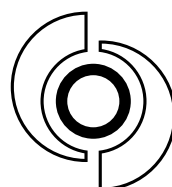




VULCANISATION TECHNOLOGY

INNOVATION IN A CLASS OF ITS OWN

www.gerlach-maschinen.de



GERLACH
MASCHINENBAU

GERLACH MASCHINENBAU

Global technological leader in hot air vulcanisation



For over 40 years we have been a partner in industry, manufacturing technologically demanding vulcanisation plants at our production facilities near Düsseldorf.

Customer-oriented research and development and innovative processes position Gerlach Maschinenbau as a leader in the technology of continuous hot air vulcanisation of rubber profiles.

We represent the entire value chain on site – design, production and supply. The results are clear: sophisticated machine technology of the highest quality and value, sustained over many years. All under one roof and “Made in Germany”.





Protection of natural resources has TOP PRIORITY with us!

Our environmentally friendly machines are highly energy efficient and emit virtually no pollutants or odours. The environment remains largely free of pollutants and odours. Exhaust air purification using pollution control technology (PCT) saves additional investment in costly separate exhaust air systems.

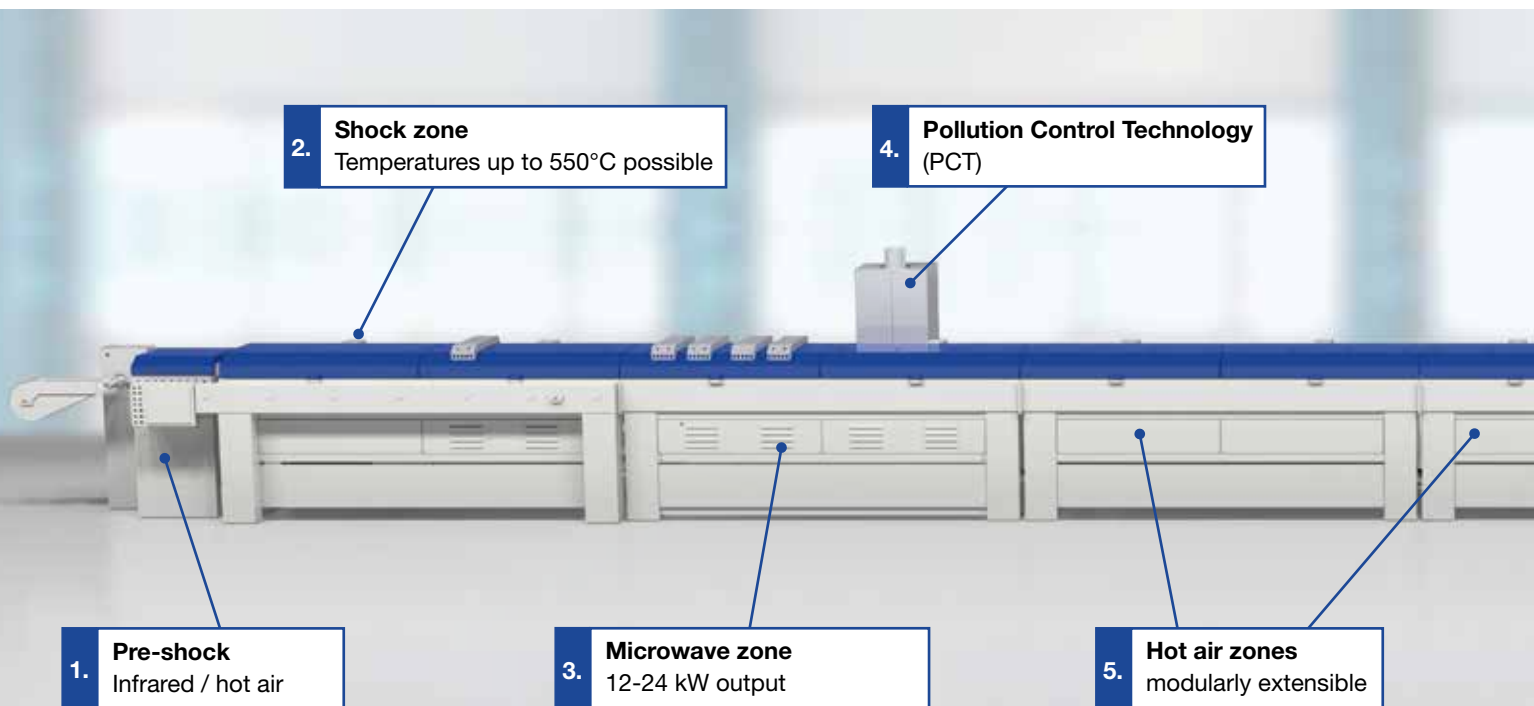
Focusing on cost!

