



VMI / *Technology Meets Success*

EXTRUSION

TIRE

CAN

CARE

SERVICES

RUBBER

“VMI... technology meets success

VMI encompasses several yet specialized business lines for Tire, Rubber, Can and Care products, each of them having earned a solid reputation in their respective markets. Our 1600 people across the globe continuously strive to bring our industries to the next level by providing state-of-the-art, innovative technology to make you more successful.

All our solutions are engineered to your particular demands and needs since no customer processes are the same. With our team of experts, we discuss your plans and wishes in depth, not only for now, but also for the future and together we define the optimum solution.

Our machines are produced in state-of-the-art manufacturing and services facilities in the Netherlands, Germany, Brazil, Poland and China. Combined with our services centers in the USA, Malaysia, Thailand and Russia, we are always close at hand for whatever support you may need. Together we assure your continued success.

HIGH PRECISION EXTRUSION

VMI extruder gear pump systems are used in different types of extrusion applications, where precision of the extrusion product is a major requirement. Worldwide rubber manufacturers rely on the customized technology that is manufactured by the dedicated team of VMI Rubber. Global experience and personal service add up to high quality and profits, and will reduce your labor costs.

Precision of the extrusion product is an important requirement in many extrusion applications. VMI's extruder gear pump systems combine the plasticization of an extruder with the accurate, high pressure

volumetric output of a gear pump. You control compound plasticization and output pressure independently to ensure high accuracy and output, while preventing scorching.

The extruder gear pump systems of VMI are built to be fitted with a variety of extrusion heads to meet your specific requirements. We offer extrusion heads for profile extrusion and straining or a cross head for tube covering or for belt strip extrusion. In case the extrusion system is placed in front of a salt bath or hot air line, the configuration could also include a vacuum screw and barrel set up. The modular range of small and large scale extruder gear pump systems makes it possible to select the right configuration for each situation.

The linear gear pump technology and precise output characteristics decrease extrusion tolerances and realize a significant reduction of the scrap rate. Additionally, the linear output behavior of the gear pump enables predictable line speeds of the extrusion system and an easy integration with the downstream equipment. This is not only the case for a continuous run, but also in startup and slow down, a perfect calibration between the extrusion system and the downstream line is obtained.

To accommodate a large range of materials and applications, there are many different designs available for the screw and barrel.

From standard conveying designs for maximum machine output to PIN screws and various mixing designs.

VMI offers various applications such as:

- strip winding
- wire coating
- silicone tubing
- profile extrusion
- pelletizing
- rubber compound degassing
- feeding of rubber into a TPE/TPV compounding extruder

We have machines ready for demonstrations with your rubber for tests and immediate results.

“VMI Rubber offers reliable processes for high quality output.”

HIGHLIGHTS

- Flexible in a wide variety of applications
- High accuracy output
- Reduction of extrusion tolerances
- Excellent process control
- Lower scrap rate

PROPORTIONAL BLENDING AND FINAL MIXING

VMI Extruder gear pump systems are used for final mixing (iCOM technology) or for proportional blending of rubber compounds. The system provides you a high quality output, while saving costs on equipment investment and on energy use.

Using a VMI final mixing system opens up perspectives for final compound preparation outside of the traditional mixing room. The masterbatch compound can be transported without consideration for shelf life as there are no vulcanization chemicals yet. The final compound can be prepared at the production plant, with just the VMI final mixing extruder, and with integrated straining possibility.

Another possibility is the proportional blending of various rubber compounds. This enables you to be flexible in adjusting the properties of the final mix. Based on two different standardized compounds produced in an internal mixer, the final compound properties can be adjusted by changing a parameter, which changes the ratio of mixing the two base compounds into the final compound.

Based on the use of a special designed mixing extruder in combination with a gear pump, the main compound is fed directly into the main mixing extruder, in a strip form. Depending on the production requirements there are several options for dosing of the secondary materials. A dosing unit (Loss in Weight) can be used for granules, or an extruder gear pump combination can be used for a feed strip.

HIGHLIGHTS

- Expanding capacity, increasing quality
- Lower use of energy
- Saving on storage and transportation times
- Fine mesh high pressure straining

TREAD EXTRUSION FOR RETREADING

The VMI solution for tread extrusion for retreading combines a single screw cold feed extruder and a volumetric operating gear pump. Because of the volumetric operating principle of the gear pump, the tread weight per meter is extremely precise with variations within +0.4% or less. This enables very tight dimensional tread tolerances and thus realizes a minimized mold scrap, resulting in maximum savings.

The linear output of the gear pump in relation to the pump speed, allows for exact control between the extrusion speed and the downstream equipment.

We adapt the solution to your specific requirements, whether you feed with one or more extruders.

Extruder	Output* maximum
60	200 kg/hr
70	350 kg/hr
90	500 kg/hr
120	1000 kg/hr
150	2000 kg/hr
200	3000 kg/hr

* The output indication depends on a specific compound gravity of 1.1

HOT AND COLD FEED STRAINING

VMI Rubber offers reliable straining systems that filter contaminations from your compound. This will improve your compound quality which is used for high end products. Our gear pump systems are fed by a single screw extruder that allows processing of compounds with a low or a very high viscosity.

The separately driven single screw extruder provides the needed plasticization for every compound viscosity. It also lowers the costs on spare parts, since well plasticized compounds result in long life time for your gear pump and bearings.

The screw delivers the rubber, free of entrapped air to the gear pump at an adjustable pump inlet pressure. Fine mesh straining, e.g. 180 mesh, is possible with our system. The gear pump is able to build up output pressures up to 500 bar.

The easy access between gear pump and screw allows for trouble-free maintenance and cleaning.

Recommended for long runs of the same compound is a hydraulically operated rapid screen changer that brings a new filter in operation within less than 30 seconds.

PREFORMING

VMI's preforming systems are fed directly by cold rubber in strip form and feature integrated straining. There is no need to prepare a pre-heated roll of material on a mill.

The cold rubber strip is introduced directly into the extruder that features a special plasticizing screw. The system process control ensures the stable compound properties and preform weight accuracy.

Due to the gear pump with high output pressure capability, the system is excellent for one-pass straining and preforming process, even for high viscosity compounds such as FPM.



Extruder	Output* maximum
60	200 kg/hr
70	350 kg/hr
90	500 kg/hr
120	1200 kg/hr
150	2200 kg/hr

* The output indication depends on a specific compound gravity of 1.1





VMI Services

“Getting the best out of your VMI solutions.”

In all of VMI's industries, technological advances never stop. But the one constant is our total commitment to providing proven, reliable equipment, services and solutions. VMI Services ensures you not only have the best equipment available, but that it continues to be the best solution.

The VMI Services organization works closely with you to determine your maintenance maturity and requirements. With regular equipment check-ups and recommendations or for complete services packages that include overhauls, upgrades, training and more, our aim is to always optimize the performance of your equipment with predictable cost. Our advisors work together with you to create a tailor-made VMI maintenance support program to bring continuous improvements to your process.

One of the key differentiators in tire- and rubber production is Total Cost of Ownership (TCO) of the equipment. To keep TCO as low as possible, special attention in the design process has been given to the tooling, spare parts usage and maintenance of the machine.

Just a phone call away, we are here to help 24 hours a day, 7 days a week, to guarantee a rapid on-site response when you need it most.





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