ...................... 2,200 bar

For processing thermoplastics.

- Injection volumes ...................... 36 to 2,000 cm³
- Injection pressure ...................... 1,350 to 1,950 bar

### ERGONOMIC AND SUITABLE FOR MODULAR EXPANSION.
- Low strip feeding height and machine height
- High injection pressure of 2,200 bar
- Smaller opening in the machine and heating plates
- Cold runner-capable
- Suitable for retrofitting with Rapid Cure Function for reduced cure times

### HOW DOES IT WORK?
With first in - first out technology the initially plasticised material is the first injected into the mould. The constant screw length in this system guarantees even and consistent use of energy throughout the entire plasticising process.

Due to the modular design it is possible to retrofit the FIFO-injection unit, in order to obtain a FIFO-injection unit with Rapid Cure Function. This expansion stage, from EFD to EFE, offers considerable cure time reductions.

### THE ALL-ROUNDER FOR PLASTIC AND LIQUID SILICONE
- High repeatability
- Ideal for processing of thermoplastics and liquid silicone
- High plasticising and injection capacity
- Suitable for horizontal or vertical machines
- Needle valve technology hydraulic, pneumatic, sprung (standard open nozzle)
- Different wear protection materials are available for a longer lifetime
- Application-specific variants available (e.g. for processing elastomers)

### HOW DOES IT WORK?
The RS-injection unit has a rotating and axially moving screw. During plasticising, the screw moves axially to the rear, so that the compound is conveyed into the area in front of the screw tip. Once dosing of the preselected volume is complete, the compound is injected into the mould by the advancing screw - the tip of which is equipped with a non-return valve.

The screw movement is pressure and speed controlled by a servo valve. In conjunction with high-resolution potentiometers, this results in high positioning accuracy, which guarantees a reproducible fill quantity in every cycle.

The heating of the injection unit is done by independently controlled heating strips with self-optimising controllers.
Unsurpassed injection precision.

- Injection volumes: 50 to 2,000 cm³
- Injection pressure: 1,800 bar

**ALL-OUT TECHNOLOGY - NO COMPOUND REMAINING IN THE NOZZLE.**

- Unsurpassed repeatability up to +/- 0.05 g
- Good access to plasticising screw and injection cylinder for quick change of compound
- Without non-return valve
- Complete emptying of the injection cylinder with every shot; therefore no vulcanized compound in the injection chamber
- Lifting injection nozzle, therefore contact between the injection nozzle and hot mould only during the injection and back-pressure phase
- Even and gentle plasticising

**HOW DOES IT WORK?**

The E-injection unit with the First In - All Out technology is based on a function principle that works without a non-return valve on the piston or screw. The injection cylinder is filled by a mobile plasticising unit through the machine nozzle, and subsequently emptied via the same nozzle. The injection cylinder is completely emptied with each cycle.

With this, no scorched compound is being transferred in the next injection cycle. The absence of a non-return valve and the easy access to the plasticising screw allows a much faster change of compound.

High precision FIFO injection system.

- Injection volumes: 160 and 250 cm³
- Injection pressure: 2,500 bar

**SPECIALLY DESIGNED FOR SMALL INJECTION VOLUMES.**

- Easy processing of high viscosity compounds
- Perfectly suited for cold runners
- Injection pressure 2,500 bar effective
- Smaller opening in the pressure plate for low deflection
- Lifting injection unit

**HOW DOES IT WORK?**

The plasticising cylinder is fixed directly to the side of the injection piston and connected via a filler channel in the injection piston. At the end of the injection piston is a ball check valve with a small diameter for maximum precision. This arrangement enables a small injection piston diameter, which results in the high repeatability of the system.

Due to the small piston diameter and the resultant small diameter of the injection cylinder, it is also possible for the opening in the machine plate to be very small. This results in optimum conditions in terms of the deflection of the injection-side fixing plate.
EFE INJECTION SYSTEM

Injection unit for cure time reduction.

- Injection volumes: 1,000 to 8,500 cm³
- Injection pressure: 2,200 bar

EFFICIENCY INCREASE THROUGH INCREASED OUTPUT.

- Significantly shorter vulcanisation times
- Complete emptying of the injection chamber
- Reduced material viscosity with injection
- Production with conventional or increased processing temperatures
- Ergonomic strip feeding height
- Can be used with cold runner systems
- ACC (Adaptive Cure Control) for maximum process control

HOW DOES IT WORK?

