

Online Strip Thickness/Coating Measurement Systems

26
YEAR OF
EXCELLENCE



XRF-3000

X-Ray Fluorescence
Metal Coating Thickness Measurement System



ITG-2000/XTG-2000

Isotope/X-Ray
Strip Thickness Measurement System

JASCH

COATING MEASUREMENT SYSTEM XRF 3000

XRF 3000 Coating weight gauge is designed to measure both sides of metal sheet's online. Any deviations from Target values are instantly caught, allowing immediate corrections in Production to maintain uniformity. The capability and Market acceptance of our services are evident from more than 175 systems impressively installed Worldwide.

SYSTEM ARCHITECTURE

XRF 3000 Coating Measurement System is to be flexible with open software architecture without compromising System reliability and easy maintenance. This is executed using the latest in Electronic Technology and apt heavy-duty mechanical components.

XRF 3000 focuses on accuracy and stable measurements of the coated material. All functional control and signal conversion/processing electronics in the side panel are embeded in the scanner. The measured data from XRF 3000 sent digitally via RS 485 link to an Autocontrol system where it is processed. In addition, it generated profiles, implements calibration tools, displays maintenance data and machine operations.

The operator interface implemented on an another Autocontrol system connects processing system through an ethernet link and is based on Labview™ which is highly customizable. It produces Comprehensive production reports that are generated for storage and easy hard copy accessibility. All measured data are available for Level 2 interface via OPC or TCP/IP server for mill wide access.

SENSORS

The Principle of measurement is based on the fluorescence produced by base/coated metal in response to X-ray irradiation (XRF).



SCANNER

The O-Frame Scanner is Solid, Reliable, and at the same time Accurate. The design is based on double I-Beam structure welded together to form a box construction. During the fabrication process the top and bottom sensor carriages are precisely aligned within 0.5 mm in X, Y and Z directions. The tools used are precise and reliable under heavy duty daily use. With a rigid O-Frame design this precision alignment is mechanically locked into system. The heavy-duty linear motion system based on ball bearings affixes the carriage movement. A Single Beam Scanner is available as an option for unique requirements.

GAUGE SPECIFICATION

Gauging System Type	:	XRF-3000 X-Ray Fluorescence Coating Weight Gauge.
Substrate	:	Steel 0.120 to 4.0 mm
Proposed Scanner Position	:	After Cooling Section / Warm Location
Scanner Type	:	O-Frame
Scanning speed	:	Maximum 150 mm/s
Numbers of Measuring heads	:	Two (one top and one bottom side)
Measuring Gap	:	40 mm
Water Cooling Jacket	:	Integrated.
Coil Report Package	:	Length wise trend report, Historical Data Trends/Production Reports, End of Coil Status, Coil Histogram and Tolerance Segments.