Gerlach machines will lighten your budget, both in terms of investment and in running operations. Excellent heat transfer allows us to design our production lines shorter than others, saving you valuable production hall space.

We help in keeping your operating costs to a minimum by using gas and by closed circuit heat recovery in our machines. Our systems also offer other innovative state-of-the-art solutions to the economic use of energy at your production site.



MODULAR VULCANISATION PLANT



We offer modular vulcanisation plants, depending on the produced rubber product.

1. Pre-shock phase

We can decisively impact product quality and reject rate in the pre-shock phase already. The desired micro pre-cross-linking of the rubber occurs in split seconds. Our sources of energy are short-wave infrared emitters and also air pre-shocks.

2. Shock zone

The downstream shock zone operates at temperatures up to 550°C, raising the temperature level of the extrudate to optimal cross-linking temperature. High speed and turbulent hot air ensures the quickest possible convective heat transfer over a short distance.

3. Microwave zone

The microwave heater in the second module supports product heating, evenly over the entire profile cross section. The microwave field interacts with polarisable mole-

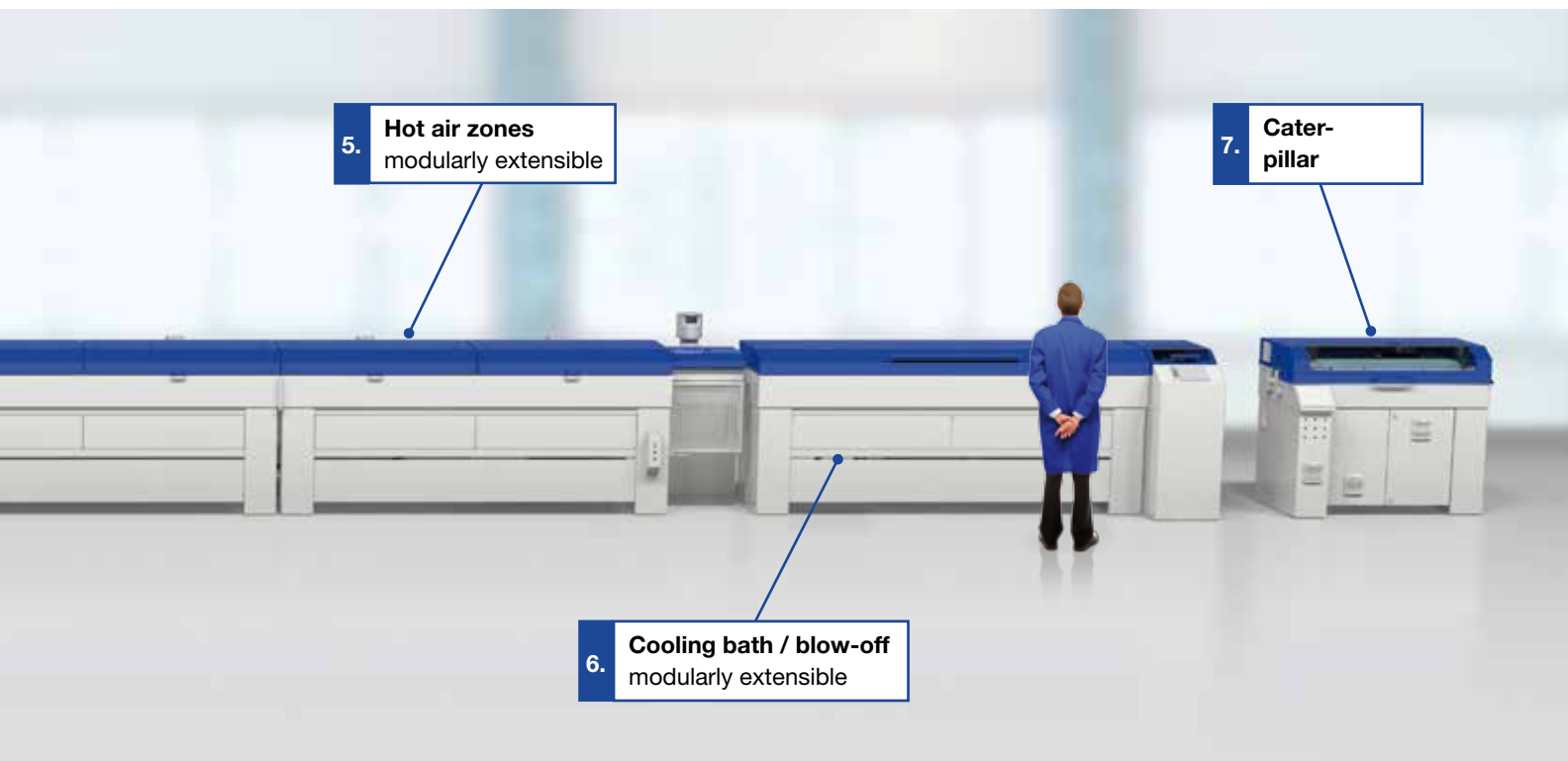
cules of the mixture, heating the mixture from the inside. Depending on the product's weight per meter, the installed UHF power may vary. The advantages of UHF also include uniform cross-linking over the cross section and fast and efficient energy transfer into the insides of thick walled products. Our technologically superior UHF-supported vulcanising plants achieve outstanding quality of surface and cell structures in sponge rubber products.