The material is fed into the mould by the EF injection unit (FIFO), the secondary, vertically arranged E injection cylinder (ALL OUT) fully injects all the compound in the mould. Since no material remains in the injection unit it is possible to achieve higher process temperatures and therefore shorter cure times. Compound temperature can be adjusted during injection via the machine control and is stored as a mould specific process parameter like any other. Depending on the compound used, part geometry and process, it is possible to achieve optimum settings.

Faster vulcanization.
Increased productivity. Cost savings.

The EFE injection system opens up new and more efficient possibilities for moulded part production in comparison to conventional injection systems. In this way it is possible to achieve an increased machine output from the same size of machine - production orders are realised in a shorter time and with reduced energy consumption.

Injection volumes: 1,000 to 8,500 cm³
Injection pressure: 2,200 bar

20% Cure time reduction
30% Cure time reduction
40% Cure time reduction
50% Cure time reduction

- Bearing bushing: Natural rubber 65° Shore
- Belt pulley: Natural rubber 50° Shore
- Gasket: FKN 60° Shore
- Damping element: Natural rubber 60° Shore
- Bearing bushing: Natural rubber 60° Shore
- Motor bearing: Natural rubber 60° Shore
- Profile cam: EPDM 70° Shore
- Damping element: Natural rubber 70° Shore
High efficiency - through integrated energy saving concept.

Saving energy is not just a cost factor in the calculation, but also a matter of general responsibility for our global future. LWB meets this responsibility through an integrated energy saving concept, which simultaneously contributes to the optimisation of production efficiency.

**ACC (ADAPTIVE CURE CONTROL SYSTEM)**
The control system developed by LWB, in combination with the EFE injection system, enables self-optimising process point determination with changing conditions, e.g. with compound quality or operating time. This enables cure time reductions - in particular with moulded parts with greater wall thicknesses - of 30 to 50% in comparison to conventional production methods, and therefore also higher part outputs per hour.

**BSD (BLUE SERVO DRIVE)**
Servo-hydraulic systems not only save energy but also offer other advantages to the user. Important features include faster, more precise movements, as well as significant noise reductions. Furthermore, in the majority of cases the quantity of oil used is reduced and no additional oil cooling is required.

**AN INNOVATIVE HEATING PLATEN SYSTEM REDUCES HEAT DISSIPATION FROM MOULDS**
LWB offers optional heating platen with insulation platen in a sandwich construction with central insulation layer. These also enable higher heating temperatures of up to 400 °C with a significantly longer service life.

**THERMAL INSULATION FOR INJECTION UNITS**
A further option for reducing heat losses with a consequent improvement in process consistency is to add additional insulation to the plasticising unit.

Tangible advantages.

The added value of LWB technology is clearly apparent in the comparison of two machines in different designs. Both machines show an ergonomic working height and a large daylight. The variable position of the injection unit can result in a space-saving footprint.

**LEAN TECHNOLOGY**
- 300 ton clamping force
- 3,000 cm³ injection volume
- EFD injection system
- Proportional hydraulics
- Open cold runner - 4 nozzles
- CAS quality management

**HIGH-TECH VERSION**
- 300 ton closing force
- 4,000 cm³ injection volume
- EFE injection system with ACC
- Dual servo-hydraulics
- Needle valve - cold runner - 4 nozzles
- CAS quality management
- Energy management system

**ARTICLE OUTPUT**
- 300 ton clamping force
- 3,000 cm³ injection volume
- EFD injection system
- Proportional hydraulics
- Open cold runner - 4 nozzles
- CAS quality management

**ARTICLE OUTPUT**
- 300 ton closing force
- 4,000 cm³ injection volume
- EFE injection system with ACC
- Dual servo-hydraulics
- Needle valve - cold runner - 4 nozzles
- CAS quality management
- Energy management system

Test product: Ash tray, EPDM 70A, Volume 1,000 cm³ (4 x 250 cm³)

- 15% lower production costs
- 20% lower injection pressure
- 40% lower energy costs per part
CONTROL TECHNOLOGY.

Leading-edge control technology guarantees maximum precision and repeatability.

For our comprehensive product portfolio, we offer the perfect solution for every requirement!

In order to fully master the high number of variants, we utilise advanced hardware and software technology with this new generation of flexEVO control. For the user, the machine is particularly user-friendly due to the new operating philosophy and visualisation solution.
Intuitive - universal - flexible flexEVO with new operating philosophy and visualisation solution.

