



Inspection systems

for the plastics industry

Reliable, precise and user-friendly

Metal detectors and separators from Mesutronic

Why detect foreign bodies?

Despite all safety precautions, the contamination of plastics with metals is unfortunately a problem in every manufacturing company. The effects are often dramatic if these are not reliably detected and removed from the production chain. Damage to crushing systems, injection moulding machines and extruders or the loss of supplier contracts are often the result of inadequate control systems.

Why Mesutronic?

For more than 30 years, we have been developing inspection systems with and for companies in the plastics industry. These are used in preparation for inspecting blow mould parts, incorrect sprue shots and much more. Grinding material, masterbatch or granules are used to protect production plants. In the outgoing goods area, plugs in particular are examined for tool breakage. For all those who need foreign body detection for their production facilities and value "Quality – made in Germany", Mesutronic is your experienced, solution-oriented, internationally active specialist and loyal partner.

We achieve this because everything from development to design and installation, up to service and maintenance is consistently geared towards individual industry and customer needs.

**» Machine protection and quality assurance
- reliable and user-friendly.**

**Manufactured in Bavaria, used throughout
the world. «**

**Christian Boxleitner
Managing Director**



Incoming goods area

In the incoming goods area, metal detectors and metal separators are used to check the emptying of lorries and big bags in free fall or in pneumatic conveyance. In conjunction with conveyor belts, they can also be used for examining granules, powders or masterbatches in 25 kg bags. This allows contaminants to be traced back directly to the supplier.

Type **P-TRON 05 GM** separators are available in nominal diameters of up to 200 mm. This makes them ideal for use in silo feeders or for the main distribution system after the silo. They can be used for both the pressure and vacuum conveying of powders, granulates or flakes.

Additives, masterbatch or even small amounts of granules are often supplied in 25 kg bags. Metal detectors of the **METRON 05 CI** series are used to close this security gap in incoming goods.



These work, usually in combination with **TRANSTRON** conveyor systems, as stand-alone systems in the logistics sector. Complaints about contaminated packages of expensive raw materials can be made directly to the supplier without opening the packages. Optionally, the bags can also be either automatically slid onto a discharge belt or marked with paint to prevent re-entry into production.

QUICKTRON 05 A free-fall separators can be used after silos or when emptying big bags. A variety of nominal diameters, accessories or special versions such as ATEX-compliant devices are available for every application.

Production und process

The protection of the production process is the core task of metal detectors in the plastics processing industry. Here, it is important to optimize service life and produce qualitatively homogeneous end products and semi-finished products. As a rule, only separators are used here. These remove metals with minimal material loss without interrupting the production process.

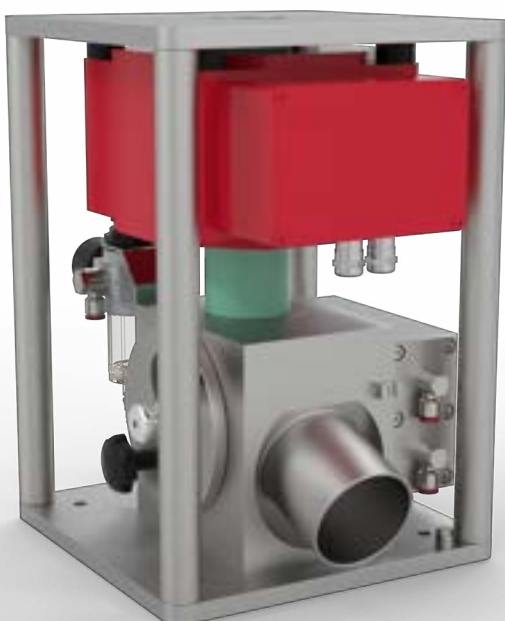
Similar to its big brother the P-TRON GM, the **P-TRON 03 FM** is used in pneumatic conveying lines with so-called »lean phase« conveying.

In contrast to the P-TRON GM, however, it is not equipped with pinch valves, but with a balanced pendulum mechanism. This makes it suitable for use solely in vacuum feed lines with relatively short feed cycles. In the conveying cycle, the pendulum flap seals against the environment; when the conveying stops, the material gathered in the collection container empties outwards. It is best suited for the protection of centrally supplied machines.



