

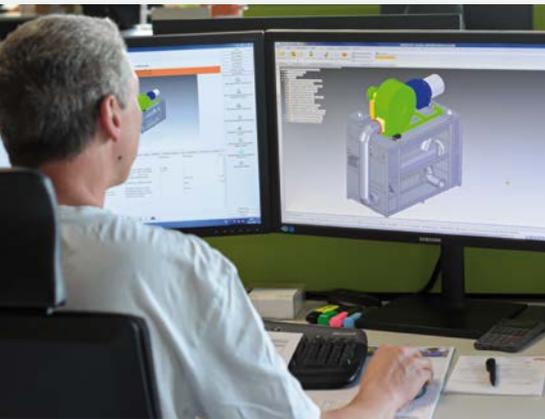


Vulcanization Machines

for the Rubber Processing Industry



GERLACH Machinery



Worldwide technology leader in the hot-air vulcanization

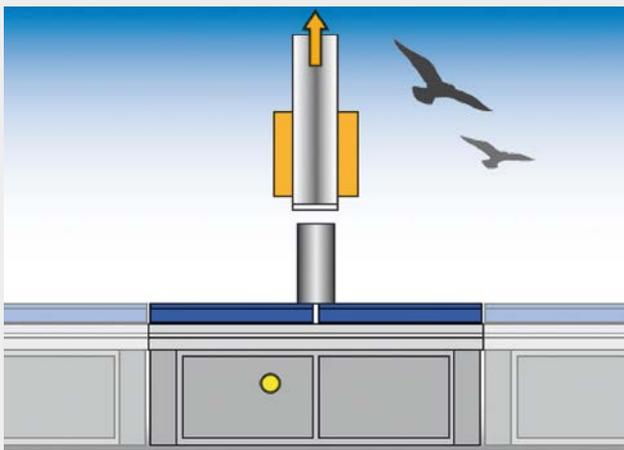
For more than 40 years now we are partner of the rubber processing industry. At our site in Nettetal, Germany, we manufacture technologically sophisticated vulcanization and auxiliary machines for our globally active customers.



Modern machine-production on the entire "line"

We represent the entire value chain on site – design, production and supply. The results are clear: sophisticated vulcanization machines of the highest quality and value, sustained over many years. All under one roof and "Made in GERMANY".





Focusing on environment and costs!

Gerlach vulcanization machines have a high energy efficiency and emit almost no pollutants or smells. The environment remains as far as possible free from pollutants and odours. Exhaust air purification using Pollution Control Technology (PCT) saves additional investments in cost-intensive separate exhaust systems.

Protection of natural resources as TOP PRIORITY!

As a machine manufacturer with an extremely high vertical range of production, different types of chipping, sheet metal and laser processing machines are used at our facility. Their cost-intensive energy supply is taken over by our in-house photovoltaic system.



GERLACH Machines: Vulcanization Applications



Vehicle production

- Static sealing systems
- Dynamic sealing systems

Complex sealing systems in road and rail vehicles are subject to the highest product- quality and dimension requirements. Gerlach machines are convincing in all respects and warrant the required profile quality at high production speeds.



Industry

- Hoses
- Protective profiles

Filigree and large-volume profiles, paired with important safety functions require a high degree of machine flexibility. Gerlach offers a perfect machine equipment for a wide range of products



Structural engineering

- Window seal
- Facade seal

Modern building architecture requires the use of different elastomer gaskets considering fine manufacturing tolerances. Gerlach machines manage these requirements and enable even more a multiple profile vulcanization with extremely high production speeds.



Water management

- Pipe gaskets
- Well gaskets

Large-volume profiles require a high energy input in the vulcanization process. Gerlach machines convince due to an extremely good heat transfer, whereby the required microwave power can be significantly reduced.