**LWB-FLEXEVO**
- Intuitive operation
  - 18.5” multi-touch display. Simple and self-explanatory
- Ready for Industry 4.0 through the use of OPC - Unified Architecture (UA)
- APC – Adaptive Position Control
  - Movement positions are monitored and automatically corrected
- Energy management
  - Intelligent system, in order to control energy consumption and minimise costs

**SIMPLE MACHINE OPERATION**
Operation of the machine is particularly simple, due to the use of an HD multi-touch display. Its functionality is based on the modern smartphone, and it can even be operated while wearing gloves. The modular control panel with uniform control hardware is used in both standard and custom machines, and can be integrated in a pivot arm or in the switch cabinet.

**DIAGNOSTICS AND AUXILIARY FUNCTIONS**
The user can change the process sequence independently, directly in the visualisation. In this way, adjustments can be made quickly and easily. The control is equipped with freely selectable authorisation levels here. In addition to faster reaction speeds, many data acquisition possibilities and process monitoring options, we also offer our customers the new flexEVO diagnostic and help functions, which make their production even more efficient.

**SMART FACTORY THROUGH OPC - UA TECHNOLOGY**

**INTUITIVE OPERATING CONCEPT WITH VISUALISATION MODULES**
With the advanced “mapp View Technology”, the full potential of web technologies is made available directly in the automation software for the first time. With integrated visualisation modules, so-called widgets, all functions of the machine user interface are covered.

The Smartphone functionality combines with the control technology to create an intuitive new operating philosophy.

Animated graphics generated with CAD make inputs comprehensible and self-explanatory.

The operating concept is revolutionised through the graphical input of travel movements via gesture control.
The use of robots and automation solutions is also becoming increasingly common in the rubber processing industry. LWB has recognised this trend for a long time now, and realises a wide range of innovative solutions for a broad spectrum of sectors.

With the foundation of LWB Automation, the spectrum of products and services was massively expanded once again.

We deliver turnkey production systems with comprehensive handling peripherals including process technology - both in combination with vertical or horizontal presses, and injection moulding machines. You will have an experienced team standing alongside you, from concept right through to realisation.
Due to the nature of the material and the high temperature in the mould area, rubber moulded parts are harder to “pick up” than thermoplastic moulded parts. Innovative solutions are therefore needed to automate the handling of moulded parts.

Our know-how is reflected in complex turnkey systems.

**STANDARD AUTOMATION MODULES**

- Sliding cavity plates, hydraulically or electrically driven, also in synchronised double version
- Rotary and sliding tables in a range of designs and operating methods
- Linear handling robots
- Gripper plates
- Sprue separators
- Sprue grippers
- We additionally use automation equipment from renowned suppliers, e.g. brush devices or industrial robots

**MACHINES AND AUTOMATION FROM A SINGLE SOURCE**

With us, you receive not only the machine and process technology but also complete automation solutions including robot and handling system.

**PROCESS-RELATED ADVICE AND CONSULTANCY IS NATURALLY INCLUDED WITH US.**

With complex automation tasks, it is advisable to consider the entire production process at an early point in time. Central points here are the sprue layout (hot or cold runner, position and number of cavities) and the resultant machine size.

It is necessary to consider whether a more economical solution might be to replace a complex multi-cavity layout with an alternative multi-system concept with smaller machines and easier automation.
The automation of parts starts with the integration of robots with the press. Then inserts can be loaded and finished parts - and runners - removed individually or together. This is followed by the placement of moulded parts either on pallets or their onward transport to a reworking station.

We are able to get a grip on rubber.

**PRODUCTION CELLS**

For the production of a 2K plastic/rubber composite part. With harmonised cycle times, a machine combination (elastomer and thermoplastic) together with a robot results in a fully-automated production cell.

**VERTICAL ELASTOMER INJECTION MOULDING MACHINE**

For producing seals with automatic part removal and integrated conveyor for outward transport of the finished parts.

**DAMPING AND ASSEMBLY ELEMENT**

For the solar industry in fully-automatic production. Special gripper and change plate technology enables the production of approx. 100 parts per cycle.

**FULLY-AUTOMATIC PRODUCTION CELL FOR THE PRODUCTION OF FUEL CELL SEALS**

For the automated production of metal bipolar plates from a silicone-metal combination. The concept is based on a frame machine with liquid silicone injection unit as well as handling units and silicone equipment. The first handling unit places the inserts in the position for the required pretreatment as well as loading the injection mould, the second handling unit performs removal from the injection mould, as well as outward transport of the inserts.

**VERTICAL ELASTOMER INJECTION MOULDING MACHINE**

For the production of radial shaft seals with automatic feed of the metal parts; removal of the finished parts and integrated conveyor belt for outward transport.
CUSTOM MACHINES.

