



Version 11/21



METAL DETECTORS AND SEPARATORS
FOR INJECTION MOLDING AND EXTRUSION

RELIABLE, PRECISE AND USER-FRIENDLY

Process reliability, quality and uptime are the cornerstones of work with plastic molding machines. Metal detectors can contribute to a significant improvement in these values and thus lastingly increase the profitability of your company.

Metal is everywhere.

The ingress of metallic foreign bodies into the production chain is virtually unavoidable. Drilling swarf, nuts, cable remnants or clippings get into the plastic stream both via incoming goods streams, via your own production and recycling machines or through simple carelessness on the part of employees. Especially in times when raw materials are becoming scarcer and thus dearer, the use of the highest possible proportion of regenerates is becoming increasingly important from an ecological and economical point of view. However, precisely this is associated with high risks.

Without effective countermeasures there is a threat of hazards such as standstills due to blocked nozzles, polluted melt filters, damaged augers or even deformed or weakened end products. In the treatment, conversely, metals cause expensive damage to crushing units on the one hand and renewed ingress into the production chain on the other.



*Metal detection, reliable
and user-friendly.
Manufactured in Bavaria,
used throughout the world.*



Christian Boxleitner
Managing Director



METAL DETECTORS AND SEPARATORS FROM MESUTRONIC

Mechanical is often not enough.

Classic mechanical methods such as sieves or filters for granulate and melt offer greater or lesser safety depending on the price and implementation. However, the maintenance intensity is usually high, in addition to which they themselves naturally also influence the flow characteristics of raw material and melt as »foreign bodies«. Magnets on the other hand are suitable for removing ferrous contaminants from granulates and flakes. However, apart from the limited protection against ferromagnetic metals, it is also usually necessary here to place rods in the material flow. This in turn encourages the formation of bridges or reduces the throughput. Neither mechanical filters nor magnets are particularly suitable for use to protect size reduction equipment.

Metal detectors and separators protect reliably!

In addition to dissimilar plastics, metals are the most frequent contaminants in the field of injection molding and extrusion. Electronic all-metal separators and detectors from MESUTRONIC offer an outstanding means of reducing this production risk to a minimum in every application. These bastions of foreign body inspection are often combined with mechanical protection devices in order to supplement them or increase the benefit. With their enormous price-performance promise, low-maintenance technology and uncomplicated installation, they offer the optimum balance between safety and expenditure.

Incoming goods area



Production and process



Final product inspection



Material reprocessing



INCOMING GOODS AREA



In incoming goods areas, metal detectors and metal separators are used for the monitoring of the emptying of trucks and big bags in free-fall or in pneumatic conveying. In combination with conveyor belts they can also be used for the examination of granulates, powders or master batches in 25 kg bags. Contaminants can thus be traced back directly to the supplier.

The separators of the type **P-TRON 05 GM** are available in nominal widths of up to 200 mm. They are thus ideally suited for use in silo feeds or for the main distribution after the silo. They can be used for both the pressure and vacuum conveying of powders, granulates or flakes.

Additives, master batches or smaller quantities of granulates are often delivered in 25 kg sacks. Metal detectors from the **METRON 05 CI** series are used to plug these safety gaps in the incoming goods area.



They work as stand-alone machines in the logistics area, usually in combination with **TRANSTRON conveying systems**. They are fed manually; complaints about contaminated bags of the expensive raw materials can be made directly to the supplier without unpacking. Optionally the bags can also either be ejected automatically onto a discharge belt or colour-marked to prevent re-entry into the production process.

After silos or in big bag emptying, on the other hand, **QUICKTRON 05 A** free-fall separators can be used. Various nominal diameters, accessories or special versions such as ATEX-compliant devices are available for every application. They offer excellent detection accuracies even with larger diameters.