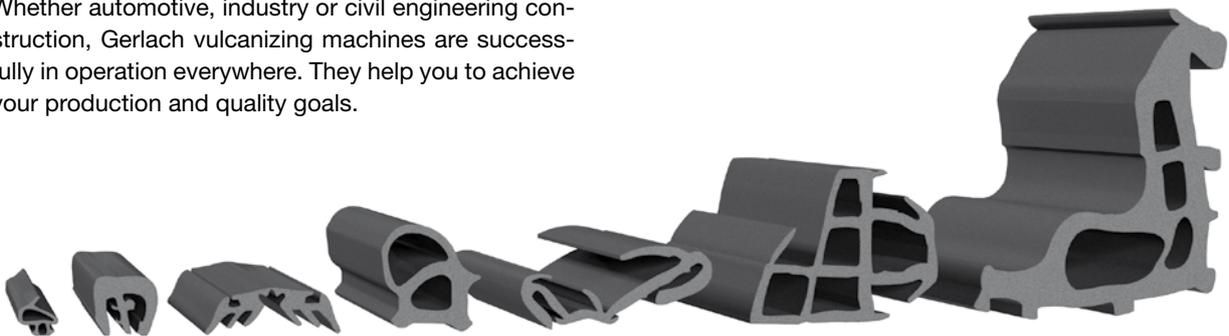
Hose industry

- Fire hoses
- Two-wheeler hoses

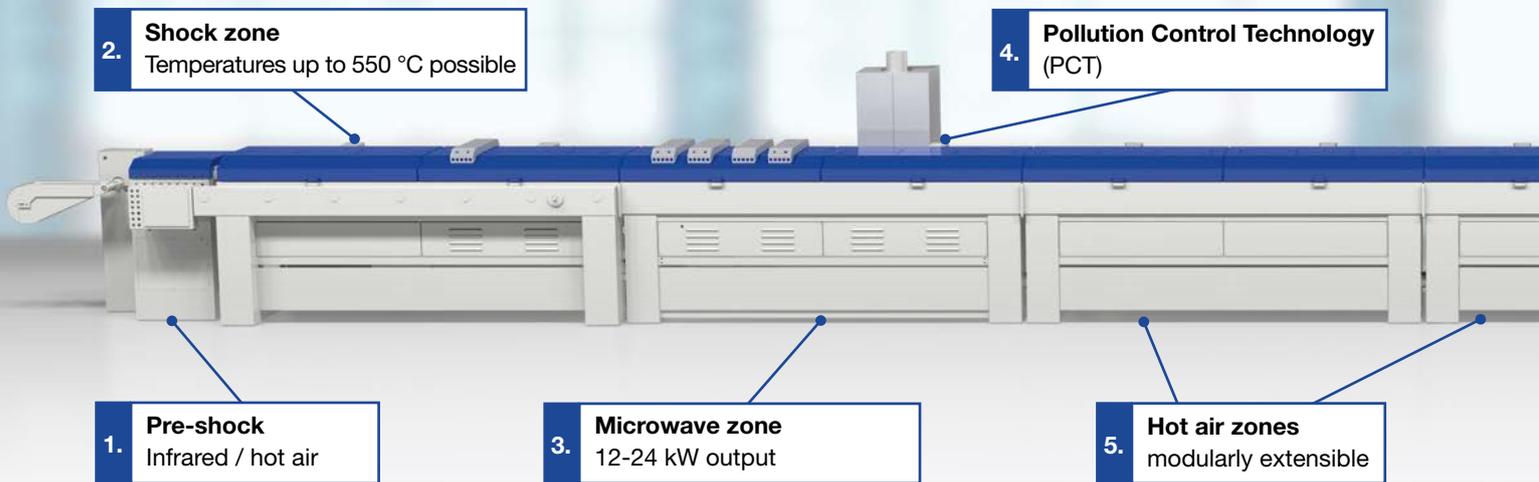
In order to meet the physical requirements for various pressure and industrial hoses it is important to have a homogeneous temperature control at the entire vulcanization process. Gerlach three-belt machines meet these requirements and provide three times vulcanization length, related to the length of machine. In combination with mounted cooling channel below the curing section in the same machine, the machine is a perfect solution for the hose producing industry.

Profiles

Whether automotive, industry or civil engineering construction, Gerlach vulcanizing machines are successfully in operation everywhere. They help you to achieve your production and quality goals.



