



Inspection systems

for the meat-processing industry

Reliable, precise and user-friendly

X-ray inspection systems, metal detectors and separators from Mesutronic

Why detect foreign bodies?

Despite all safety precautions, the contamination of meat and sausage products with foreign matter 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 processing machines, problems during audits, loss of supplier contracts and, in the worst case, severe image problems among consumers are often the result of inadequate control systems. In addition, X-ray inspection systems offer a wide range of other possibilities for checking the quality of meat products and sausages

Why Mesutronic?

For more than 30 years, we have been developing inspection systems with and for companies in the areas of meat and sausage products. 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**



Slaughtering and incoming goods area

METRON tunnel detectors and appropriate TRANSTRON conveyor systems are the systems of choice for protecting production from damage at the incoming goods stage.

Typical use at the incoming goods stage is the inspection of E2 boxes containing fresh meat.

METRON 07 CI tunnel search coils (optionally available as a complete feed system) are also used in the grinder feed to examine fresh meat or blocks of frozen meat for metals. The system reliably detects knife fragments, chain rings, or even entire butcher's hooks, so as to ensure a smooth production process. Of particular importance in this area are the hygienic construction of our systems, maximum resistance to any type of cleaning, as well as their robust design.



Sausage filling

Safety between vacuum filler and skin.

MEATLINE metal separators segregate even fine metal parts from sausage meat safely and without interruption.

Metal detectors in the **MEATLINE** series find even the finest metal particles made of iron, aluminium, copper or stainless steel. Safety hazards at this stage are upstream processing machines such as grinders, bowl cutters and others. All devices in the series impress with their ease of use, high cleaning resistance, hygienic design and uncomplicated disassembly. The special requirements for the required mobility in this area are met by integrated ramming protection, a tilt-proof and robust chassis and precise thread height adjustment.

The devices can be connected both mechanically and electrically to all common fillers. For very old models or smaller manufacturers, we are of course happy to offer an individual solution for adaptation. The filling range is rounded off by optional accessories such as upstream magnets for iron removal, insertion stations for test specimens and various collection systems for rejected material.

MEATLINE 07

The metal detector as a pure pass-through device on a chassis. This variant should be used specifically in the production of raw sausages. The short installation length ensures minimal weight fluctuations and fat smudges. In the event of a metal message, either the clipper signal is suppressed or conveying is stopped and the system is cleaned manually.

Also available as a MEATLINE 07 LE version with integrated linking gear extension.

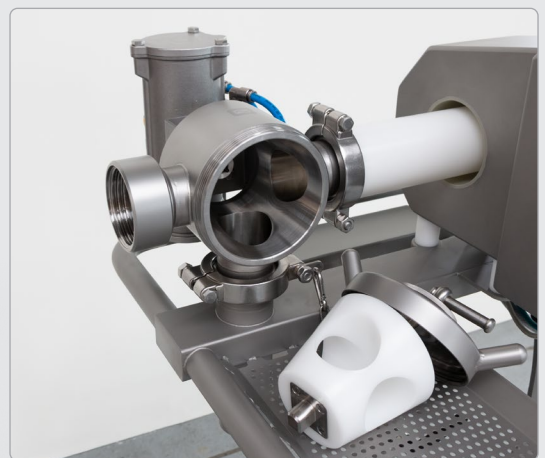
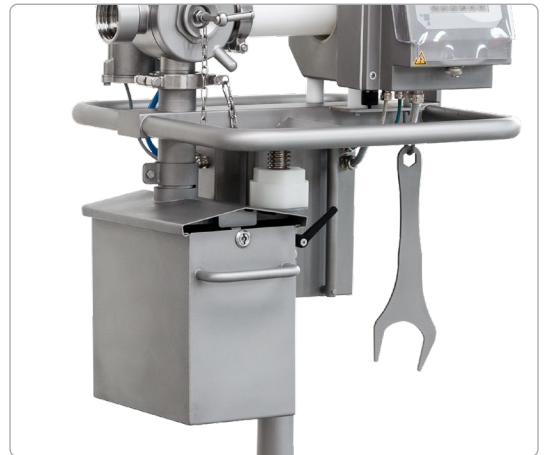


MEATLINE 07 O

Metal separator with integrated reject valve.