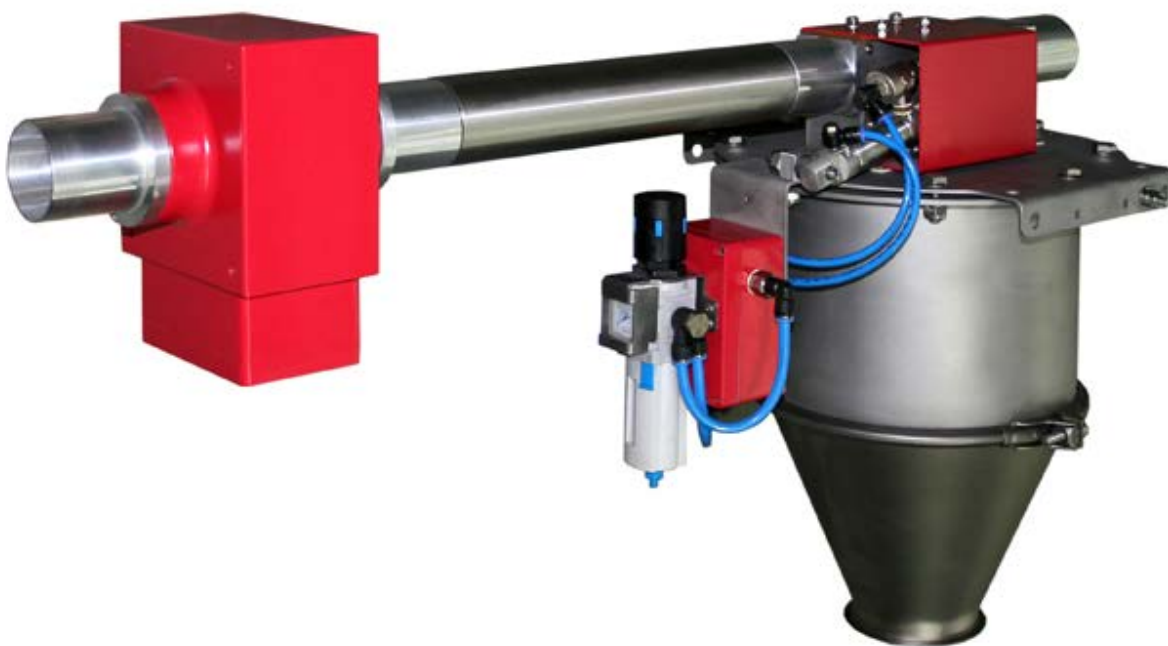
PRODUCTION AND PROCESS



Protection of the production process is the core task of metal detectors in the plastics processing industry. The goal here is to optimise uptime and to manufacture end products and semi-finished products of a constant quality. In general, only separators are used here. They remove metals with a minimum loss of good material, without interrupting the production process.

Like its big brother the P-TRON GM, the **P-TRON 03 FM** is used in pneumatic conveying lines with so-called »lean-phase« or thin-stream conveying. As opposed to the GM, however, this device is not equipped with pinch valves, but with a balanced pendular mechanism. This means that it is only suitable for use in vacuum conveying lines with relatively short conveying cycles.

During transport the flap valve seals against the environment; when the airflow stops the polluted material in the collecting container is discharged to the outside. It is best suited for the protection of centrally supplied systems.



PLASTRON 05 K

New to the MESUTRONIC product range is the PLASTRON 05 K metal separator.

This is placed directly on the plastification unit of an injection molding machine or an extruder. By means of an innovative rotary cone mechanism and supporting compressed air system it reliably discharges contaminants from standing material columns and in free-fall, working with dusts as well as granulates or ground goods.

It is mechanically highly stable and can also support complete feeding systems like hopper loaders and mixers. It is simple to dismantle, allowing optimum cleaning when changing colour or material. With high detection accuracies down to 0.3 mm it offers reliable protection even against pieces of wire or fine clippings, also with pre-dried granulate at up to 120 °C. Versatile communication options enable integration into process control systems in the sense of Industry 4.0.

It is the first choice for the last chance of metal separation before the molding machine.