The **PLASTRON 05 K** metal separator is placed directly on top of the plasticizing unit of injection moulding machines or an extruder. By means of a rotary cone mechanism and supporting compressed air system it reliably discharges contaminants, both when stationary material columns are lying flat and in free fall, with dust as well as with granules or ground material. It also carries complete feed units consisting of suction conveyor and mixer with high mechanical stability. Easy disassembly ensures optimal cleaning when changing colours or materials.

With excellent detection accuracy of up to 0.3 mm, it offers reliable protection, including against pieces of wire or fine shear, including with pre-dried granules at temperatures up to 120°C. Communication options allow integration in process controls as in Industry 4.0.



Outgoing goods area

The quality of the outgoing products is checked in the packaging area.

This exit check also monitors whether damage such as abrasion or breakage to the tools of the shaping machine has occurred during the forming process. This avoids costly waste and loss of time, especially in the case of fine cavities in injection moulding.

The **METRON 05 FlatLine** metal detector coil is integrated into the discharge shaft or the discharge belt of the injection moulding machine.

This system provides sufficient detection power to detect even parts of broken tool pins. The strong shielding even allows installation directly underneath the movable closure of the tool. This means that system can be stopped as soon as metal is detected. This is followed by maintenance by the operator and the tool is checked.

Here, the portfolio can be optionally supplemented with customer-specific holding frames or special inlet funnels.



Metal detectors of the **METRON 05 CI** series, on the other hand, are used in conjunction with TRANSTRON conveyors for the inspection of parts that have been removed using a robot. As a rule, they replace existing pick-up conveyors. The deposited parts are removed individually or as a set as desired. The timing of the belt is then controlled by the robot in order to avoid problems. The metal detector is also "live" only when the robot is stationary in order to avoid the triggering of false alarms by actuators or the arm itself.

The systems operate autonomously within the robot's safety zone. On request, solutions can also be provided without a control display in order to avoid operator errors or failures.



Material recycling

For optimal value creation, it usually makes sense to return your own production waste to the material flow as quickly as possible. This can be done within the machine itself or in central processing areas.

The work location of the **METRON 03 SL** is the feed belt of the auxiliary mill of an injection moulding or blow moulding machine. As a rule, small parts or hollow bodies are again crushed and fed directly to the production machine. Here, the SL protects against machine parts that could have detached themselves from the complex production machines. The stand-out aspect of the device is its simple installation (also possible at later stages) in aluminium module strips. Here, it does not require an additional metal-free zone.

In central grinding, residual flows are collected and reprocessed.

The METRON SL is also suitable for the protection of smaller mills. In most cases, however, larger bulk heights are standard. As a rule, the **METRON 05 D** divisible tunnel detector is used to reliably inspect these heights. The divisible coil halves mean that it is also easy to integrate. This is a key simplification of the process for changing the belt of the conveyor.

Since this system requires a metal-free zone, belt conveyors must either already be designed in this way or retrofitted at a later stage. When purchasing a **TRANSTRON GF** ascending conveyor belt, risks can be minimized because all requirements of the metal detector have been taken into account in the best way possible. This ensures stable, long-term operation without compromising detection performance.



For particularly large material heights, such as the grinding of large tanks or film bundles, it may be necessary to switch to closed tunnel detectors of the **METRON 05 C** series.

These have a higher detection performance and can also be equipped with so-called »shielding extensions«. This massively reduces false alarms caused by electromagnetic interference fields, which can cause a sharp reduction in detection accuracy, especially at clearance heights above 800 mm.



To protect against the entry of finer metal parts or to protect a powder mill, it is recommended to use a **QUICKTRON 03 R** metal separator, which is installed immediately after coarse crushing.

This economical and extremely robust system removes metals from grinding stock with an accuracy of up to 0.5 mm. This means that the treated residual stream can again be fed to the production machines or the fine crushing machine without hesitation.