TECHNICAL SPECIFICATIONS

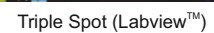
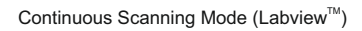
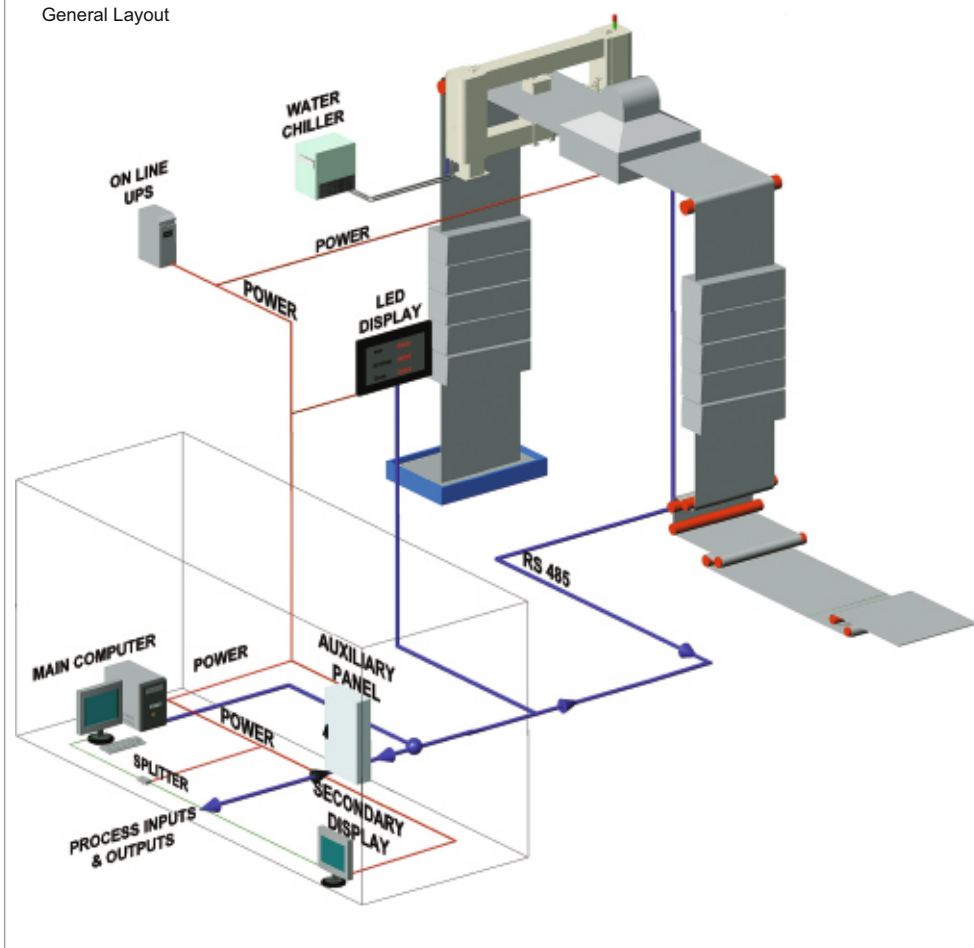
Measurement Principal	:	X-Ray Backscatter and Fluorescence
Source :		Oxford X-Ray Source
Detector	:	Ion Chamber
Measurement Range (per side)		
Zinc	:	0-350 g/m ²
Gal-volume	:	20-150 g/m ²
Tin	:	1-40 g/m ²
Iron /Zinc	:	10-200 g/m ²
Aluminum	:	30-120 g/m ²
Nickel/Zinc	:	5-250 g/m ²
Terne	:	1-40 g/m ²

Measurement Area	:	Approx. 35mm in diameter.
Standardization Frequency	:	Recommended after every 8hrs. (done automatically)
Standardization Time	:	Approx. 20 seconds (after shutter is open)
Initial warm up from cold start	:	Approx. 20 minutes.
Operating Temp. Range	:	Electronics Cabinet up to 35°C & O-Frame under normal CGL conditions.

PERFORMANCE SPECIFICATIONS

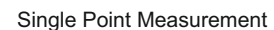
Sampling Time		20 mili seconds	
The time interval over which digital Information is collected.			
Overall Integration Time		200 mili seconds - 2 seconds	
Static measurement accuracy/statistical variability (2 sigma Value@ 500 mili seconds integration time)			
At 50 g/m ²	±0.15g/m ²	At 200 g/m ²	±0.70g/m ²
At 100 g/m ²	±0.25g/m ²	At 250 g/m ²	±2.00g/m ²
At 150 g/m ²	±0.45g/m ²	At 300 g/m ²	±3.50g/m ²

General Layout



Single point measurement - In lieu of fixed point, this mode allows the measuring heads to be appropriately positioned at any point across the strip width. Additionally, this mode is home for the Coating Weight Gauge to measure the machine direction trend of the coated weight.

Triple Spot Measurement - In this mode, the measuring heads are positioned in cycles so the measurement is carried out at a selectable distance from left strip edge, at center line and at a selectable distance from right strip edge.