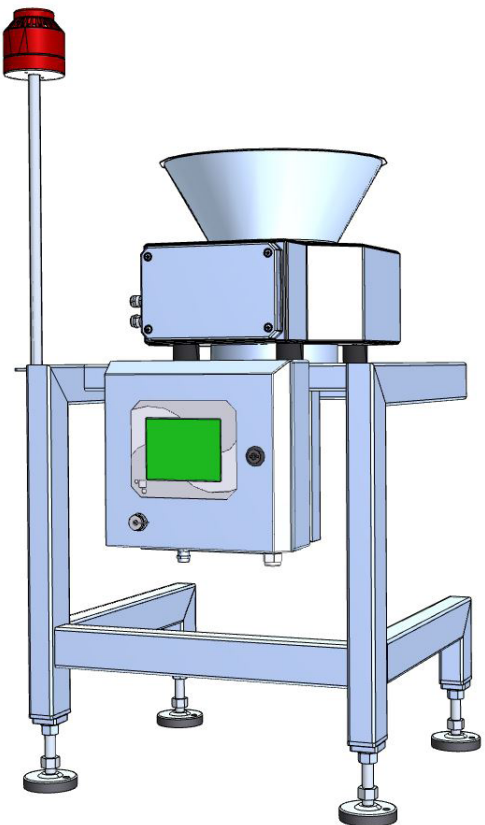


FINAL PRODUCT INSPECTION



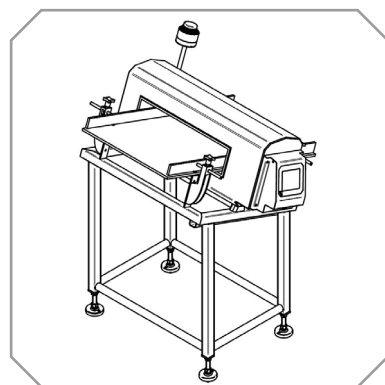
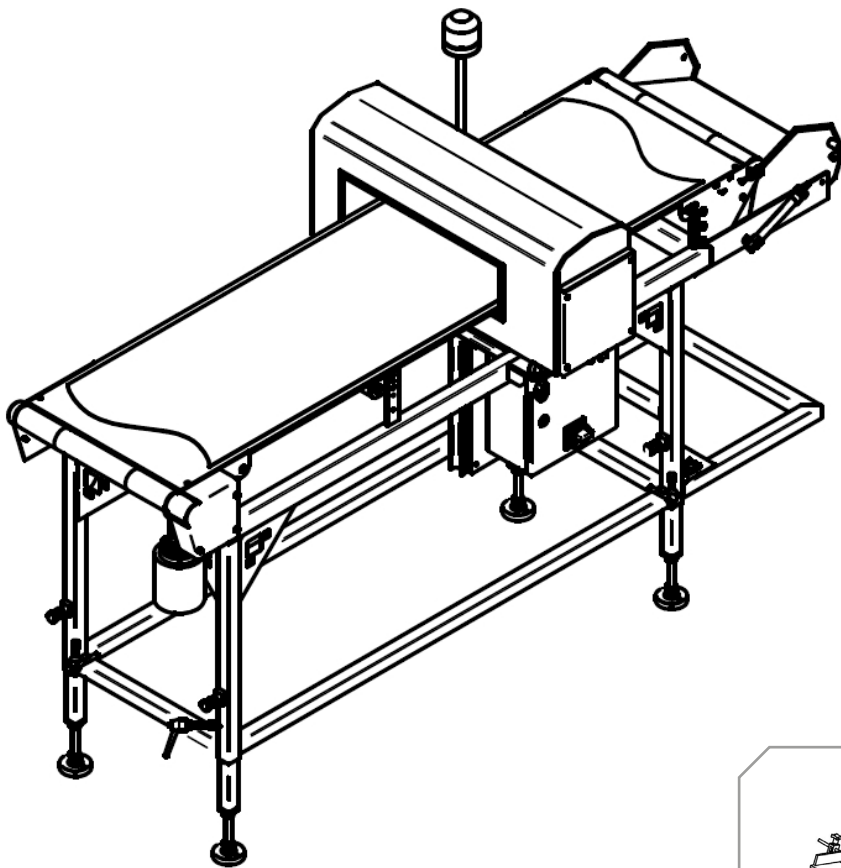
In the outgoing goods area the first important task is quality control. On the other hand a check is performed to ascertain whether damage, such as abrasion or breakage, has been caused to the tools of the shaping machine. In particular with fine cavities in the injection molding area, expensive scrap and loss of time can be avoided in this way.

