Automatic Test System (ATS) offers a hygienic, non-invasive and consistent method for testing the center line performance of metal detectors used in vertical inspection applications.

Benefits of ATS

- **Increases productivity** by reducing the time taken to conduct routine performance tests by up to 90%, and reducing the number of operators required to perform the tests, compared to manual processes.
- **Improves process quality** by ensuring tests are completed consistently, every time, for multiple metal types.
- **Preserves hygiene** by eliminating the need to routinely introduce test pieces into the product flow.
- **Enhances operator safety** by reducing or virtually eliminating the need to work at height or reach across equipment to conduct tests.
Optimized Testing Processes
Increased Productivity

Routine performance testing is particularly challenging for operators of high speed, vertical or gravity-fed metal detection systems. Introducing metal test samples into free-falling powders, snack food, or confectionery applications and documenting the results takes considerable time and resource, and can impact hygiene levels. In many cases the process requires operators to work at height and to reach across equipment which creates potential risk. ATS addresses each of these challenges.

Overview
ATS reduces the time and costs associated with routine performance monitoring of metal detection systems. It maximizes productivity and ensures precision and repeatability of testing in vertical packing or gravity-fed applications.

Once activated, the system automatically tests the metal detector to ensure it continues to operate to the customer’s required quality standard. It does not however, verify the effectiveness of the reject control system in place.

How ATS works
The system features certified test samples that run within acrylic tubes fitted between the metal detector aperture and product funnel. This ensures that test pieces never come into contact with the product being inspected.

The automated pneumatic control transports each test sample in turn, to a defined position above the principle sensing coils within the metal detector.

The test sample is then released, precisely simulating the presence of a contaminant in free-fall under gravity.

The system repeats the process for all test pieces and provides visual feedback on the pass / fail status of each test.

The whole process takes less than 45 seconds to complete for a three-metal test, or less than 60 seconds for a four-metal test. The significant reduction in the time required to perform the tests increases productivity.

Operator efficiency is improved compared with manual testing. Only one operator is required to conduct routine performance monitoring tests, and the time taken to conduct the process is reduced considerably.

Operator safety is improved when using ATS because it virtually eliminates the need for an operator to work at height or reach across other production line equipment to conduct routine metal detector performance tests.

When integrated with a Profile metal detector, operators have the option of running ATS from the Control Unit, or via the full colour touchscreen user interface.
Equipment
ATS is comprised of three components: the Pneumatic Control Module, the Transport-tube Assembly and the Control Unit. ATEX, IECEx and cETLus options are available on Version 4 Profile/PowerPhase PRO models controlled via the metal detector’s HMI.

Pneumatic Control Module
The Pneumatic Control Module (PCM) houses the Programmable Logic Controller (PLC) and pneumatics. It connects to the Transport Tube Assembly, Control Unit and metal detector. The maximum allowable distance between the Pneumatic Control Module and the Tube Assembly is 2m.

Transport Tube Assembly
The Transport Tube Assembly is available as a three metal test (pictured) or a four metal test option. Ferrous, Non-ferrous (brass) and Stainless Steel 316 test samples are standard in both. The four-metal option also includes aluminum. The Tube Assembly is connected to the Pneumatic Control Module via flexible pneumatic pipes and is mounted onto the external flange of the metal detector.

Control Unit
The Control Unit enables an operator to start a production test and reset the system should the need arise. The Control Unit can be mounted up to 30m from the Pneumatic Control Module in a position that is convenient for regular operator use, making it ideal for applications where the metal detector is installed in a location that is not easily accessible. The ATS operating and test status is clearly visible via the metal test indicators.

Profile and PowerPhase PRO metal detectors offer increased flexibility
METTLER TOLEDO Safeline Version 4 metal detectors feature a full-color touchscreen and offer users the ability to control the ATS from the operator interface rather than the Control Unit.

When combined with a Profile or PowerPhase PRO metal detector, ATS is also able to confirm centerline sensitivity, by using a second detection threshold.

The optional Emulation feature which is an additional price option enables control and monitoring of ATS via networked devices such as laptops, tablets and mobile phones. However, it is recommended that any changes to the metal detector, or control of the ATS, is performed close to the actual installation such that correct operation and any changes can be appropriately verified.