Creative solutions for special requirements.

The modularity of our machine and options result in a high degree of design flexibility. Taking into account the individual requirements and applications of our customers in detail we develop perfectly tailored custom machines.
Custom machines are required for the production of pump stators with an injection volume of over 10 kg. Depending on the design, these essentially comprise one or more large-scale FIFO plasticising and injection units of type EF. The largest pump stators are more than 6 metres long and contain over 100 kg mixture.

With these sizes it is possible to utilise repetition injection moulding. Here, the injection unit injects a preselected volume into the mould cavity multiple times in succession.

Heavy current isolators are frequently produced from silicone elastomers. With this, a GRP tube or rod is sheathed with silicone. The special systems designed for this build upon one or more synchronised VR machines, which are combined with a long-stroke sliding table. This special LWB machine combination enables very large clamping surfaces and injection volumes. The dual injection can be operated with electrically driven needle valve cold runners.

Downstrokings press with a clamping force of 10,000 kN and a heating platen with 600 mm width and a length of 3,000 mm are a special requirement, as used for example in mining applications. Combined with a left/right shuttle system, machine standstill times are reduced to an absolute minimum.

Upstrokings presses with a clamping force of 12,000 kN and a heating platen size of 2,000 x 2,000 mm are a requirement for large mats and membranes. With this technology, two VR presses are combined, which are equipped with a total of 4 individual clamping cylinders. This combination facilitates maximum precision with incomparable machine stiffness.
In the thermoplastics processing industry, articles are frequently required with dimensions that would need disproportionately large machines. With our modular system of C-frame machines, we are able to make vertical 200 ton thermoplastic injection moulding machines available with a mounting area of 1,600 x 600 mm and 2K injection technology. Free accessibility from three sides with the smallest footprint.

**EQUIPMENT FEATURES**
- Vertical thermoplastic machines
- 2K injection technology
- Mounting area 1,600 x 600 mm
- Free accessibility with the smallest footprint

**VERTICAL 2K THERMOPLASTIC INJECTION MOULDING MACHINE FOR PRODUCING SEALS FOR THE AUTOMOTIVE INDUSTRY**

Short handling times are vital in the series of glass encapsulation. LWB therefore offers solutions for large mounting areas of 2,000 x 1,000 mm, which reduce handling times to a minimum. With our 450 ton left/right shuttle solution, we achieve this with a working height of just 700 mm even with a big daylight.

**SYSTEM FOR GLASS ENCAPSULATION**

A rotary table application offers shortest handling times for the series production of overmoulded glass panes. With this process, side access to the affected mould is frequently necessary, in order to guarantee the insertion and removal of parts. This special LWB rotary table machine development also permits exceptional access to the mould from the side.

**EQUIPMENT FEATURES**
- Vertical 300 ton machine, top closing
- Dual thermoplastic injection unit, horizontal
- Rotary table ø 2,900 mm
- Working height 850 mm
- Total mounting area 2,200 x 700 mm

**THE ERGONOMICS AND EFFICIENCY MASTER - VERTICAL ROTARY TABLE MACHINE FOR TWO MOULDS AT THE SAME TIME**

With our machine concept, we achieve a total mounting area of 2,200 x 700 mm with a rotary table diameter of almost 3 metres and a working height of just 850 mm. Two individual moulds are in use, each with its own thermoplastic injection unit.

**EQUIPMENT FEATURES**
- Vertical 300 ton machine, top closing
- Dual thermoplastic injection unit, horizontal
- Rotary table ø 2,900 mm
- Working height 850 mm
- Total mounting area 2,200 x 700 mm

**VERTICAL ROTARY TABLE MACHINE IN THERMOPLASTIC VERSION FOR GLASS ENCAPSULATION**

A rotary table with side access to the part

**EQUIPMENT FEATURES**
- Vertical 250 ton C-frame machine
- Thermoplastic injection unit, horizontal
- Hydraulic height adjustment of the injection unit
- Mounting area 1,300 x 650 mm
- Rotary table with side access to the part

CUSTOM MACHINES.

OPTIONAL EQUIPMENT.

Always the optimum setting - thanks to modular technology.

In addition to the machine components, the modular system for the configuration of presses encompasses a greater range of options allowing a basic machine to be in tune with parts it needs to produce, resulting in greater efficiency.
SOLID SILICONE STUFFER UNITS
We offer static and mobile stuffer units for the processing of silicone. Three sizes are available to choose from, with chamber volumes of 5,000, 10,000 and 14,000 cm³ for the automatic supply of solid silicone to the plasticising unit.