If multiple metal separators are used, it may be worthwhile investing in a re-separation unit. With this, precipitated granules or ground material are again examined in a highly isolated environment. Thanks to the adjustable throughput, the depositing of metal parts with only a few granular grains is fully automatic. This means that up to 95% of previously contaminated material can be fed back into production. This also simplifies the examination of possible sources of contamination. System operation is fully automatic by means of a suction conveyor, a dosing unit and a metal separator.

Digital products and services

The successful operation of inspection systems is no longer solely dependent on purchasing of the right product, but also on how well the system is connected to the people and machines in its environment. Mesutronic offers a wide range of support services that increase the integration of our products.

Depending on the type of electronics used, our systems can already provide information as standard via analogue signals, various bus systems or Ethernet. Information is received by either controllers, process control systems or other, higher-level machines along the line. In addition to other protocols, with digital networking the OPC UA protocol is used here for the smooth transmission of operating conditions and production-critical values.

If a networking solution is desired purely at the level of foreign body detectors, here **mesuNET** offers optimal performance for the simple creation of reports, evaluation of statistical data, central backup of the event history and as an intermediary to higher-level databases or control systems. This facilitates the easy collection of important OEE data with secure, web-based access without attachment to a single computer.



The **mesuEXPORT** software feature is another easy, automatic and cost-effective way to back up reports. Here, systems with the AMD 07 electronics series are connected to the customer's network drive via Ethernet. The system can then be configured to store event reports for specific events or at specific times. Data is therefore redundantly backed up and cannot be lost - even if the system is completely destroyed.



mesuREMOTE allows our service specialists from Kirchberg im Wald to access any connected system, often avoiding time-consuming on-site deployment. Communication is secured according to current IT standards, encrypted and takes place solely after approval by the customer at all times.

All of this can additionally be secured on the hardware side via a key switch. This means that any uncoordinated manipulation of systems by Mesutronic or third parties is reliably excluded.



The electronic **autoTEST** tester allows significant reduction in manual test cycles in devices of the 07 electronics series.

Signals from physical test bodies are copied via an interference coil that operates independently of the detector. As a result, short test cycles, and thus maximum process reliability, can be implemented without additional effort.



In order to reduce introduction barriers and ensure smooth, long-term operation, we recommend our **training programmes**. We offer a wide range of solutions, from simple operator training included with commissioning to multi-day events on our premises. As with our physical products, we strive to make training as efficient and economical as possible for our customers while still in the coordination phase. The content is recommended by us and then individually adapted to your needs according to the number of participants, their educational background or previous experience.



We are also happy to offer regular training courses at a reduced rate in connection with **maintenance contracts**. These courses are also designed to be customer-oriented. Frequently selected options include, for example, annual on-site maintenance or reduced prices for spare parts. It is also possible to flexibly add or remove devices from the scope of the contract.

Options for maintenance contracts and training in our systems are usually also available for indirect customers of our local partners or OEMs.



The cornerstone of our **after-sales service** is our motivated, trained and customer-oriented service staff. Our promise of “detecting what matters” includes accessibility without compromise and without additional costs, 24 hours a day, 365 days a year. This is supplemented by our cost-effective board exchange programme with reprocessed electronic components as well as the possibility to repair every system ever sold to the market.

Customer-specific projects

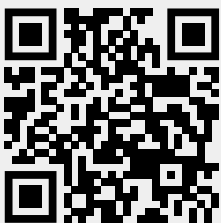
Special challenges may arise in particular when retrofitting inspection systems into an existing production environment. The development of solutions for these tasks is one of the core competencies of Mesutronic GmbH. The ways shown range from simple consultation on the deployment of a standard solution in an unusual way, through smaller and larger modifications, to the complete, customised customer system.

We focus on the permanent, reliable and economically optimal fulfilment of your requirements. This is made possible by our company's competent team of employees, who are trained in all relevant areas from sales to application, mechanical and electronic development, up to production and after-sales. They are supported by modern work equipment and a process world embedded in ISO 9001.

We make projects, which we see as a permanent dialogue, transparent for our customers at all times.

The way we see it, our work is not finished when products are delivered, but when production is again functioning smoothly after conversion.





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