Modular Rubber Vulcanization Plant



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

1. Pre-shock

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-

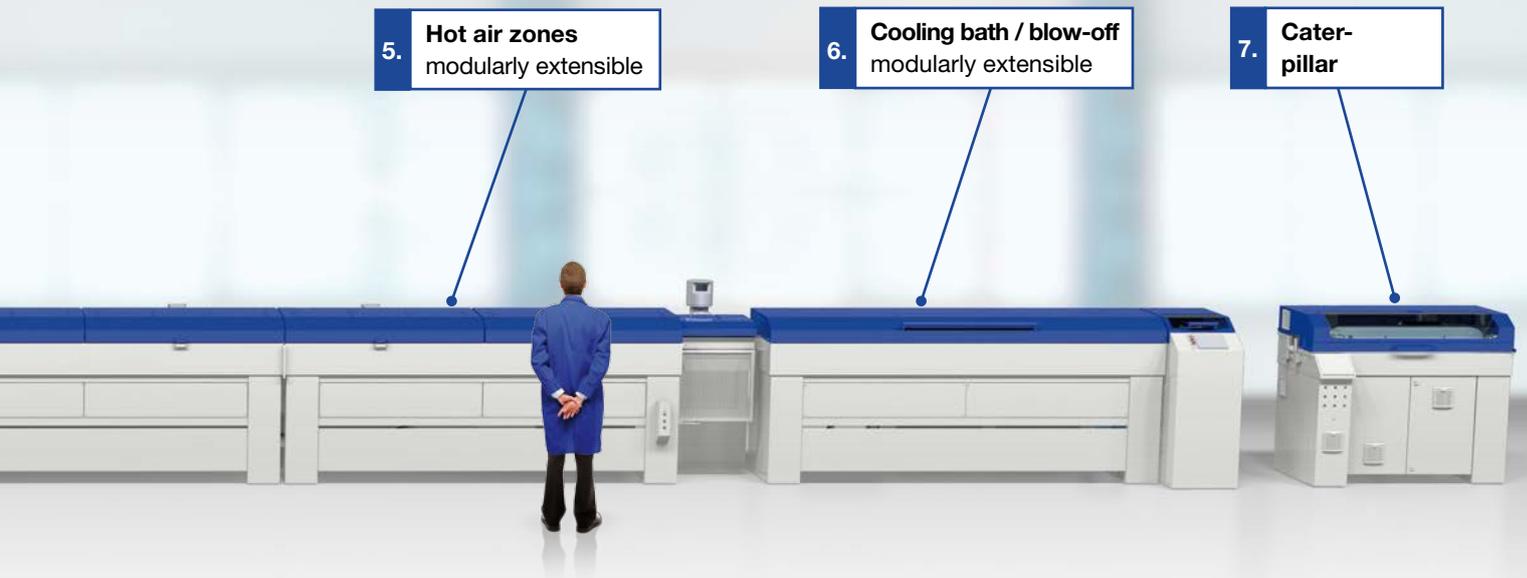
cules of the mixture, heating the mixture from the inside. Depending on the product's weight per meter, the installed UHF power may vary. The advantages of UHF also include uniform cross-linking over the cross section and fast and efficient energy transfer into the insides of thick-walled products. Our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

4. Pollution Control Technology (PCT)

Our vulcanizing machines work with integrated exhaust air purification, leaving only carbon dioxide and water to be released 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 vulcanization temperature of the extrudate. Different channel lengths may be configured, depending on rubber mixture, profile geometry and production speed.



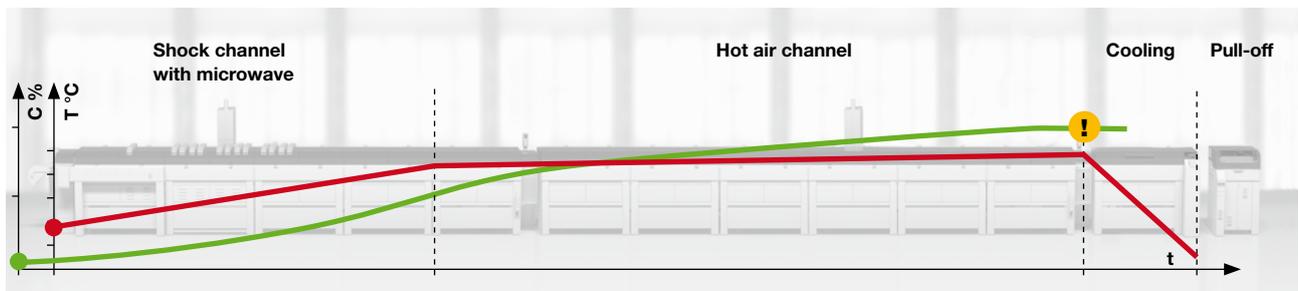
6. Cooling bath

To allow further processing of the hot, fully vulcanized 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 2000 N tractive force. The upper caterpillar position and tractive force are automatically adjusted. Furthermore, the slip between profile and caterpillar is compensated by a regulator. Applying to all Gerlach machines the caterpillar is also operated via touch screen.

Physical impact using GERLACH high velocity hot air curing machines



- Profile heating
- Profile curing
- ! Curing point: t90

Vulcanization Machines



Pre shock units

Pre shock units reduce conveyor belt marks and profile sticking through early cross linkage of the profile surface.