Continuous Scanning Mode

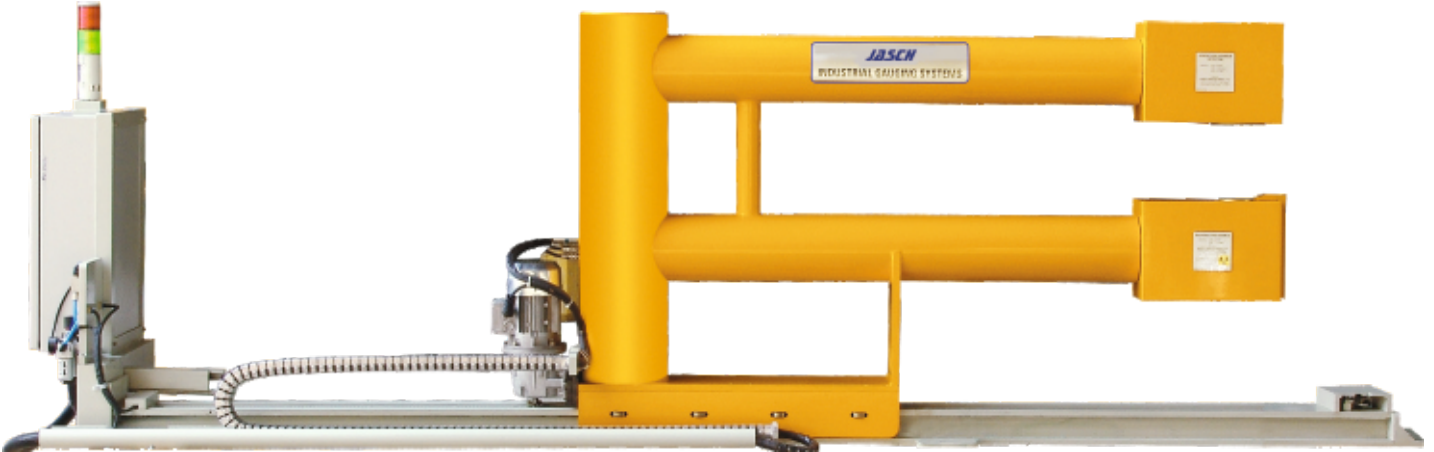
Rapid Scan Mode - In this mode the measuring heads continuously scan from strip edge-to-edge. After every scan, the cross profile is displayed on the operator screen + as Histograms.

Mid-Process the measuring period state, coat weight is averaged and displayed as a Trend on Operator screen.

STRIP THICKNESS GAUGE ITG-2000/XTG-2000

Network-controlled ITG-2000 / XTG-2000 thickness gauge measures the body of metal strip of both Ferrous & Non-Ferrous tasks on :

- Cold Rolling Mills
- Coating Lines
- Strip Processing Lines



SYSTEM ARCHITECTURE :

ITG-2000 / XTG-2000 comes with a customised fabricated C-frame which prevents sensors from oil/coolant ingress, and is ruggedized to tolerate strip hit during any and all respective breakage. It is a maintenance-free operation. All measurement data from sensor heads is shared virtually via RS-485 link to an Autocontrol system which:

- Processes measurements
- Generates Running Profile
- Implements Calibration tools
- Displays Maintenance data, and Displays Machine Operations.

Open Software details in agreement with customizable reports can easily adapt to any new or existing mill design requirements.



The Operator Interface is implemented on an another computer based system which is in accordance to the processing system through an ethernet link. The Operator Interface is based on Labview™ which is highly user-friendly to varying mill requirements. ITG-2000 / XTG-2000 customizable and adaptive. Comprehensive production reports and generated for storage and hard copy.

Calculated parameters and wide set of profiles measure in the processing system can be accessed and reflected via :

- OPC server
- TCP/IP
- RS-485
- RS-232
- BCD
- PROFIBUS.

Analog output response time deviation for respective mill AGC is set to 2 m/s.

PRINCIPLE :

The attenuation of Gamma/X-Ray proves as a basis for ascertaining the principle as the rays pass by the means of the material. The mass is calculated by sensing and and all variations in the energy radiated by source of known intensity.

