



RSI

Radiometric Services & Instruments, LLC

Your #1 source for thickness and coating gauge needs.

RSI

Model 50

Upgrades for Isotope Gauges

THE AFFORDABLE SOLUTION FOR UPDATING LEGACY ISOTOPE GAUGES

Radiometric Services and Instruments, LLC

Upgrade Packages

The Model 50 Electronics package has been used successfully to upgrade legacy isotope gauges from major manufacturers such as Eberline, Loral, Boyle Controls, DMC, Radiometrie, AccuRay, and ThermoFisher.

- The most cost-effective solution to gauge obsolescence. Roughly half the cost of a new gauge.
- No need to purchase expensive new gauges to benefit from newer technologies. Existing measurement sensors can often be retrofitted with the latest technology as part of the upgrade.
- Reusing the existing measuring sensors, c-frames, junction boxes, and cabling minimizes installation costs and keeps down-time to a minimum. Most upgrades can be completed in just a few days.
- Modernizing and reusing existing measurement sensors negates the need to purchase expensive new sensors to support the system.

Model 50 Features

- Integrated 17-inch Touchscreen Operator's Panel
- Remote Mounting of Operator's Panel
- Additional Operator's Panels (optional)
- Multiple language options for main operator pages
- Single and Dual Gauge Configurations
- Coating compensation for Sn, Zn, Zn/Al, Zn/Fe
- AC line conditioner/UPS inside cabinet (optional)
- Side Mounted Air Conditioner for ambient temperatures warmer than 35C/95F (optional)

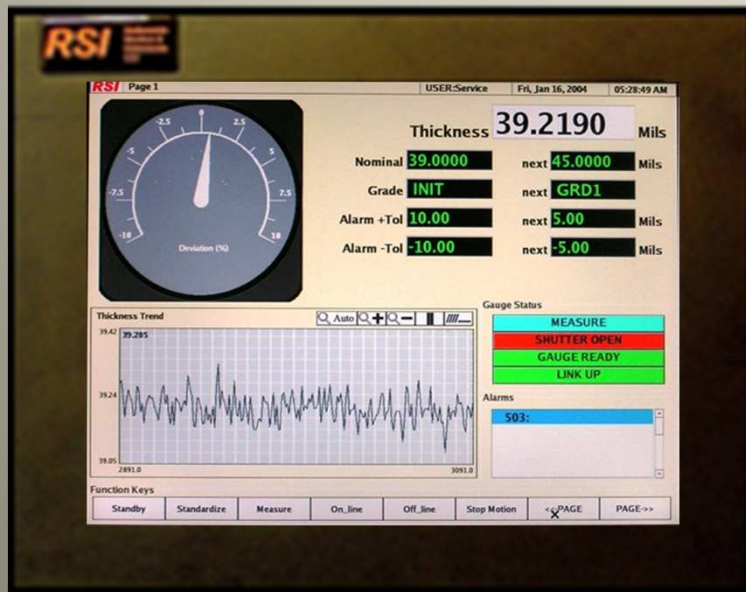


Gauge Processor Configuration...Added Reliability !!!

- Industry Standard "Computer-On-Module", ETX (Embedded Technology eXtended) modules minimize long term "hardware obsolescence" issues
- Solid State Drives for enhanced reliability
- Separate Processors for system measurement and communications. "Core" measurement software continues to run even if display application software crashes.
- 16 bit - A/D Channels
- Four Independent Analog Output Channels
- Up to 48 Channels of Digital I/O, configurable
- Connectivity for remote monitoring and troubleshooting (optional)
- Linux Real Time O/S with "C++" language modularized



The Operator's Terminal is mounted on the front door of the MEC. The terminal is used for system configuration, set-up of measurement parameters, diagnostics, fault finding, etc.