On-screen messages provide operators with visual feedback on the ATS test status.
## Components

### Control Unit for three-metal test
1. Start
2. Reset
3. Ferrous test status
4. Non-ferrous (brass) test status
5. Stainless Steel 316 test status

### Tube Assembly for three-metal test
1. Tube Assembly
2. Thumb screws
3. Acrylic tube

## Technical Specification

### Dimensions (mm)

<table>
<thead>
<tr>
<th>Component</th>
<th>Control Unit</th>
<th>Standard PCM</th>
<th>ATEX/IECEx PCM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Unit</td>
<td>101 (w) x 153 (h) x 85 (d)</td>
<td>210 (w) x 314 (h) x 120 (d)</td>
<td>275 (w) x 300 (h) x 150 (d)</td>
</tr>
</tbody>
</table>

### Enclosure finish
Stainless Steel (304) Bead-blast finish

### Ingress protection
- **Standard Model**: IP54 - wipe clean only
- **ATEX/IECEx Model**: IP65 - wipe clean only

### Explosive safety
- **Standard model**: Not rated for potentially explosive atmospheres
- **ATEX/IECEx model**: Ex II 2D Ex tb h IIC T135°C Db

### Test type
3 or 4 metal test

### Test ball materials
- Ferrous: 0.25 – 2.2 mm
- Non-ferrous (Brass): 0.3 – 2.2 mm
- Stainless Steel 316: 0.3 – 2.2 mm
- Aluminum*: 0.5 – 2 mm

### Power requirements
- 1 Phase 100-240V AC (+10% to -15%) 50 to 60 Hz
- 15 Watts (maximum)

### Air supply requirements
- Clean, dry, oil free compressed air
- 6 Bar to 10 Bar (maximum)
- 6mm Push-in Air Fitting

### Environmental conditions
- **Operating**: 15°C to +45°C (59°F to 113°F)
- **Storage**: 0°C to +50°C (32°F to 122°F)
- **Maximum relative humidity**: 93% for a temperature up to 45°C (113°F)

### Typical application
Vertical packing or gravity-fed inspection of dry product e.g. snack foods, cereals

*Aluminum is only available in the 4 Tube Assembly option

## Hardware Compatibility

### Product Compatibility

<table>
<thead>
<tr>
<th>Product</th>
<th>Case Construction</th>
<th>Aperture Size</th>
<th>Platform</th>
<th>Availability</th>
<th>ATEX / IECEx / cETLus Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile T Series</td>
<td>Painted and stainless steel medium duty finish</td>
<td>Ø 125 to 300 mm</td>
<td>V3</td>
<td>Original equipment only</td>
<td>No</td>
</tr>
<tr>
<td>PowerPhasePRO T Series</td>
<td></td>
<td></td>
<td></td>
<td>Upgrade to existing installations only, subject to qualification</td>
<td>Yes</td>
</tr>
<tr>
<td>Profile ST Series</td>
<td></td>
<td>Ø 148, 184, 200 &amp; 235 mm</td>
<td>V4</td>
<td>Original equipment only</td>
<td>Yes</td>
</tr>
<tr>
<td>PowerPhasePRO ST Series</td>
<td></td>
<td></td>
<td></td>
<td>Upgrade to existing installations only, subject to qualification</td>
<td>Yes</td>
</tr>
<tr>
<td>Profile Gravity Fall</td>
<td></td>
<td>Ø 125 to 300 mm</td>
<td>V4</td>
<td>Original equipment only</td>
<td>Yes</td>
</tr>
<tr>
<td>PowerPhasePRO Gravity Fall</td>
<td></td>
<td></td>
<td></td>
<td>Upgrade to existing installations only, subject to qualification</td>
<td>Yes</td>
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<tr>
<td>Profile Gravity Fall G RH Series</td>
<td></td>
<td>Ø 150 and 200 mm</td>
<td>V4</td>
<td>Original equipment only</td>
<td>Yes</td>
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<tr>
<td>PowerPhasePRO G RH Series</td>
<td></td>
<td></td>
<td></td>
<td>Upgrade to existing installations only, subject to qualification</td>
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<tr>
<td>Signature T Series</td>
<td></td>
<td>Ø 125 to 300 mm</td>
<td>V3-V4 (Touch LS upgrade)</td>
<td>Upgrade to existing installations only, subject to qualification</td>
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<tr>
<td>PowerPhase T Series</td>
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<td>Ø 125 to 300 mm</td>
<td>V3</td>
<td>Upgrade to existing installations only, subject to qualification</td>
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<tr>
<td>Safeline T Series</td>
<td></td>
<td>Ø 125 to 300 mm</td>
<td>V2</td>
<td>Upgrade to existing installations only, subject to qualification</td>
<td>Yes</td>
</tr>
</tbody>
</table>

ATS is compatible with metal detector specific aperture ranges. Fitting ATS may require system modification which could impact sensitivity, throughout rate and system length. Full specification details are available on request. Please contact your local METTLER TOLEDO sales representative for more information.

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www.mt.com/metaldetection

For more information

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METTLER TOLEDO Group
Product Inspection Division
Local contact: www.mt.com/contacts

Subject to technical changes
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