The **METRON 05 FlatLine** metal detector coil is integrated in the ejection chute or the outfeed belt of the injection molding machine. This system offers sufficient detection performance to detect even fragments of broken tool pins. The strong screening allows installation directly underneath the runner of the machine. The plant can thus be stopped immediately after metal detection. The operator then performs a service and the tools are checked. The portfolio is complemented here by custom holding frames or special infeed hoppers.



Conversely, metal detectors from the **METRON 05 CI** series are used in combination with **TRANSTRON** conveyors for the inspection of parts removed by means of a robot. They generally replace existing removal belts. The parts set down are discharged individually or as a set, as desired. The cycling of the belt is controlled by the robot in order to avoid problems. The metal detector is also only »armed« when the robot is stationary in order to avoid false alarms due to actuator motors or the arm itself.

The systems work autonomously in the safety area of the robot. Solutions completely without an operating display are also possible here on request in order to avoid operator errors or stoppages.



MATERIAL REPROCESSING



For optimum value creation it makes most sense to return your own production waste directly to the material stream if possible. This can take place directly on the machine or in central treatment areas.

The **METRON 03 SL** is used in the feed belt of the beside-the-machine granulator of an injection molding or blow molding machine. As a rule, small parts or hollow bodies are crushed here directly next to the production machine and re-fed. The SL protects against machine parts that may have worked loose from the complex production machine. It impresses with its simple installation into aluminium modular belts, even if retrofitted . It does not require any additional metal-free zone.

Residual streams are collected and reconditioned in the central grinding area. The METRON SL is also suitable here for the protection of smaller grinders. However, larger material heights are more common here. The divisible **METRON 05 D** tunnel detector is normally used to examine these reliably. This model is also simple to integrate, since the coil halves can be separated. This is a decisive simplification for changing the belt of the conveyor. Since this machine requires a metal-free zone, belt conveyors either have to be designed as such or subsequently converted.

Risks can be minimised by purchasing a **TRANSTRON GF** inclined conveyor belt, as all requirements for the metal detector are taken into account here. This guarantees stable, uncompromising detection performance in the long term.



For particularly large dumping heights, such as grinding large tanks or foil bundles, it may be necessary to switch to closed tunnel detectors of the **METRON 05 C** series. These devices have a higher detection performance and can additionally be equipped with so-called »shielding extensions«. These reduce large-scale false alarms due to electromagnetic interference fields, which can greatly reduce the detection accuracy, in particular with passage heights exceeding 800 mm.

For protection against the ingress of finer metal particles or to protect a pulverizer, the use of a **QUICKTRON 03 R** metal separator is recommended. It is installed immediately downstream of the coarse grinding. This economical and extremely sturdy system removes metals from the ground material with an accuracy down to 0.5 mm. The treated residual flow can thus be fed again without worries to the production machines or fine grinding.

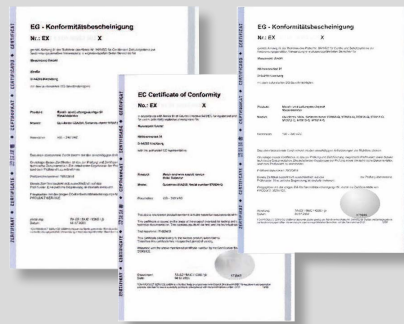
If several metal separators are installed it may be useful to invest in a **Re-separation unit**, with which ejected granulates or ground materials can be subjected to a further meticulous examination. Thanks to the adjustable throughput, metal particles can be ejected with just a few granules – fully automatically. This means that up to 95% of the previously contaminated material can be fed back into production. In addition, this simplifies the examination of possible sources of contamination. The system operates fully autonomous with a suction conveyor, a dosing unit and a metal separator.



Metal detectors and separators from MESUTRONIC

- detect and separate **all metals**, such as stainless steel, alloys and ferrous metals as inclusions or in loose parts in plastics and plastic products
- Are durable, robustly and reliable – the best investment you ever could do!
- Protect valuable machineries against expensive damage by metal contaminants
- Assure constant quality and high production rates
- Are also available with PrefES documentatiON for the US market

Metal search technology “Made in Germany” – increases profit, avoids trouble!



Explosion proof
version available.



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