The **MEATLINE 07 O** is used to operate a filler with a clipper or a linker with self-propulsion. The discharge valve is a custom-made MESUTRONIC design to ensure complete safety during separation, even with lumpy masses, absolute tightness and minimal separated quantities of sausage meat per detected metal. The valve, without loose parts, can be disassembled for cleaning in less than 10 seconds.

With the size 80/100, connection to ham fillers is possible without the risk of vacuum loss.

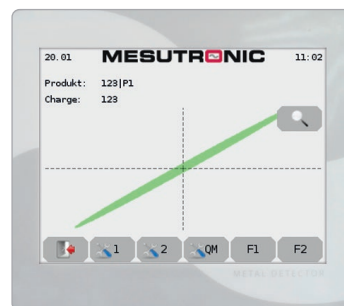
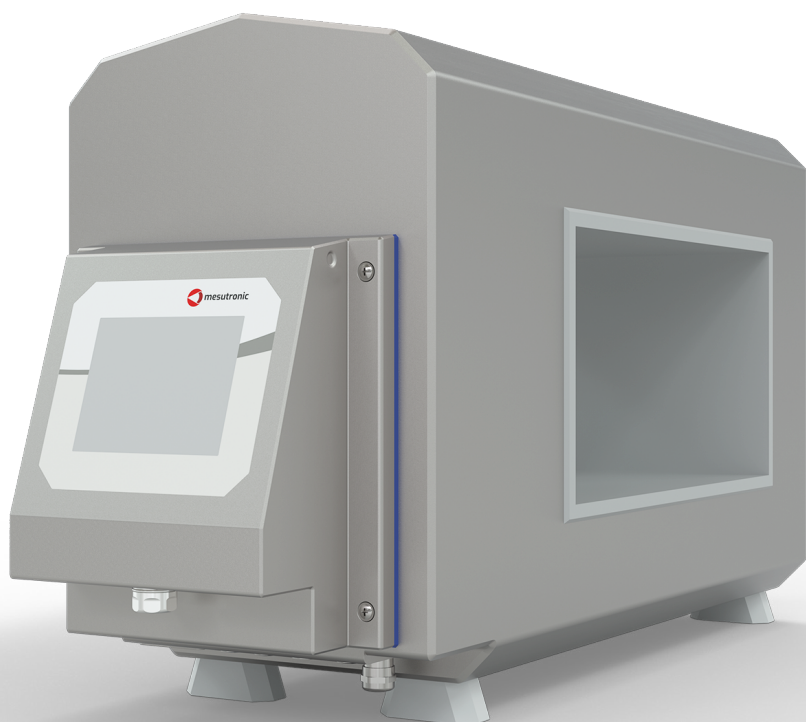


Final packaging area

Safety for your customers, reliable, precise and compliant with common quality and food safety standards of the trade.

Metal detectors of the **METRON 07 CI** series and conveyor systems of the **TRANSTRON** series are system solutions that offer you the best possible conditions for allowing you to look forward to the next audit without any worries. Be it for loose goods before collective packaging or after thermoforming, the freezer or single line products.

The **METRON 07 CI** detector series impresses not only with its high search accuracy, but also with its ease of use, complete data security and maximum availability. Reporting via USB or network, individual user management and automated test functions come as standard. The device can withstand all ordinary cleaning processes – even in the standard IP 66 protection class. The version with IP69K offers increased safety.



Conveyor belt systems of the **TRANSTRON** type are the reliable solution for all requirements in the meat sector. As a supplement to our metal detectors, they represent optimum recognition accuracy and stability.

Separation variants such as pushers, air jet nozzles, belt retractions or hinged belts are standard. High-quality components, starting with bearings via motors and conveyor belts, ensure continuous, low-maintenance operation. We are also happy to offer you systems specially adapted to your production, e.g., as ascending conveyor belts with special separation, or in special installation positions. Supplementary packages for special trading standards such as BRC, TESCO and others are also available.



X-ray inspection

In the meat-processing sector in particular, inspection for foreign bodies by means of X-rays offers diverse advantages in addition to the search for metals alone. In addition to the detection of other types of contamination such as glass or stones, quality algorithms make a significant contribution to customer satisfaction. For the inspection of products with metallic components, X-ray inspection systems are the only meaningful way to carry out a final, policy-compliant inspection. Metal detectors offer, in the case of products which are easy to test and have no intrinsic conductivity, advantages for the detection of low-density types of metal, such as aluminium. In very rare cases, this is also applicable to magnetic impurities, for example iron or nickel. Here, a combination of the two technologies can be the best solution for maximum protection.