4. Pollution Control Technology (PCT)

Our vulcanising machines work with integrated exhaust air purification, allowing only carbon dioxide and water to escape to the atmosphere. The overall plant also has an intelligent energy concept, ensuring economical use of our natural resources.

5. Hot air zones

The downstream modular hot air zones, equipped with driven conveyor belt, maintain vulcanisation temperature of the extrudate. Different channel lengths may be configured, depending on rubber mixture, profile geometry and production speed.



6. Cooling bath

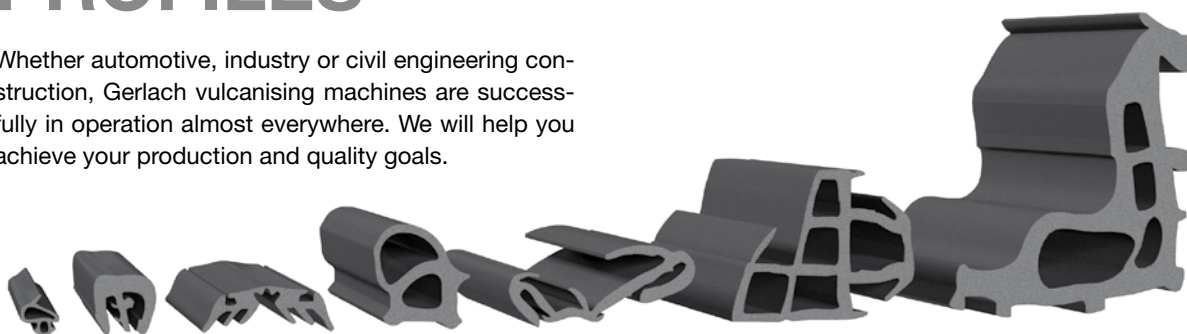
To allow further processing of the hot, fully vulcanised profile, it is cooled using water. Our cooling channels comprise 3 m zones and may be extended as required. Depending on requirements, spray or flush nozzles are used. A powerful blow-off station with an integrated side channel compressor produces an absolutely dry profile surface. Flexible nozzles assure perfect drying, even for complex profiles.

7. Caterpillar

The required profile pull-off is ensured via a caterpillar with 2 000 N tractive force. The upper caterpillar position and tractive force are automatically adjusted. Further more, the slip between profile and caterpillar is compensated by a regulator. As with all Gerlach machines the caterpillar is also operated via touch screen.

PROFILES

Whether automotive, industry or civil engineering construction, Gerlach vulcanising machines are successfully in operation almost everywhere. We will help you achieve your production and quality goals.