- Touchscreen LCD color display
- Rugged, industrial quality for tough environments
- Simple, easy-to-use interface
- Password controlled, multiple access levels
- Display of thickness, deviation from set point, current and “next” nominal values
- Manual entry of thickness, alloy/grade
- Gauge status and alarms
- Customer configurable displays

Screen Shots

Measurement

RSI Operator Page Technician Sunday, Aug 21 2005 10:41:50 AM

Thickness: **39.2037**

Nominal: 300.0000 Mils
 Grade: GRD1
 +Tolerance: 3.00 Mils
 -Tolerance: 3.00 Mils

Gauge Status:
 MEASURE
 SHUTTER OPEN
 GAUGE NOT READY
 ON-LINE
 CONTROL = MEC

Alarm Status:
 ALARM 181 Invalid nominal
 ALARM 306 Standardize Gauge

System Commands:
 F1-Standby F2-New Alloy F3-Standardize F4-Measure F5-On_line F6-Off_line

Setup

RSI Setup Page Technician Sunday, Aug 21 2005 10:32:51 AM

Thickness: 39.2616 Mils 3.6059 Volts

Nominal: 40.0000 Mils
 Multiplier: 1.0000
 Offset: 0.0000
 Grade: GRD1
 Time Constant: 30 ms

+Warning: 1.5000 Mils
 -Warning: 1.5000 Mils
 +Tolerance: 3.0000 Mils
 -Tolerance: 3.0000 Mils

Standardize Voltages:
 V Zero: 9.24178
 V Infinity: -0.00484
 Last Standardize Time: 09/02/2005 17:16:00

Gauge Status:
 MEASURE
 SHUTTER OPEN
 GAUGE READY
 ON-LINE
 CONTROL = MEC

Alarm Status:
 ALARM 306 Standardize Gauge

System Commands:
 Standby Measure Standardize New Alloy Next-Current

Alarm Log

RSI Alarm Page Technician Sunday, Aug 21 2005 10:45:48 AM

Number	Name	Description
306	Standardize Gauge	Exceeded maximum time between standardization. Standardize gauge
300	Standardize Failure	Standardize Failure - Vzero too low (3.60922)
106	Invalid Multiplier	
540	Online TimeOut	
541	Offline TimeOut	
540	Online TimeOut	
101	Invalid nominal	
108	Invalid Tolerance Warning	
149	Invalid Next Tolerance Alarm	
107	Invalid Time Constant	

Alarm 306 Details:
 Standardize Failure
 Standardize Failure - Vzero too low (3.60922)

Set Date: 09/07/2005 11:36:03
 Cleared:
 Gauge: 0
 Group: 1
 Active Alarm

System Commands:
 Standby Active History Recent History Clear All

Calibration

RSI Calibrate Page Technician Sunday, Aug 21 2005 10:54:59 AM

Index	Target	Volts	Normalized	Predicted	Error	% Error
1	1.51200	8.92629	-0.036662	1.51856	0.006560	0.434177
2	2.51900	8.71166	-0.060986	2.52432	0.005320	0.211216
3	4.01000	8.40556	-0.096733	4.00397	-0.006030	-0.150468
4	8.11700	7.60384	-0.196909	8.15968	-0.045820	-0.236275
5	9.93200	7.28502	-0.233713	9.93915	0.007150	0.071987
6	19.98000	5.27452	-0.480581	19.98765	0.007650	0.038293
7	39.84300	3.56486	-0.953671	39.84319	0.000190	0.000465
8	79.77600	1.38138	-1.899439	79.77003	-0.005970	-0.007483
9	100.05700	0.85398	-2.378083	100.06280	0.005800	0.005798
10	139.90000	0.33248	-3.312050	139.89844	-0.001560	-0.001134
11	199.57400	0.07989	-4.690930	199.57426	0.000260	0.000133
12	239.41700	0.02944	-5.590517	239.41695	-0.000050	-0.000021

Correlation: 0.99999995629179

Standardization:
 Zero: 9.2598100
 Inf: -0.0051400

Curve Commands:
 Load Curve
 Save Curve
 Calculate Curve Fit
 Change Curve Order
 Remove Sample
 Remove All Samples
 Refresh Sample List

