



**Coating
Thickness**

**Material
Analysis**

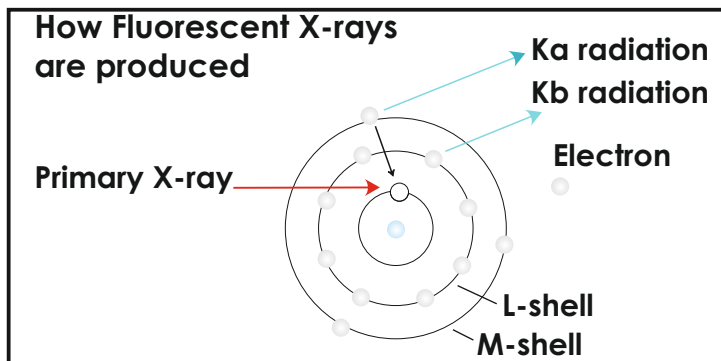
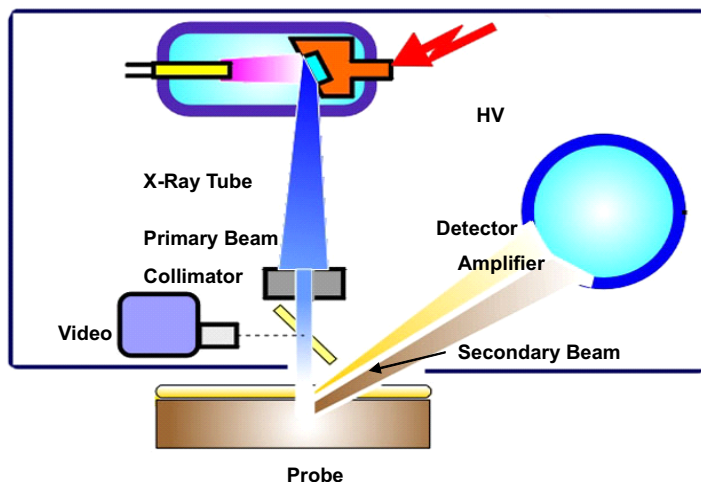
Gold Testing Machine StaRk

**GERMAN
TECHNOLOGY**



Model	StaRk	StaRk PIN	StaRk SDD
Measuring Direction	Bottom to Top		
Applied Application	Gold & Silver Analysis in jewellery and alloys, Coating Thickness Measurement on Metals		
X-ray Tube	Mini-focus,high performance, W-target, Spot 0.2mm-0.8mm	Long Life, High efficiency, tungsten target air cooled	
High Voltage	50kV (1.2mA) Software Control Optimized		
Detector	High resolution Gas Filled Prop Counter	High resolution Silicon Pin Detector	Silicon Drift Detector
Measurement Time	60 sec. to 180 sec.		
Collimator	0.3mmØ or 0.5mmØ, Optional four positions Collimator changer		
Sample Stage	Fixed Sample Positioning		
Power Supply	230VAC, 50/60Hz, 120W / 100W		
Inside Chamber	330 x 200 x 170 mm (WxDxH)		
Dimension	350 x 450 x 310 mm (WxDxH)		
Weight	32 kg		

Principal of X-ray Measurement



High energy photons emitted by a X-ray tube interact with metal & materials. The high energy photon is absorbed by an electron of the atom. This electron is accelerated and forced to leave the atom. The so created hole in the structure of the electron shell is filled up by an electron of higher energy. The difference in energy between the leaving electrons position and the filling up electron may leave the atom as a photon of defined energy or as an electron. In the case of a leaving photon this process is called X-ray fluorescent and the energy of the leaving photon is characteristic for this atom therefore for the element. The electron shells of an atom are called K-, L-, M-shell.

Filling up a hole in the K-Shell creates, K-radiation (Ka if the filling up electron has its origin in the L-shell, Kb if the filling up electron has its origin in the M-shell). Filling up a hole in the L-shell creates L-radiation and so on. Only K and L radiation is of interest because the energy of K and L radiation is in the region which can be detected with standard detectors.

Technology

Proportional Counter Detector (Prop counter)

Based on Gas filled prop counter for measuring most common alloys including gold for jewellery industry.

It has distinct advantages like high efficiency, wide bandwidth larger area where it can be scaled to almost arbitrarily large size.

Silicon Detector (Si-PIN)

Based on high resolution **Si-PIN** is used for alloys analyzing in jewellery industry including gold & silver, even one step ahead for accuracy & repeatability compare to Gas filled pro counter.

Si-PIN with the usage of a high-resolution silicon detector in conjunction with digital signal processing achieves best detection limits and highest precision. Based on that, an about four times better resolution (in comparison with conventional technique) the element separation is much better. Furthermore lowest detection limits are achieved because of better signal to noise ratio. The Si-PIN is available with a larger active area and thicker depletion depth. Where resolution is not critical but high detection efficiency is important, the Si-PIN is the best choice.

Silicon Drift Detector (SDD)

Based on high resolution **SDD** which is ultimate for alloys analysing industry it's high resolution helps better repeatability and accuracy of measurement.

SDD has better energy resolution than a Si-PIN of the same area. The **SDD** has much better energy resolution at short peaking times, which is particularly helpful at high count rates. At the noise corner (the peaking time where the noise is minimal) the **SDD's** resolution is still better. So where the highest resolution is needed, or where good resolution is needed at high count rates, the **SDD** is the choice.