MODULAR OVERALL SYSTEMS

ahead of the competition, flexible response to tomorrow

Pre-shock equipment



Fast profile pre-cross-linking on reduced length machines

- environmentally friendly and energy saving operation using gas and electrically powered machines
- infrared, gas-ceramics, mesh burner, hot air pre-shocks
- suited for single or multiple extrusion
- various heating intensities and modulation options
- partial zone and 360° pre-shock possible
- utilisation of the pre-shock energy in other modules
- effective utilisation of energy resources
- also configurable as autonomous machines

Shock channels



Increased effectiveness through compact 3 m shock channels

- gas heating produces shock temperatures up to 550°C
- very rapid heat transfer
- driven rollers and swing infeed conveyor
- heat-insulated and pneumatically actuated visor flaps
- automatically monitored locking system ensure low energy loss
- utilisation of the process air through recirculation
- fast pre-cross-linking at high process speeds
- ergonomic machine operation via control panel display
- various add-on options available

High performance shock channels with microwave support



The SHF plant – as the core of hot air vulcanisation

- high power shock channel with or without integrated exhaust air cleaning (PCT)
- environmentally friendly and energy-saving
- production speeds up to 60 m/min
- modularly extensible machine lengths
- shock, microwave and hot air modules
- shock temperatures up to 550°C, hot air up to 340°C
- continuous UHF power regulation up to 24 kW
- integrated interlinking of all energy sources
- perfectly thermally insulated machine modules
- profile transport via rollers and/or conveyor belt
- formulation management options in the operating concept
- machine operation via touch display
- various options available

Hot air channels with and without exhaust air cleaning (PCT)



Flexible vulcanising lines, depending on demand

- hot air channels with and without integrated exhaust air cleaning (PCT)
- environmentally friendly and energy-saving operation as either drying or vulcanising machine
- compact design for machine lengths of 6 to 24 m
- air heated by gas burner or electrically
- configurable with recirculating or fresh air working principle
- optionally with integrated microwave or infrared heating
- profile transport via rollers or conveyor belt

Cooling channels water / air



Effective profile cooling and drying

- effective noise dampening profile cooling
- ergonomic and simple profile guide system
- modular design with 3 m zones
- spray, flush or submersed cooling for flexible and rigid products
- swivelling visor flaps
- profile transport on roller tables or by conveyor belt
- use with either closed or open cooling circuit
- powerful profile drying in compact blow-off station
- mobile design cooling channels possible



EXAMPLES OF APPLICATIONS

Automotive / door seals



The EPDM seals used by the millions in automobile construction have largely been vulcanised on continuous process by using Gerlach machines. Whether flexible or rigid, varnished or flocked profiles – the high demands made on profile geometry and surfaces together with high productivity and quality have for many years been successfully realised with Gerlach hot air vulcanising plants.

Industrial / roller door seals



Elastomeric products such as hoses, clamping and protective profiles with various functionalities are used in a variety of sectors in industry and are widely vulcanised on Gerlach machines. Apart from specific requirements of the materials, the high dimensional stability of voluminous extrudates is a significant parameter guaranteeing flawless further processing, fitment and functionality of the end product. The efficient continuous vulcanising process allows tight control of the surface and geometry in order to achieve the quality demands.

Window / seals for buildings



The profiles used in modern window and facade construction are successfully produced on Gerlach vulcanising machines. The option of multi-string vulcanisation together with high production speeds increases productivity and creates the necessary competitive advantage. Increasing thermal protection demands innovative solutions to thermal insulation, such as cellular rubber profiles with defined pore structures. These and other detailed solutions are already being successfully implemented on our modular machines featuring supplementary UHF and exhaust air cleaning (PCT).



Concrete pipe sealing underground



Depending on requirement, innovative sealing systems for concrete pipe connections for canalisation require different elastomeric sealing profiles. Correct cross-linking temperature control and effective use of UHF during vulcanisation decisively impact final product properties. For these applications, Gerlach can offer vulcanisation machines configured to suit the customer's demands.

RESEARCH & DEVELOPMENT

Testing facilities



Ongoing development of complex elastomeric products and increasing demands for environmentally friendly and more effective production methods are tasks which we will gladly accept and provide solutions for. Our Research and Development Department has a complete production line at its disposal for testing the practical implementation of our innovations. In order to provide proof of continuous production capability, we include customer mixtures and extrusion dies in the validation process.

We cooperate with independent and scientific partners all the way from idea to series production.

