

FISCHERSCOPE® X-RAY Conti 5000



X-Ray Fluorescence: Most effective method for multi-layer and alloy systems

1 - Introduction

Product name	FISCHERSCOPE® X-RAY Conti 5000
Description	The FISCHERSCOPE® X-RAY Conti 5000 measures continuously rolling material strips in a contact-free way. The material range comprises even materials such as solar panels with a big measuring area on the surface. Coating thickness and material analysis of practically all metallic layer systems can be performed in one run. The well-designed measuring head is flexible and robust. The protection hood can be removed easily and is equipped with a double-acting security device..
Measurement method:	Energy dispersive X-ray fluorescence (German abbreviation: EDRFA; Engl. abbr.: EDXRF) according to DIN EN ISO 3497 (previously DIN 50987) and ASTM B 568
Measurement direction	<p>Primary radiation from bottom to top or down (variable) (depending on customers requirement for implementation)</p> <ul style="list-style-type: none"> ➤ Vacuum-Measuring head on a Flange ISO 250F (with water-cooling system) for a fix implementation in a in-line coating process. ➤ Normal Air-Measuring head on a Flange ISO 250F (without water-cooling system) for a fix implementation in a in-line coating process. ➤ Flange with mounted measuring head can be adapted individually as per customers requirements ➤ Special designs on moving stage are possible too.
Key features	<p>Automatic on-line measurement of coating thickness and material analyses in one measurement with automatic compensation of distance variation up to +/- 2mm which will increase efficiency and cost effective manufacturing.</p> <ul style="list-style-type: none"> ➤ No Shutter, no optics, no moving parts → cost effective, high reliability, long-term stability ➤ Very high repeatability → 2 nm on a coating of 500nm of In (depending on Measuring time) ; COV of 1% ➤ Simple calibration with only 1 Standard (time efficiency) ➤ High Safety precautions with radiation safety ➤ Automatic distance compensation ➤ Easy handling, Simple operation,

- Standardized ISO Flange for implementation - flexible measuring head
- Independent and easy Maintenance (very low running costs)

2 – Application

General Applications

Applications where coating thickness must be measured and/or composition of layers analyzed with big measuring areas such as Zn-Phosphate coatings or other coatings on flat surfaces in either vacuum or atmospheric conditions

Photovoltaic Applications

Thin film coating application for solar cells industries

- CIS/CISG
 - CuInGaSe/Mo/Glass
 - CuInGaSe/Mo/Stainless Steel
 - CuInGaSe/Mo/plastic foil
- In/Cu/Glass or In/Cu
- CdTe (Cadmium telluride)
- Mo/CdS/CdTe/
- SnO - ITO/Glass
- etc..

Note: Customer samples would be required for pre-analyses.

3 – Technical Data

3.1 - XRF Generation	
X-Ray tube	Standard Tungsten tube
High voltage for generating X-radiation	<p>High voltage 30-50kV and Anode current 55-850µA can be adjusted individually to the measuring application using the software.</p> <p>The adjustment of the high voltage of the X-ray tube improves the primary excitation of the specimen's X-ray fluorescence. Special feature: During continuous operation, the high voltage generator generates the voltage or the controllable anode current for the X-ray tube with a high stability. Due to the sophisticated thermal design, the high voltage can be generated at max. performance during continuous operation.</p>
Primary filter	10µm Ni Foil integrated on flange
Collimator	Ø 1,0mm – 8,0mm, customer specific solution optional available
Aperture in the primary beam Measuring spot Size	Depending on the measuring distance and the version of the Conti 5000 Unit the spot size is bigger than the diameter to the respective aperture resp. dimension of collimator
3.2 - XRF Detection	
Detector	25mm ² Si-Semiconductor detector (with optional water cooling system)
Energy resolution of the detector	<175 eV, Specification in fwhm (full width at half maximum) for Mn-Kα
Angle (Detector to Collimator)	33°
Element range	Aluminium (Z=13) to Uranium (Z=92)
Signal processing design pulse processor	Ultra fast digital pulse processor (DP4) max. 500'000 cps
Max. count rate [pulses / second]	<p>Up to 500'000 cps</p> <p>The specification "Max. count rate" describes the maximum number of pulses per second that the pulse processor is able to process. The count rate is different depending on the application and the instrument settings.</p>

3 – Technical Data (cont.)