Measurement performance features

automatic application, recognition, application & standards library, numerical filtering package with peak deconvolution.

Chamber performance capability.

Compact Sample Chamber accommodates a wide variety of parts.

Ease

This machine is very user friendly & easy to operate doesn't require special person to operate. Simply position the piece of interest with the aid of a video microscope and start the measurement. The analysis is performed non-contact and non-destructive within 35 sec. to 3 minutes.

Coating Thickness

Specially useful for plating & electronic industry.

Compact

It is very Small in size, thanks to smart design which enables this machine fit at any place from smallest showroom to busy business area.

Fast

Ultra fast detection system for quick results where the analysis performed is quick within 60 seconds.

Accurate

This system is based on X-ray fluorescent radiation technology with modern user friendly software which ensure accurate measurement.

Non-destructive

The analysis performed non-contact and non-destructive. It also gives you measurement of other sub alloy apart from main alloy.

Major benefits of XRF with Compact Eco / Cube / Stark Series

- versatile testing equipments, potentially solving multiple testing needs with one analyzer.
- low initial costs compared to other analytical equipment
- minimum operation costs
- non-destructive solutions
- minimal sample preparation
- instant results 60 to 300 sec.
- relatively simple technology to learn & obtain accurate, repeatable results.
- maximum profits through accuracy
- increase turn around and production output
- In-house quality control

Features of XMaster Application

X-Master is the user-friendly operating software for the modern suit of X-ray systems. This program used most modern software tools available for Windows® operating platforms. The main task of the operating software is the control of all system parameters such as high voltage settings, X-ray tube current, display of collimators and filters as well as the collection and manipulation of the measurement data.

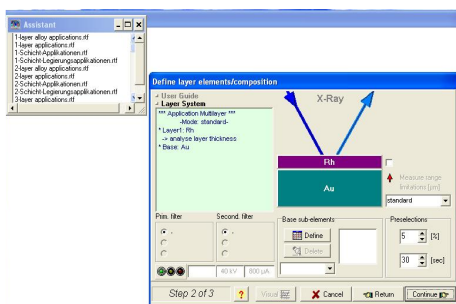
Capability

- Empirical calibration mode for calibrating unit using well assessed standard samples.
- Fundamental calibration mode for standard free calibrations.
- Simultaneous quantitative measurement up to 8 elements.
- Qualitative material identification upto 20 elements.
- Spectrum analysis for semi-quantitative concentration measurement.
- Statistical functions with mean value, standard deviation, high/low reading, trend line etc.

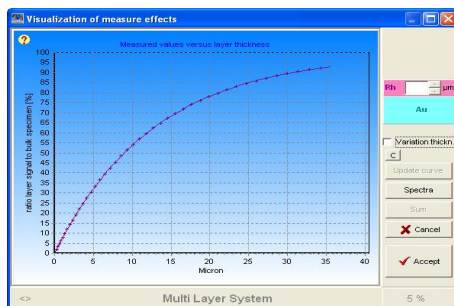
Calibration

- Pre-calibrated for Gold and other precious metals.

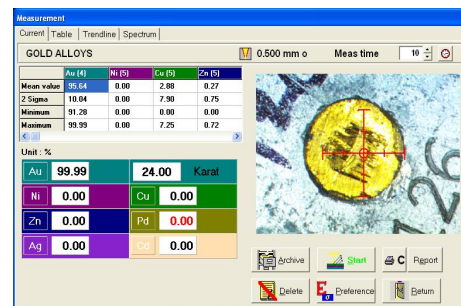
Working of XMaster



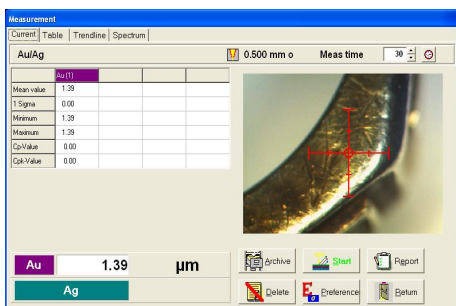
Layers



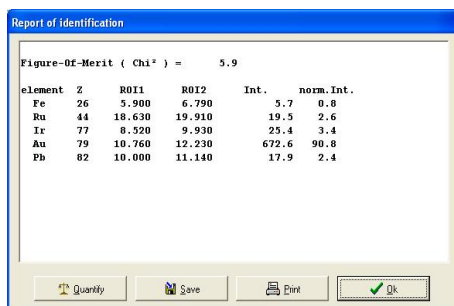
Linearity Graph



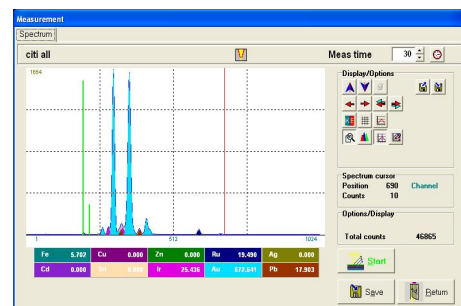
Result Window



Coating Thickness



Reading Window



Metal Graph

Application



Jewellery Showroom



Assaying & Hallmarking center



Jewellery Factory



Bank & finance

Specifications are subject to change without prior notice.
Images shown are for illustration purpose only.

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