- gas- and electrically operated machines
- infrared, hot air
- different heating intensities
- subsector and 360° pre-shocking
- independent and mobile units



Hot air channels with microwave support

Compact and powerful vulcanization channels, the right solution to increase production performance.

- flexible machine length
- gas or electrical operated
- channels can be combined with a shock zone (550°C)
- microwave power according to customer requirements
- integrated exhaust air purification device (PCT)



Complete vulcanization lines

Gerlach technology in perfection, custom-made vulcanization and drying channels, as a combination solution for the demanding elastomer extrusion line.

- inlet conveyor belt
- pre-shock device
- shock channel (550°C) with variable microwave outputs
- post-heating and drying channels
- integrated exhaust air purification (PCT)
- autarkic machine operation or by line control

Supplementary Equipment

Exhaust air purification: Stand-alone solution

- exhaust gas cleaning on Gerlach existing machines
- energy recovery possible in recirculation mode
- cost savings compared to central cleaning
- energy recovery through heat exchanger possible
- compact and self-sufficient machine design
- gas heating LNG/LPG according to Euronorm
- machine operation via touch panel



Cooling channels, profile drying

Efficient profile cooling and drying for all extrusion processes.

- spray, flush or immersion cooling for flexible and rigid profiles
- profile transport on roller conveyors or conveyor belt
- ergonomic and simple profile feed-through
- profile drying due to compact blow-off station
- modular 3 m zone construction
- operation in open or closed cooling circuit



Pull-off caterpillars

Continuous profile pull-off with high safety standards and tailor-made machine functions.

- multiple intervention protection
- extremely accurate speeds due to servo drive
- no profile deformation due to controlled contact pressure
- pull-off force measurement and control possible
- speed control via sag control



Focus on Customer Service



Remote maintenance and service

Remote maintenance against machine downtime

Gerlach machines are equipped with remote maintenance access. The remote access is provided e.g. via Siemens PLC configuration software. Our service team is able to access the plant parameters and start an error analysis. Any faults that occur will be localized and investigated and corrective action will be taken. The downtime of the machines will be reduced to a minimum.

Production tests at Gerlach

Extrusion at Gerlach

According customer wish, a complete extrusion line can be equipped with different machines. Common machine performance tests and material- and profile validations can be realised at this way.

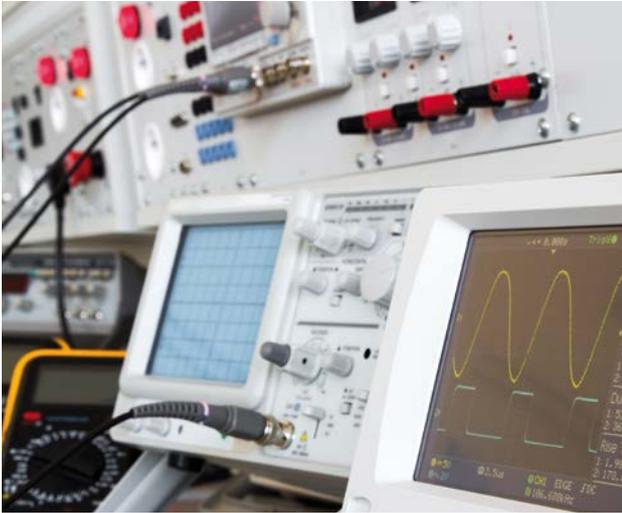


Information, education and training

Trained customer personnel

A machine operator is enabled to use all machine functions sensibly for series production and pass the knowledge on to his production team. The know-how helps to achieve higher product quality through reproducible processes.

Research and Development

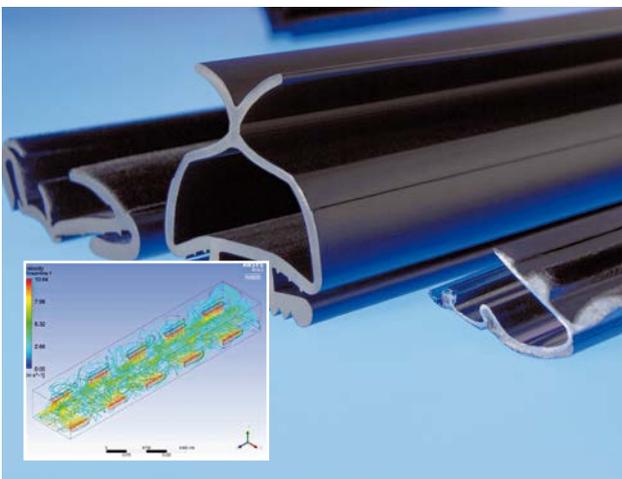


Laboratory measuring stand

The optimization of known rubber cross linkage technologies and the development of new ones, Gerlach research activities are focussing both of directions. We cooperate with various scientific partners. A complete production line as well as diverse scientific laboratory facilities are available for the engineering team.