GAUGE ACCURACY (ITG-2000)

Radiation source : 1 Ci AM 241
Air Gap : 200 mm
Statistical Noise : 2 Sigma Values

Time Constant

Thickness	20m sec.	50m sec.	100m sec.
At 0.15mm	±4.0µm	±2.6µm	±1.8µm
At 1.0mm	±0.70%	±0.35%	±0.26%
At 2.0mm	±0.60%	±0.32%	±0.21%
At 3.0mm	±0.60%	±0.28%	±0.26%
At 4.0mm	±0.70%	±0.35%	±0.32%
At 5.0mm	±0.87%	±0.48%	±0.35%

Radiation source : 3 Ci AM 241
Air Gap : 200 mm
Statistical Noise : 2 Sigma Values

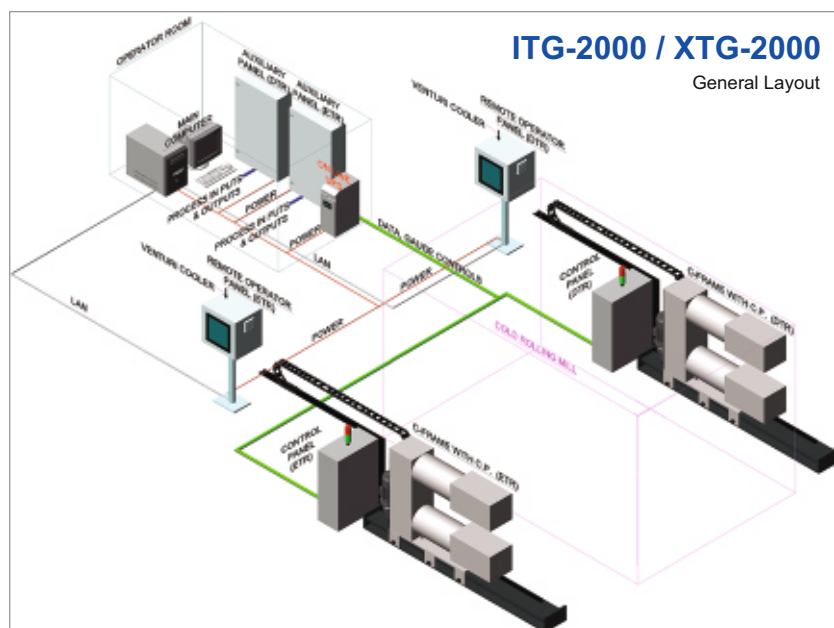
Time Constant

Thickness	10m sec.	20m sec.	50m sec.	100m Sec.
At 0.15mm	±3.2µm	±2.3µm	±1.5µm	±1.0µm
At 1.0mm	±0.56%	±0.40%	±0.20%	±0.15%
At 2.0mm	±0.42%	±0.30%	±0.18%	±0.12%
At 3.0mm	±0.45%	±0.32%	±0.16%	±0.15%
At 4.0mm	±0.56%	±0.40%	±0.20%	±0.18%
At 5.0mm	±0.70%	±0.50%	±0.28%	±0.20%



ITG-2000 / XTG-2000

General Layout



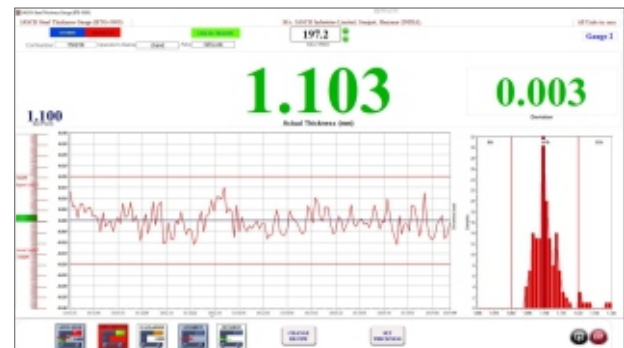
GAUGE ACCURACY (XTG-2000)

