

# FISCHERSCOPE® X-RAY

Automated Inline Measurement System

Modular Measuring Systems

with 1, 2 or 3 axis of configurable length  
for layer thickness and material analysis



# FISCHERSCOPE® X-RAY

## Main Features

The FISCHERSCOPE X-RAY is an automated measurement system. It can be integrated in a production process (inline) or can be operated attached to it (semi-inline). The system features a modular design to easily satisfy customer specific requirements. The number of axis (1, 2 or 3) and their length as well as the sample loading/unloading mechanism are individually configurable.

The modular FISCHERSCOPE X-RAY can be equipped with all Fischer instruments to measure thickness and analyse material composition, as:

- X-ray (EDXRF): Contact-free measurements using the energy dispersive x-ray fluorescence method, as the FISCHERSCOPE® XAN®-110/120/150 or FISCHERSCOPE® 5000
- Tactile measurements  
Eddy current, magnetic induction or phase sensitive probes (or combinations); Measurements with contact, pneumatically lifted and lowered, measurements on passing-by samples (probes embedded on rollers).
- Beta radiation backscatter or transmission method using Betascope:  
Beta source (isotope) with transmitted or backscattered beta radiation;  
Contact-free measurements

The FISCHERSCOPE X-RAY features a state-of-the-art, ergonomic human-machine-interface (HMI). Additionally, it can be operated from the production line's control centre or fully automated via a remote interface.

It is designed to operate 24h per day, 7 days a week. Fully automated measuring checks enhance reliability and ergonomics.

The FISCHERSCOPE X-RAY or parts of it may also be embedded in customer's production lines (OEM).

Application comprise, amongst others:

- Solar panels coatings and compositions (photovoltaic thin-film industry)
- Reel-to-reel applications, e.g. in a CVD-process
- Belt production of conveyor belts
- Felt production for paper maché
- ...

## Design

The FISCHERSCOPE X-RAY is built up of the following components:



Easy accessibility is granted by a dedicated service port.

Samples of almost any shape and any production line can be measured:

- Measurement of layers in foil / reel-to-reel / strip-to-strip applications
- Thickness measurement of belts (paper, conveyor, metal foils,...)
- Unit production (e.g. solar panels)
- Measurement of samples on belt conveyor
- Alloys: Material composition
- ...

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## General Specifications

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Intended use	Inline measurement of <ul style="list-style-type: none"><li>- Thickness of layer</li><li>- Thicknesses of layer systems</li><li>- Material composition</li></ul> on different measuring spots
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## Features

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Measurement Run	Fully automated measurement jobs at pre-programmed positions (X, XY), optional endless loop. Manual operation possible
Measurement Check	Fully automated, quick measurement check to ensure correct measurement capability
Calibration standard	Integrated in the equipment, easy recalibration
Process warning	Warning signal lamp and buzzer for information of limit violation
Remote control / Data Export	Via digital data interface (Ethernet)
Reports	In pdf- or csv-Format, 3D-visualisation
Maintenance	Only yearly maintenance for measuring system. Axis system is maintenance free. Short weekly and monthly inspection.

## Measuring Systems

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The following measuring systems can be used in the Modular X-/XY-Measuring Table:

X-Ray (EDXRF)	Energy dispersive x-ray fluorescence measuring systems To measure the thicknesses of layer systems and/or composition of each layer. FISCHERSCOPE® XAN®-110/120/150, with TV-camera FISCHERSCOPE® 5000 The standard WinFTM® evaluation software from Fischer is used.
Tactile measurements	To measure the thickness of one or two layers using the following physical principles: <ul style="list-style-type: none"><li>- Eddy current</li><li>- Magnetic induction</li><li>- Phase-sensitive</li><li>- Duplex</li><li>- Combinations (as DUALSCOPE)</li></ul> The standard devices from Fischer are used for raw data interpretation.
Betascope	To measure the thickness of a foil or the coating thickness of one layer. Beta source (isotope) with transmitted or backscattered beta radiation. Due to its principle, this probe can be used to measure thicker layers or to measure a layer composed of lighter elements.

## Axis System

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No. of axis	1, 2 or 3
Axis length	Customer specific
Linear velocity	Up to 8 m/s (depending on measuring system and application)
Acceleration	Up to 5 m/s <sup>2</sup> (depending on measuring system and application, decreased for EDXRF-measuring systems)
Position repeatability (one-sided)	< 50 µm

## Dimensions

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Size	Depending on configuration (customer specific)
Weight	Depending on configuration (customer specific)

# FISCHERSCOPE® X-RAY

## Environmental Conditions

Temperature: Operation	10 °C – 40 °C / 50 °F – 104 °F (ambient condition)
Temperature: Storage/Transport	0 °C – 50 °C / 32 °F – 122 °F
Humidity of ambient air	≤ 95 %, non-condensing

## Interface & Evaluation unit

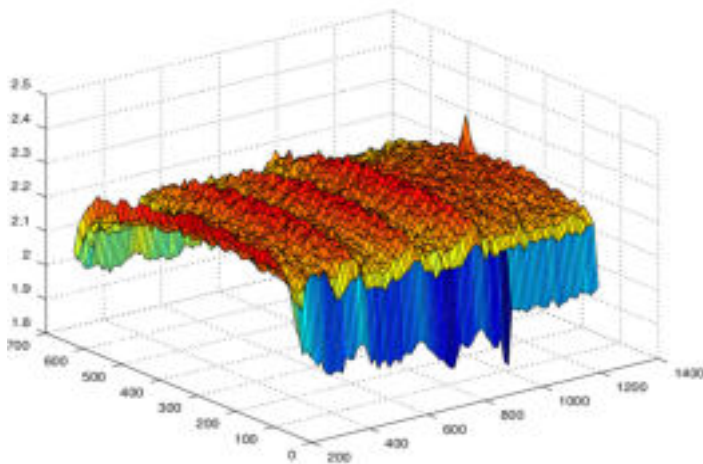
Computer	Windows® PC, state-of-the-art
Remote Interface	Ethernet, MODBUS-based protocol

## Electrical data

Line voltage, line frequency	AC 115 V or AC 230 V 50 / 60 Hz
Power consumption	Depending on configuration
Protection class	IP 40

## Customization

Customization	Customer specific requirements can be developed and integrated.
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Layer Thickness of Molybdenum on a solar panel in X- and Y-dimension



3 axis measurement system with tactile probe

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