The **easySCOPE** X-ray machine, designed for the examination of medium and large packaged sausage and meat products in the format or gastropackages, with belt widths of 400 or 600 mm, complements the Mesutronic product portfolio for the meat industry. Even for beginners in X-ray technology, the device, with its moderate price, high-quality, and thus low-maintenance, components, as well as its extremely intuitive operation, is their best chance of entry into this type of foreign body control. The system detects metallic and non-metallic impurities such as, for example, glass, stones or plastics, by means of an imaging process – X-ray technology.

The **easySCOPE ST**, on the other hand, is the optimal solution for the inspection of smaller, flat products. Without compromising on X-ray performance, it combines easy cleanability with an extremely compact footprint.

As with all other X-ray inspection systems in our portfolio, the easySCOPE ST is also available with fitted separation units, sensor packages to meet trade standards, and designs for hot or dusty environments.



Image processing functions

The following functions are offered in particular for meat products, adding significant value beyond pure foreign body control:

Clip hiding and clip completeness check

This function checks, on the one hand, the completeness of closure clips using a plurality of algorithms, and on the other, it ignores the mostly metallic clip, so foreign body detection is not negatively affected.

Numbers

This function is used to reliably detect missing parts in collective packaging.

M1 integrity check

This extension, consisting of various algorithms, monitors almost all shape parameters of the entire product or product parts. It recognises broken products, products that are too large or too small, cavities, errors in the external profile and much more. In particular, fragile products in opaque packaging can also be checked again while intact after primary packaging.

The background image features a dark, textured surface with various mathematical formulas and a graph. The formulas include:

- $$\frac{\sum p_{01} q_1}{\sum q_1} + \frac{\sum p_{00} q_0}{\sum q_0}$$
- $$= r_{yx} * \frac{\sum y}{\sum x}, (4)$$
- $$\Delta NE = \frac{dQ_{ex}}{de} \Delta e - e \frac{dQ_{im}}{de} \Delta e - e Q_{im}, (4)$$
- $$B(a, b) = \int_0^1 (1-x)^{b-1} d \frac{x^a}{a} = \beta_{yx} = r \frac{1}{56} \left(7 + \sqrt{7(-5 + 4\sqrt{2})} \right)$$
- $$= \frac{x^2(1-x)^{b-1}}{a} \Big|_0^1 + \frac{b-1}{a} \int_0^1 x^a (1-x)^{b-2} dx = f(x) = \frac{a_0}{2} + \sum_{n=1}^{\infty} (a_n \cos n \pi x)$$
- $$= \frac{b-1}{a} \int_0^1 x^{a-1} (1-x)^{b-2} dx - \frac{b-1}{a} \int_0^1 x^{a-1} dx$$
- $$h = 1$$

A graph is also visible, showing a curve with points labeled $\frac{3\pi}{4}$, π , and t .

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.

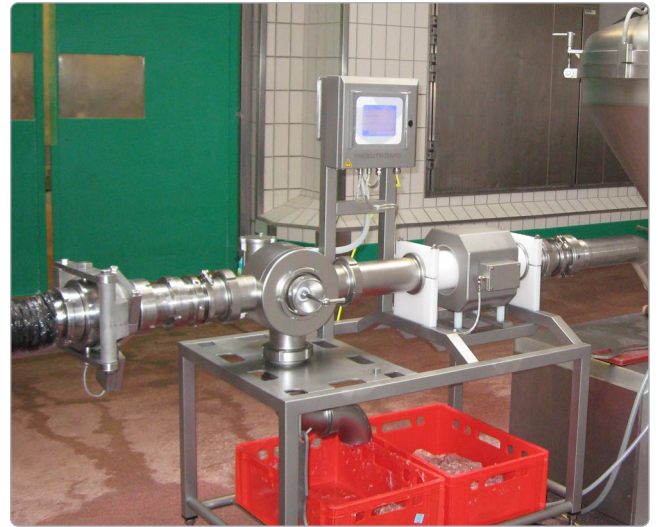
Customer-specific projects

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.





www.mesutronic.de

📍 **Mesutronic GmbH**
Hackenfeld 13
94259 Kirchberg im Wald
Germany

☎ +49 9927 9410 0
✉ sales@mesutronic.de
www.mesutronic.de