Radiation source : X-Ray (80 KV / 15 watts)
Air Gap : 200 mm
Statistical Noise : 2 Sigma Values

Time Constant

Thickness	10m sec.
At 0.17mm	±1.00µm
At 1.0mm	±0.27%
At 2.0mm	±0.21%
At 3.0mm	±0.22%
At 4.0mm	±0.27%
At 5.0mm	±0.33%

ITG-2000/XTG-2000

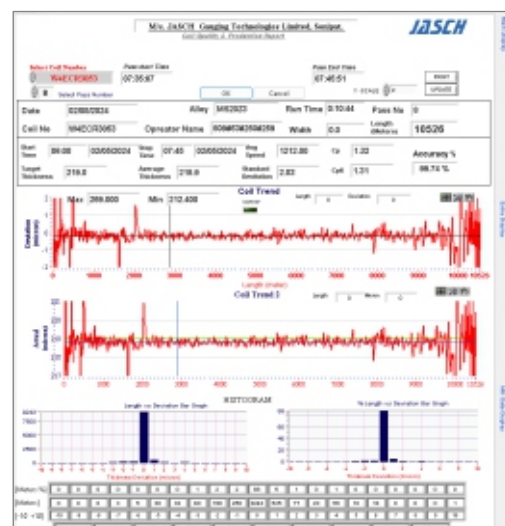


M/S. JASCH Gauging Technologies Limited, Sonpat, Haryana (MOCA)

01/09/2024 04:00:00

Cell Number	Set Point	Target Thickness	Deviation Thickness	Standard Deviation	Standard Error	Length	Length Error	Run Time	Run Time Error	On Rate	On Rate Error	Off Rate	Off Rate Error	Accuracy %
00000001	2.486	2.483	0.003	0.001	0.001	1000	1000	10:10:00	10:10:00	1.00	1.00	0.00	0.00	100.00

Actual Thickness Report produced and certified by the M/S. JASCH. The Report is valid only for the duration of the test. Report generated on 01/09/2024. Cell Temperature: 25.00°C



PAINT COATING MEASUREMENT SYSTEM BTG-3000

FEATURES:

- Quick and Rapid Coating Paint thickness readings
- Online non-destructive measurements in real time.
- Measurements executed in profile and time-trend graphics
- Unmatched accuracy and consistency
- Insensitive to ambient light & air gap.
- MIS reports in automation
- Pre-Calibrated