Coefficients:
 Index | Coefficients
 1 | 0.004364
 2 | -41.272755
 3 | 0.801317
 4 | 0.379002
 5 | 0.107776
 6 | 0.014752
 7 | 0.000823

Gauge Status:
 CALIBRATE
 SHUTTER CLOSE
 CONTROL = MEC

Alarm Status:
 ALARM 306 Standardize Gauge
 ALARM 300 Standardize Failure

System Commands:
 Standby Calibrate Mode Calibrate-Standardize

Diagnostic Features

- Access via internet for remote diagnostics and troubleshooting (optional)
- Cabinet temperature monitoring with alarms
- Full diagnostics with multiple screens
- Calibration curve building capabilities built in; includes curve order selection, display of coefficients and curve error display
- Alarm and event logging by time and date
- Analog input and output scaling
- Digital I/O checks

System Interfaces

- TCP/IP, Profibus or OPC interface to Level II computer
 - Download nominal thickness, tolerances, alloy name, alloy chemistry, etc.
- RS232C serial links available for older systems
- Four scalable analog outputs (standard)...additional outputs are optional
- Isolation amplifiers available for Control Interfaces
 - ± 10 VDC or 4 – 20 mA current loop, 1000 vdc isolation
- Digital Inputs and Outputs (Solid State or Relay) for system status
 - Gauge healthy, measuring, calibrating, on/off-line, etc.

The Remote Operator's Panel permits the viewing and entry of measurement values and parameters. Multi-level password control allows access to system extensive diagnostic and configuration tools.



- Touchscreen LCD color display
- Rugged, industrial quality for tough environments
- Display of thickness, deviation from set point together with present and next nominal values
- Manual entry of thickness, alloy/grade
- Gauge status and alarms
- Mounting options...Surface, Desktop, or Rack
- Chassis mounted CPU simplifies installation
- Ethernet fiber-optic interface
- Optional keyboard, trackball and mouse operation

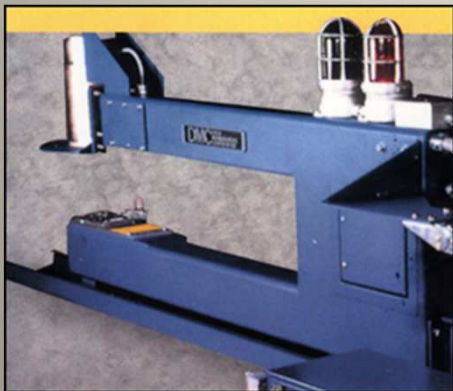
Detectors ...

- Detectors from Boyle Controls, DMC and Radiometrie isotope gauges can be reused in the upgrade without modification
- Detectors from Loral / Accuray systems will need to be retrofitted or replaced



Model 50 Main Electronic Cabinet (MEC)

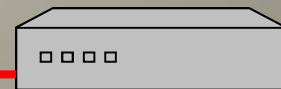
C-frame(s) (One or Two)



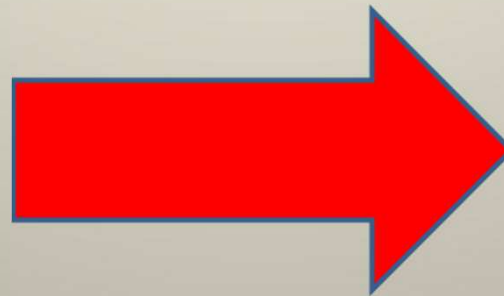
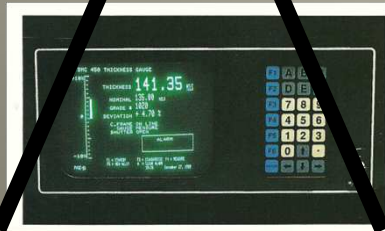
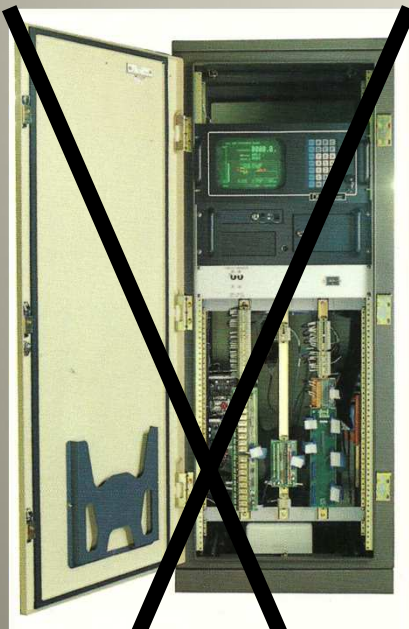
Optional Remote
Operators' Panel(s)