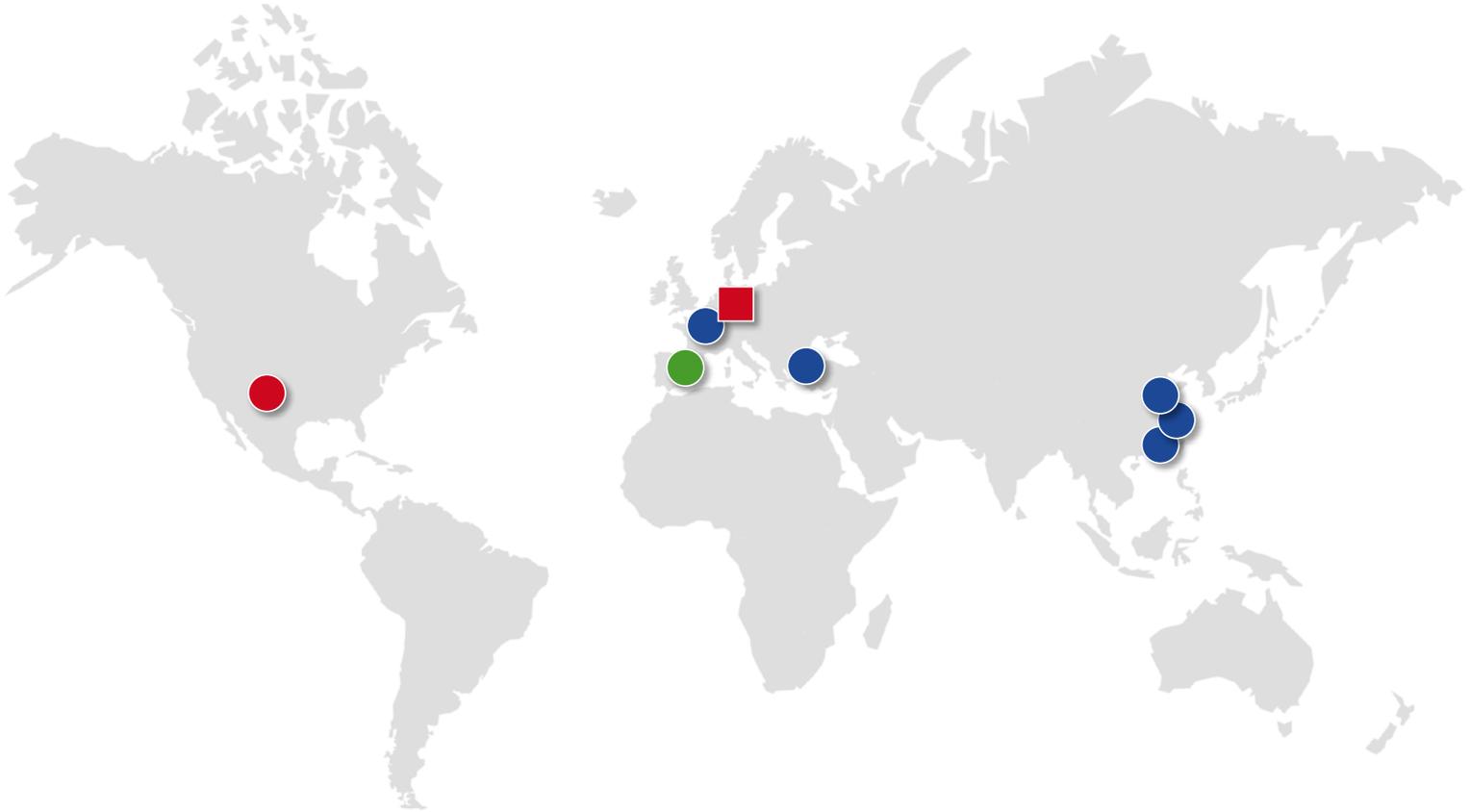
HeatStraD (laboratory oven)

Laboratory machine for validation and analysis of the physical crosslinking behavior of elastomers. The results provide information about the optimal energy form combination for the material, required duration of energy exposure, as well as the relevant economic factors of the vulcanization process.



Researching company

The new generation of machines provide scientifically ingenious features. These are developed with our various scientific partners, starting from prototype phase till the series production readiness.



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