Inteleg® Ar-0He

Zero Helium - Maximum Precision, Argon spray, Filament-less, No pumps

NOVA FABRICA
INTELLIGENT PROCESS MONITORING & CONTROL

COMPACT SPOES LEAK DETECTOR

2025 03 01

Inteleg® Ar-0He - a SPOES RGA-based leak detection system - consists of a miniature plasma cell and an OES system. It is a rugged, small-size, low-cost and low-maintenance solution. It utilises optical emissions from a plasma cell and employs readily available Argon instead of expensive Helium for "spray" mode leak checking.

We use Inteleg® Ar-0He™ for real-time "Argon-spray" (i.e. no Helium) leak detection, on-line leak detection, process gas composition evaluation and vacuum quality monitoring.

Inteleg® Ar-0He™ SPOES leak detection systems can operate across a wide pressure range - from high vacuum (down to 7.5E-7 Torr) to process pressures (up to 0.75 Torr) without differential pumping.

Inteleg® Ar-0He™ can be field deployed inexpensively, quickly, and their robustness and compact design ensure low maintenance and high reliability, even in demanding environments.

The Argon-spray method for industrial leak testing offers enhanced reliability and significantly reduced test times, featuring typical cycle times of just a few seconds.

Inteleg® Ar-0He™ leak detection systems provide a practical, low-cost approach to real-time leak detection by OES.

APPLICATIONS

Vacuum leak detection · Vacuum quality monitoring · Gaseous environment monitoring · Residual gas analysis · Process gas analysis · Pump-down analysis · Contamination detection · QA/QC · Fault detection · Troubleshooting

ADVANTAGES

OES-based leak detection · Filament-less · Non-invasive · Low maintenance · Real-time · Speed and sensitivity · No differential pumps · Spray mode leak checking · Vacuum "ready" state detection · Online mode process leak tightness monitoring · Online mode process quality monitoring · Low cost · Fault detection/recognition · System health checks · Scrap and downtime prevention · Rugged design · Easy installation · OEM Integration · 24/7 operation

FEATURES

4.0kV DC/MFAC mini-plasma · Total pressure sensor · Process leak detection mode · Spray leak detection mode · Process recognition · Vacuum recognition · External mounting · Safety interlock · UV-VIS-nIR OES · 200-1040 nm 2B-PEM® detector · Digital sensor · Digital actuator · Fast feedback control · Real-time alarms and states · 0-5V, 0-10V, 4-20mA · Self-diagnosis · Self-calibration · Web interface

TECH	Technology	OES-based gas analysis using a double 4kV DC/MFAC microplasma reactor
	Detection limit	up to PPM, application dependent
	Operating pressure range	7.5e-7 Torr to 0.75 Torr (1e-6 mbar to 1 mbar), application dependent
REACTOR	Power modes	DC, MFAC, DC+MFAC
	Regulation modes	Current, Voltage or Power
	Safety features	Short-circuit detection, over-temperature detection, kWh counter, End-of-Life warning
	Ethernet interface	x2 RJ45, Modbus/TCP, HTTP
	Mounting	External KF40 (or bespoke)
	Max flange temperature	40 °C
	Operating Temperature	10 to 30 °C (non-condensing), ensure proper ventilation
	Power Requirements	24 VDC, 1.5 A
	Dimensions and weight	100 x 127 x 334 mm, 4.0 kg
	Power supply	External power supply, 60W, 90→264VAC, 47-63Hz, 1.0A/230VAC
	Cooling	[default] Passive, [optional] Water cooling
2B-PEM®	Detector	190 - 1040 nm range, 1.5 - 3 nm optical resolution, 1 ms - 60 s
	Control algorithms	PID, PDF+, EPD
	Ethernet interface	x2 RJ45, LAN port, SERVICE port
	Industrial Ethernet	[optional] x2 RJ45, PROFINET, EtherCAT, Modbus/TCP
	SYSTEM power supply	External power supply, 120W, 100→240VAC, 50-60Hz, 1.5A/240VAC
	Housing	Stand-alone, 9.5" half-rack or 19" rack. Passively cooled
	Dimensions and weight	[default] 71 x 141 x 227 mm, 2.7 kg
UI	GUI compatibility	Windows 10. Requires Java Runtime Environment 8 (JRE 8)
	GUI computer requirements	[min] CPU: Quad-Core i5, 3GHz, RAM: 16GB, OS: 64 bit Windows 10 or later, VGA adapter: any [optimal] CPU: Quad-Core i7, 3.5GHz, RAM: 16GB, OS: 64 bit Windows 10 or later, VGA adapter: GeForce 8 and 100 series or higher
	Monitor resolution requirements	[min] 1920 x 1080 px

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Model Number example: **IAR0HE-n / IAR0HE-CUST***

N	RGA	OES	Fiber bundle	Spray gun
Inteleg® Ar-0He variants:				
1	ISIM-1, KF40, passively cooled	I2BPEM-001C0000MB	FBO-6UST1-1, 200cm	SPRAY-GUN-1, 360/450cm

* - a special M/N can be issued in case of a special configuration.

LEAK DETECTION SOLUTION COMPARISON: **Helium vs SPOES**

		HELIUM SPRAY		INTELEG® Ar-0He (SPOES)
Core principle	●	Electron emitter with a Mass Filter	●	Plasma cell with OES
Trace gas	●	Helium	✓	Argon (any other, e.g. He)
Element detection	●	Helium mass (amu) limited	✓	Ar* and N2* or user selected emission lines
Self-cleaning	●		✓	Yes
24/7 operation	✗	Not designed for 24/7	✓	Designed for 24/7
Pressure				
Differential pumping	✗	Required	✓	Not required, optional
Vent to atm. during operation	✗	Filament damage	✓	Carry on as normal
Total pressure measurement	●	Yes	●	Yes
Performance				
Detection limit	●	1E-12 mbar l/s	●	1E-7 mbar l/s
Residence time	✗	He, up to 30min	✓	Ar, <10s
False positives	✗	Yes	✓	No
Leak finding process	✗	Slow	✓	Fast
Leak location accuracy	✗	Inaccurate	✓	Precise
Detector use complexity	✗	Complex	✓	Simple
Effort	✗	1+ days to leak check	✓	1+ hours to leak check
Software				
Monitoring	●		✓	Time-trends
AI recognition	●		✓	Vacuum, Process recognition
Process control	●		✓	Multi-channel: PID, End-point
Material data	●		✓	Lines DB: atoms and molecules
Communication	●		✓	Ethernet
Integration	●		✓	Modbus/TCP, PROFINET, EtherCAT
Data logging	●		✓	Logger service
Offline viewer	●		✓	Web-based off-line viewer
Mounting				
Process chamber	●	Yes	●	Yes
Roughing line	●	Yes	●	Yes
Ownership				
Maintenance	✗	Filament	●	View-port, Electrode pair
Spray gas availability	✗	He	✓	Technical grade Ar
Spray gas cost	✗	$$$	✓	$
Detector set cost	✗	$$$	✓	$
Total cost of ownership	✗	$$$	✓	$