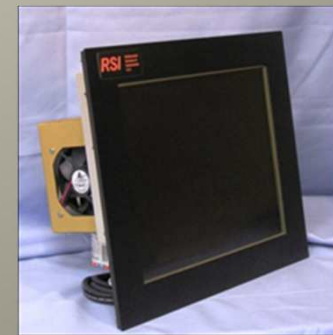
Optional Link to Level II
Computer



DMC Model...DMC 420 and 450 Thickness Gauges

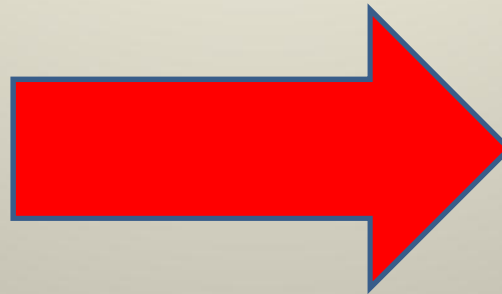
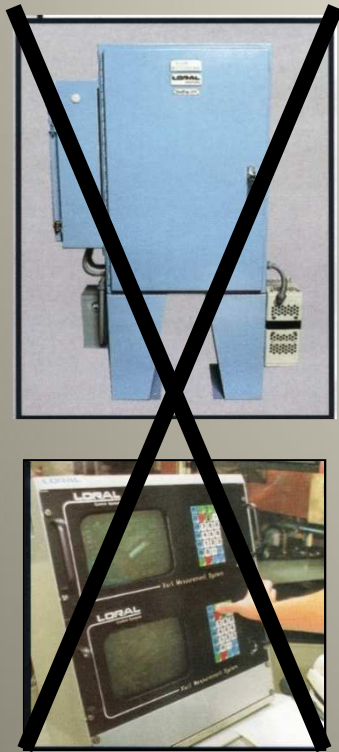


Existing Detector is reused without Modification

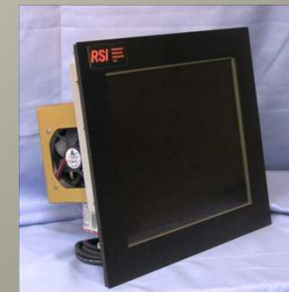


Optional Remote Operator's Panel

Model 3000, 3500, 5310 Weston/Loral Isotope Thickness Gauges



Existing Detector is updated with a modern Ion Chamber and Preamp



Optional Remote Operator's Panel



RSI ...now #1 in Service Support!

RSI provides more service support than any other North American supplier, using experienced test and service personnel

- Free emergency service Hot Line (+1) 717-476-9012
- North American Service from Frederick, MD, Wheeling, WV and Detroit, MI
- European Service from the UK and Italy
- Service in Asia from Beijing, China
- Maintenance contracts designed to meet your requirements
- Discounts on spare parts
- Wipe tests
- Competitive Service Rates
- Visit our website: www.rsi-xray.com

Why Work with RSI ?

- Our thickness gauges and coating gauges are proudly Made in the USA
- Field Service and Technical Support are always available
- Free telephone hot line for customer emergencies
- Affordable preventive maintenance contracts and call-out service
- Fast turn-around on fully tested repairs – large inventory of spare parts
- Our x-ray sources and detectors are mechanically and electrically backwards compatible with those used in many legacy gauges
- An experienced technical staff with a proven track record
- We have more than 200 years of combined gauging experience

At RSI, the Customer is #1