



OptiReader™

Revolutionary ellipsometric jet fuel
thermal oxidation heater tube scanner

- Precise HT scanning with pass/fail results
- Accurate test results in less than 10 minutes
- Completely automated test, requires no training
- Unified test report with results from JFTOT
- Approved in ASTM D3241-18 Annex A4

TAKING HEATER TUBE SCANNING TO THE NEXT LEVEL

PAC has developed a blazing fast jet fuel thermal oxidation heater tube scanner, using advanced multi-wavelength ellipsometry technology. Our new OptiReader™ provides pass/fail results with a full 2D and 3D thickness map defining maximum deposit thickness and volume in less than 10 minutes. Results are not only fast, but also highly precise and accurate. The user interface is so simple it doesn't require any training which saves time and money.



KEY ADVANTAGES

OVER THE TOP PRECISION



- Better precision than ASTM D3241 requirements
- Validation system with standard tubes generated by ALD (Atomic Layer Deposition)
- $r < 2\text{nm}$, $R < 4\text{nm}$
- Minimization of human error from the decision making

LOW COST OF OWNERSHIP



- No training or analytical knowledge required
- User friendly interface on a large 10.8" color touchscreen
- One button operation
- No operator visual check necessary
- Ease of use translates into lab savings

BEST IN THE MARKET



- 2-year warranty
- Full mapping is completed in less than 10 minutes
- Automated pass/fail validation

NUMERICAL HEATER TUBE SCAN



- Objective pass/fail results
- Quantifiable HT deposit thickness and volume
- Unified test report with results from JFTOT & OptiReader
- Data integration using PAC Intelligent Heater Tubes - at no extra cost

SAFE & WORRY-FREE ECOSYSTEM

This easy process provides accurate and fast results allowing you to improve lab productivity by reducing the need of trained technicians.

The Unified Report provides detailed results from the JFTOT & OptiReader tests.

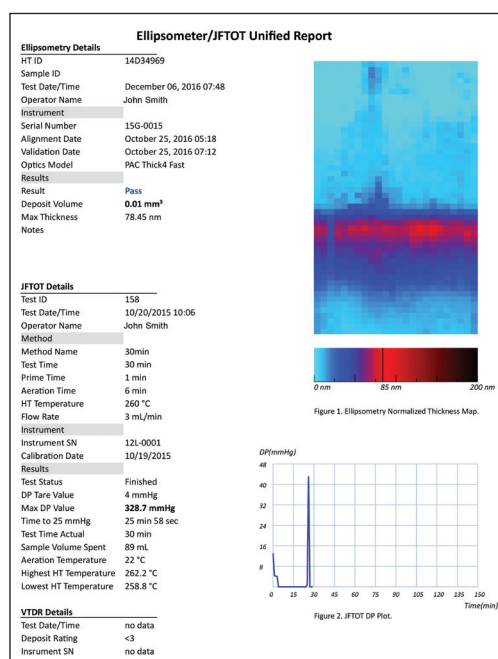
- 1 Insert Intelligent Heater Tube (IHT) into the JFTOT



- 2 Put the IHT with the JFTOT results into the OptiReader



- 3 Generate a single unified report on the IHT



BEST OVERALL PERFORMANCE

The OptiReader's friendly interface, accurate and fast results, and data integration capabilities make it the best in its class.

Feature	OptiReader MWETR	VTR	ITR	ETR
HT rating	✓	✓	✓	✓
Quantitative thickness map	✓	✗	✓	✓
Wide range of deposits	✓	✗	✗	✓
Fast results (<10 minutes)	✓	✓	✗	✗



SPECIFICATIONS

Analytical Principle	Multi-wavelength Ellipsometry (MWETR)
Standard Method	Approved in ASTM D3241-18 Annex A4
Deposit Thickness Range	0 to 500 nm
Deposit Volume Range	0 to 0.5 mm ³
Repeatability	<2 nm
Reproducibility	<4 nm
Number of measurement points	1200
Ambient temperature	10° to 35° C / 50° to 95° F
Altitude	Less than 2000 mts.
Test Sample	Regular/Intelligent Heater Tube
Test Duration	< 10 min
RFID Reader	Yes
User Interface	10.8" Color Touchscreen
Sample Loading	Heater Tube Insert
Test Results	<ul style="list-style-type: none">• Heater Tube Number• Sample ID• Pass/Fail Result• Deposit Thickness• Deposit Volume• 2D & 3D Color Map
Special Function	Pass/Fail Indication, Event Log
Internal Memory	Up to 2000 results
Calibration/Validation Log	Custom validation range selection
Password Protection	Yes
Output	3x USB, 1x Ethernet LAN
Network Printer Connectivity	Yes
Dimensions w x h x d (in/cm)	Instrument: 10 x 14 x 16.5 in. / 25.4 x 35.5 x 42 cm. Crate: 29 x 34 x 29 in. / 73.6 x 86.3 cm.
Weight (lbs/kg)	Instrument only: 33lbs. / 15 kg. Crated instrument: 130 lbs. / 59 kg.
Electrical (Voltage/Frequency)	100V to 240V - 50/60 Hz or 12V/5A - DC

Continuing research and development may result in specifications changes at any time

ABOUT PAC

PAC develops advanced instrumentation for lab and process applications based on strong **Analytical Expertise** that ensures **Optimal Performance** for our clients. Our analyzers help our clients meet complex industry challenges by providing a low cost of ownership, safe operation, high performance with fast, accurate, and actionable results, high uptime through reliable instrumentation, and compliance with standard methods.

Our solutions are from industry-leading brands: AC Analytical Controls, Advanced Sensors, Alcor, Antek, Herzog, ISL, Cambridge Viscosity, PSPI, and PetroSpec. We are committed to delivering superior and local customer service worldwide with 16 office locations and a network of over 50 distributors. PAC operates as a unit of Roper Technologies, Inc., a diversified technology company and a constituent of S&P 500, Fortune 1000, and Russell 1000 indices.

HEADQUARTERS

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