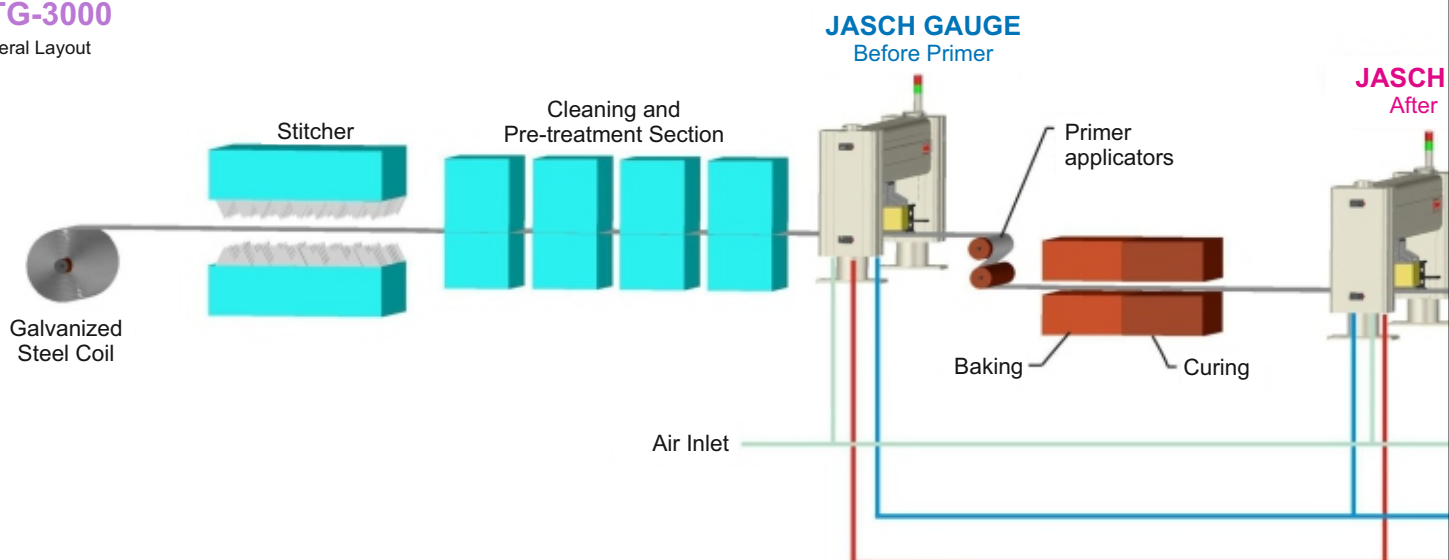


BENEFITS:

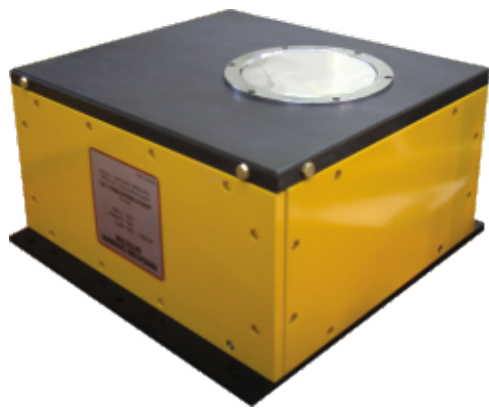
- Real Time analysis and Data Archiving
- Help Operators study the process coating on line in real-time
- Scanning profile display shows coating across the strip.
- Improve Through put and machine efficiency - Operator can adjust coating system at Coater much faster.
- Energy conservation - Dryer can be matched with coater to control the drying process.
- Raw material cost-saving.
- Uniformity in final products