3.3 - Mechanical dimensions & data

Measuring head external dimensions	Width 350 mm, Depth 237 mm, Height 370 mm (without Flange)	
Measuring head constructional conception	All Conti 5000 models feature a steel sheet cover and mounted on a ISO 250F Flange	
Measuring head mass	48kg for Measuring head with water cooled ISO 250F Flange 38kg without water cooling option 27kg only Measuring head (without flange)	
Flange system for Vacuum (with and without cooling system)	ISO 250F with integrated Water cooling, Pressure = 4- 10 bar at 30°C (connections - 3/8" inter. f threat with sealing integrated)	
Flange sealing	O-Ring (FKM)	
Max Vacuum	5 ¹⁰⁻⁸ mbar	
Max temp. Substrate	Approx ca. 300°C	
Protection foil	Heat reflecting Au evaporated-Foil (8µm) Exchangeable for primary and secondary beam	
Measuring distance (flange-substrate)	-	Vacuum unit (water cooled) : 80mm ± 20mm or 125mm ± 25mm
	-	Vacuum unit : 80mm ± 20mm or 125mm ± 25mm
	-	Air system (water cooled) : 80mm ± 20mm
	-	Air system : 45mm ± 15mm or 80mm ± 20mm
Cable connections & length	-	Cable Power supply, length = 10m
	-	Cable USB Interface, length = max. 5m
	-	Cable LED X-Ray ON, length = max 10m
	-	Cable hood switches (safety switch), length = max 10m
Line Voltage	100 – 240 VAC / 50-60 Hz	
Power consumption	Max. 120 W (measuring head only; without PC and monitor)	
Environmental conditions	Admissible operating temperature: 10°C to 40°C;	

	<p>Storage temperature: 0°C to 50°C; Admissible air humidity: 0 % to 95 % (non-condensing)</p>
<p>Radiation safety tests according local regulations</p>	<p>X-Ray Approval and acceptance test according to local Safety and Radiation regulation to be done with local authorities at customers site</p>