OTHER GERLACH MACHINES & SERVICES

Metal core heaters



Extrusion injected metal carrier have a significant effect on the fastening function and bending behaviour of elastomeric profiles.

The important adhesion between extrudate and metal core depends on prior treatment of the structural metal tape. The metal core heater ensures that adhesion-reducing oils and impurities are rapidly eliminated by heat. The core temperature of the structural metal carrier is simultaneously raised to the required extrusion temperature.

Reliable profile pull-off of flexible and rigid profiles



The caterpillar can exert pull-off forces up to 2 000 N. The machine may be fitted with separate PLC control, a drive for top and bottom belt, automatic slip compensation, motorised height adjustment, optional belt speed control as well as additional safety systems – fulfilling all possible needs.

The machine also offers an option of controlling all the significant machine parameters of the entire production line via the installed control panel.

Heat tabber



Apart from vulcanisation technology, Gerlach Maschinenbau is also developing products for various other applications.

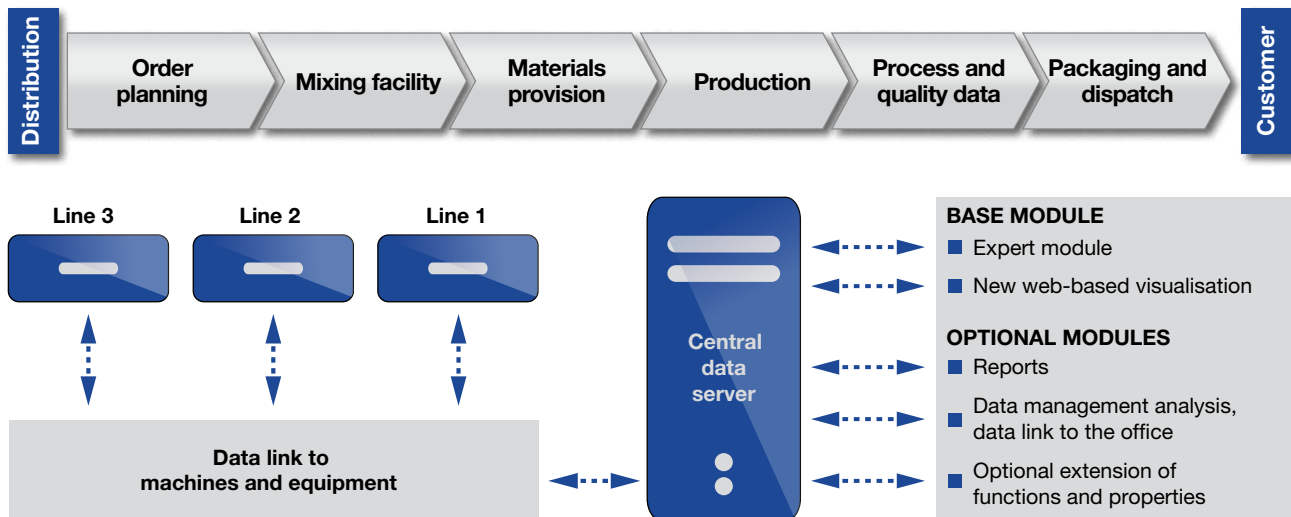
For “adhesive tape” application we, for instance, offer laminator solutions and an option for producing handling ends on elastomeric profiles.

Our “Heat tabber” is a compact and reliable semi-automatic system for producing handling ends. This ensures fast and reliable peeling of liners on double-sided adhesive tapes during installation of the seal. The machine may be used on-line or off-line.

GERLACH EXPERT SYSTEM

For the production of elastomeric profiles, the GXPS Gerlach Expert System links different machines and units to form a complete production line.

Data flow



Advantages of the Gerlach Expert System

- Cost savings through lower power consumption at optimally adjusted machine parameters
- Shorter production times through faster access to data
- Lower reject rate during start-up
- Quality improvement through constant on-line control
- Increased process reliability through reproducible processes
- Faster response to changed customer requirements

SPARE PARTS SERVICES

Logistics centre



“Just in time” service

Gerlach keeps essential spares and wearing parts in stock for immediate delivery. We have warehouse space of several hundred square metres available for this purpose, managed via modern EDP systems. Our service team is available on demand, providing advice and assistance in the event of urgent on-site requirement.



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