BTG-3000

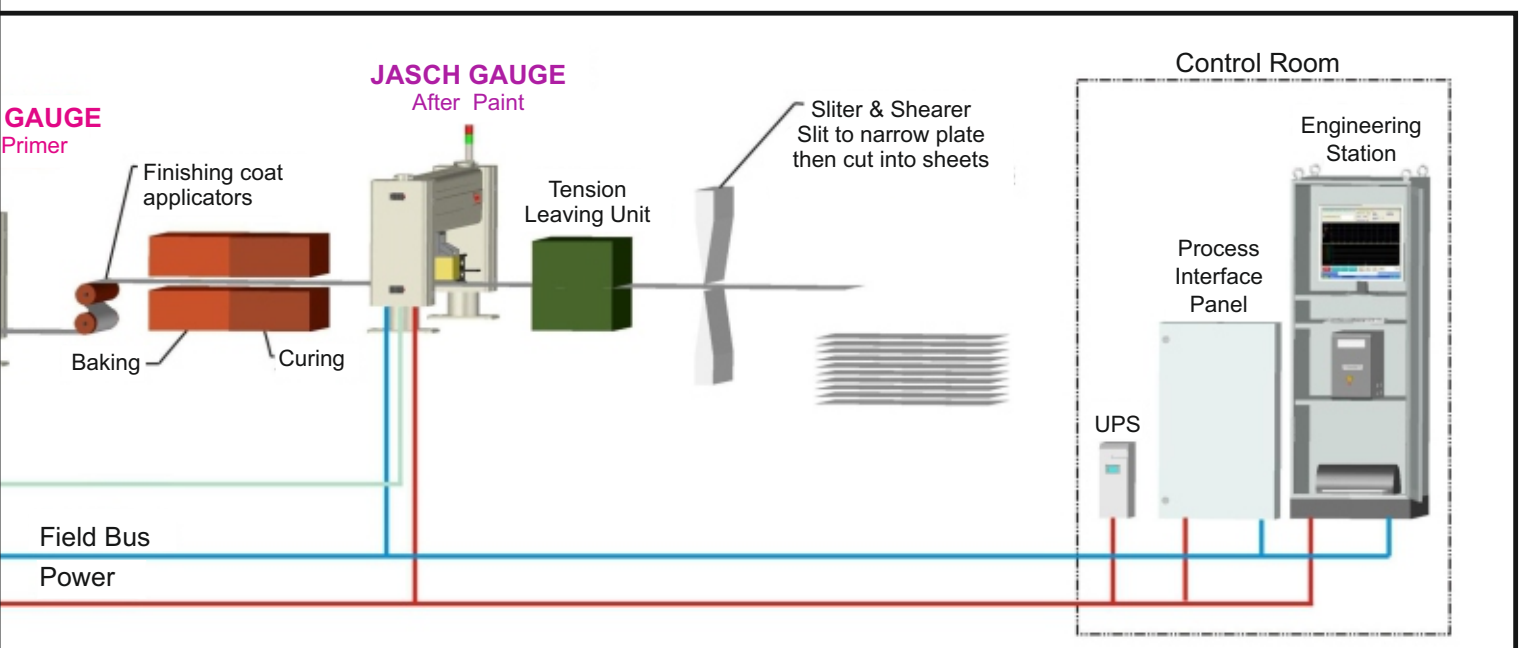
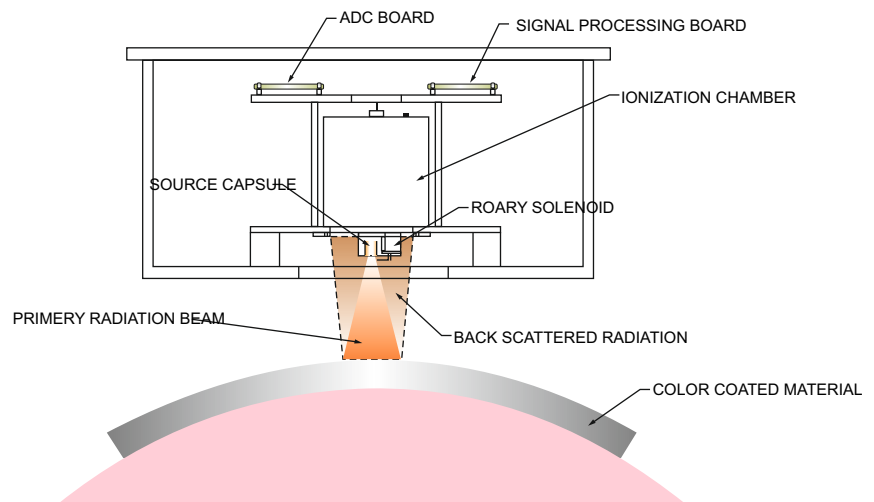
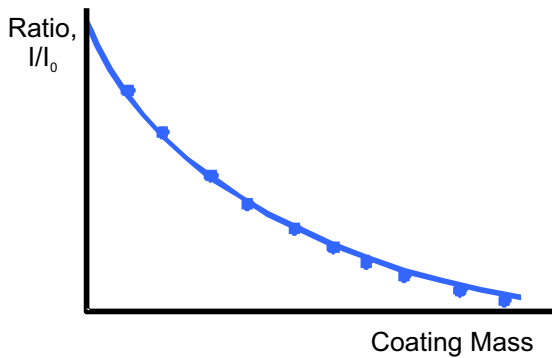
General Layout



TECHNICAL SPECIFICATIONS



Gauging System Type	: BTG-3000 Beta Thickness Gauge.
Thickness Range	: 0.1 μm to 300 μm
Accuracy	: 0.25 micron
Repeatability	: 0.25 micron
Scanner Type	: Single Beam, Sealed
Numbers of Measuring heads	: 1
Measuring Gap	: 20 mm.
Measurement Principal	: Beta Backscatter
Source	: Kr-85 Radioisotope 200mCi
Detector	: Ion Chamber



BTG-3000

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