SLIDING PLATE SYSTEMS
Our sliding plate system offers easier access for the loading of inserts and the removal of articles. This is a module for relocating the parts handling from the hot mould area to the area in front of the machine. Optionally available as a synchronous sliding plate system, in which two identical cavity plates are moved in and out of a press or injection mould simultaneously.

CENTRAL EJECTOR
The ejector facilitates easy handling of sprue components or moulded parts from mould plates.

LEFT/RIGHT SHUTTLE SYSTEMS
As with the rotary tables, long manipulation times can also arise here whilst the operator is performing demoulding and loading, which can lead to an inefficient overall cycle time. This technology offers further possibilities for avoiding this, because demoulding and loading can take place in parallel to the injection moulding cycle. This system can be used with C-frame machines and column machines.
BSD (BLUE SERVO DRIVE)
Servo-hydraulic systems not only save energy but also offer other advantages. Important features include precision and speed of movement, as well as significant noise reductions. Furthermore, in the majority of cases the quantity of oil is reduced and no additional oil cooling is required.

COLD RUNNER TECHNOLOGY
Material savings and waste avoidance are the major advantages of cold runner systems. It is possible to choose between a range of versions, be it with open nozzles or needle valve systems, which can be driven hydraulically or electrically. Further advantages include a reduced distance between nozzles and sprue point, or a balancing of different shot weights per cavity via cascade control.

ROBOT TECHNOLOGY
Automation is an integral part of many projects today. We therefore specialise in formulating the right concept together with our customers. Be it robots, linear handling, feed technology or demoulding equipment - we have the right solution.

MACHINE GUARDS
Safety is the primary objective! We utilise all conventional systems, from protective screen technologies to light barriers and laser scanners. Individual customisation and the highest standards are a given.

STRIP FEEDING AIDS
Unintentional tearing of the strip in the screw unit is avoided through the use of a strip feeding unit. The strip is fed into the plasticising unit via a drive and guarantees a continuous production process.

HYDRAULIC SEPARATOR
Hydraulic separators are attachment components on vertical machine clamping units, in order to separate the sprue plate from the base plate with every production cycle for example - and thus enable the removal of the sprue distributor.

TEMPERATURE CONTROL EQUIPMENT
Oil or water temperature control units can be supplied optionally for rapid-reaction liquid temperature control in plasticising units and/or moulds.

DEMOULDING STATIONS
Specifically designed demoulding stations can be supplied for situations, in which high forces are applied or complex movements must be executed.
Exceptional service for outstanding technology.

We provide you with comprehensive and customer-oriented support throughout the entire life-cycle of your machines - on site anywhere in the world. Be it for set-up, process optimisation, maintenance or overhaul - our service staff are here for you at all times.

<table>
<thead>
<tr>
<th>CUSTOMER SERVICE</th>
<th>With our technical customer service, as well as the LWB branches and representatives, you have competent support and many years of experience on hand constantly.</th>
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<tr>
<td>COMPETENT AND CUSTOMER-ORIENTED</td>
<td>Our competent technical service staff is available to you fast - anywhere in the world. We additionally support you via service hotlines and teleservice, and ensure trouble-shooting and fault rectification in the fastest possible time.</td>
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<td>TRAINING</td>
<td>With requirements-oriented and tailored training, we support your employees in optimally utilising the full potential of a LWB machine.</td>
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<td>In order to fully utilise the efficient technologies, we train your employees in machine operation and process technology. The diverse programme is targeted specifically at your focal areas and the knowledge level of your employees.</td>
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<td>MAINTENANCE</td>
<td>With specialist maintenance from LWB, you ensure the best preconditions for a long service life and the optimum performance of your machines.</td>
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<td>RELIABLE &amp; COMPETENT</td>
<td>Our maintenance service also offers you “Quality - Made in Germany” - around the world at every customer site. With every action and step, our employees ensure fully reliable machine operation.</td>
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<td>SPARE PARTS SUPPLY</td>
<td>Original LWB wearing and spare parts are available to you around the world.</td>
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<td>QUICK &amp; UNCOMPLICATED</td>
<td>We ensure the fastest reaction times and rapid delivery of all the LWB machine parts you require - to ensure seamless production processes for our customers.</td>
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You can find further information and details on our range of services in our service brochure.
INTERNATIONAL.

LOCATIONS.

LWB is represented in all important markets. You can find an overview of all important representatives on our website.