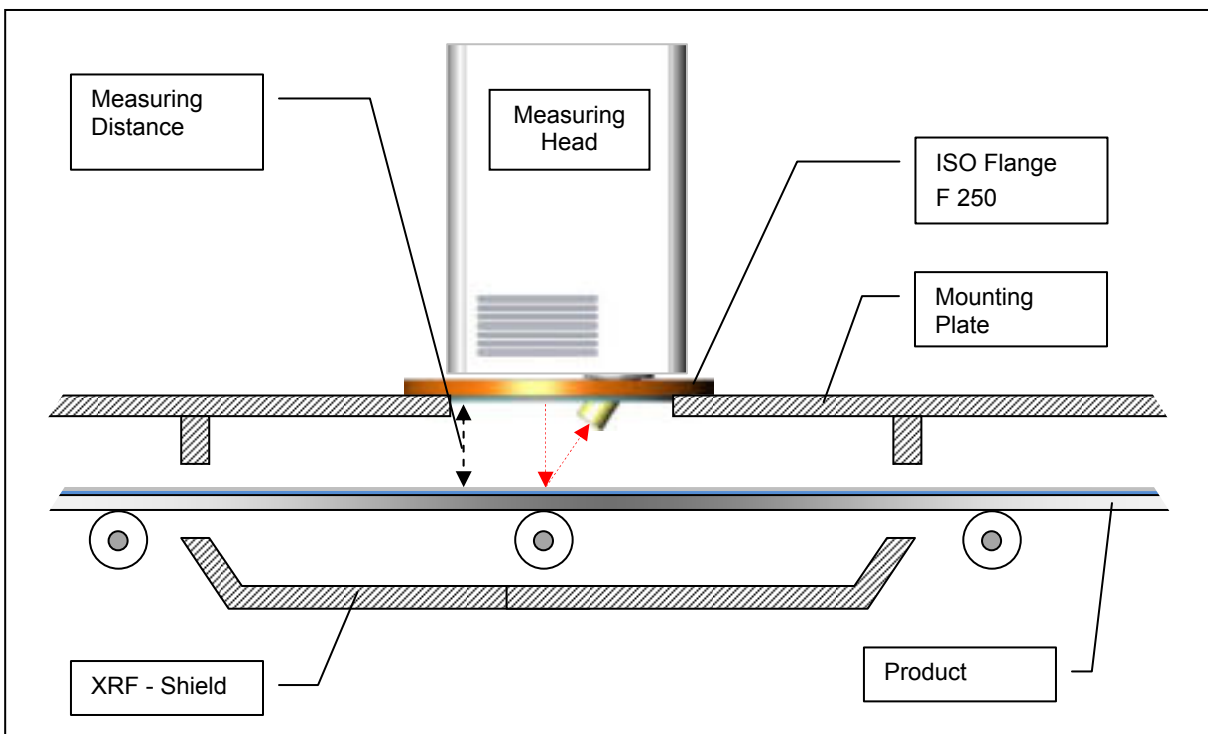
4 – Evaluation Software & Components

Software	<p>Standard: WinFTM® V.6 BASIC + PDM®</p> <p><i>Optional:</i> WinFTM® V.6 BASIC + PDM® + SUPER (part number 603-290).</p> <p>See separate data sheet WinFTM® V.6 (part number 951-049).</p>
Operating system	<p>Windows® XP professional</p>
Evaluation PC (Optional)	<p>Standard: PC unit FMC-XPENT: Intel Pentium processor (current version) or comparable, hard disc, DVD-RW drive, mouse, Windows keyboard XK.</p> <p><i>Optional:</i> PC unit FMC2000 opt. (part number 603-975).</p> <p>Evaluation unit for FISCHERSCOPE® X-RAY with superior equipment. Particularly advantageous for materials analysis applications due to the shorter computing times.</p> <p>Significant features: - True Pentium IV Processor 3.4 GHz clock rate; - 1 GB RAM; - 250 GB hard disc; - DVD-RW drive.</p> <p><i>Optional:</i> Hand scanner for automatic product selection (part number 603-678)</p>
Monitor	<p>19" TFT flat panel monitor (part number 603-798) for presentation of measurement data.</p>
Printer (Optional)	<p>EPSON colour inkjet printer (part number 602-555)</p>

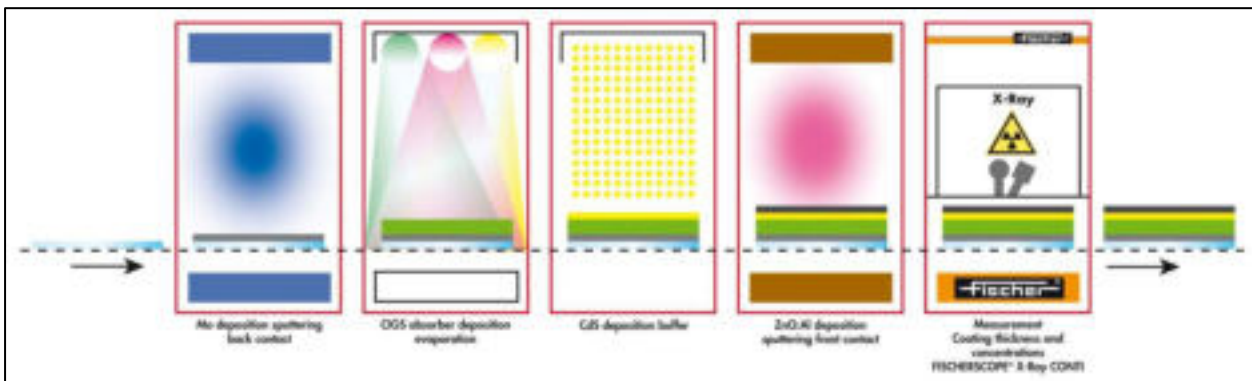
4 – Intended use & Setup Overview

Intended use	X-ray fluorescence spectrometer for materials analysis and coating thickness measurement
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General Overview:



Multi-stage Panel continuous deposition method with FISCHERSCOPE® X-Ray CONTI 5000



5 – Product training & Seminars

Product training and seminars

The user receives extensive product training during instrument system setup. HELMUT FISCHER offers seminars for X-RAY users several times a year: The content is education about the physical background of the x-ray fluorescence method and the practical application of the X-RAY instruments.

6 – Maintenance & Service

Instrument service

Hotline for metrological application advice. Set-up of Def.MA files (i.e., determination of parameters for the measurement application) for special customer applications.

Application service

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7 – Warranty

The warranty period is one year beginning from the date of the acceptance. Defects that occur within the warranty period resulting from design or production will be repaired free of charge or the defective part(s) replaced.

Defects resulting from the following factors are not covered under the warranty:

- Consumable parts
- Usage or modification of components by unauthorized personal
- Natural disaster or unexpected accident.
- Misuse or mistakes due to fault operation

8 – Trademarks

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