# ABLE INSTRUMENTS & CONTROLS

# JEROME® J405

## ULTRA LOW-LEVEL DETECTION GOLD FILM MERCURY VAPOUR ANALYSER


BROOKFIELD AMETEK

## REDEFINING THE PORTABLE MERCURY ANALYSER MARKET

- Measurement range: 0.5 ug/m3 to 3000 ug/m3
- High Resolution (0.01 µg/m3)
- Accuracy: +/-5% at >100ug/m3 Hg
- Sample mode response time 12 seconds
- 230 VAC power supply with Nickel Metal Hydride rechargeable battery pack (24-hour life)
- On-board Data Logging (20,000 data points)
- USB driver for WIN XP and 2000 inc. for downloading data
- Automated Sampling Options
- Battery Powered Sensor Regeneration
- SCADA Interface Capabilities via 4-20ma
- Functional Test Kit (FTK) allows verification of analyser performance, between recommended annual factory calibrations
- Used by EA, Natural Resources Wales, SEPA and the HSE

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# THE J405

## ACTIVE ENVIRONMENTAL SOLUTIONS

**The Jerome J405 portable mercury vapour monitor is redefining the trace level mercury vapour analyser market. Significant performance enhancements and modern communications capabilities have been combined to create a new option for mercury spill detection and clean-up analysis. The J405 utilises the industry-proven, inherently stable and reliable gold film sensor technology and simple, one-button operation.**


ABLE Instruments & Controls Ltd are the **exclusive representative** for sales and service of the **Jerome J405** in the UK and Ireland

# SPECIFICATIONS

| | |
|---|---|
| **Resolution** | 0.013 µg/m³ |
| **Detection Range** | 0.5-999 µg/m³ |
| **Precision** | 15% RSD @ 1µg/m³ |
| **Accuracy** | ±10% @ 1 µg/m³ |
| **Response Time** | 12 seconds |
| **Flow Rate** | 750 cc/min |
| **Environmental Range** | 0-40°C, non-condensing, non-explosive |
| **Interface** | USB host, USB slave |
| **Dimensions** | 11" L x 6" W x 6.5" H/ 28 cm L x 16 cm W x 17 cm H |
| **Weight** | 5 lbs/ 2.5 kg |
| **Internal Battery Pack** | Rechargeable nickel metal hydride |
| **Power Requirements** | 12V DC/Power Adapter |
| **Warranty** | 1 year |
| **Marks** | UL, CE |

# FEATURES

## ULTRA LOW-LEVEL DETECTION:

The Jerome J405 can detect mercury vapour in air at levels as low as 0.5 µg/m3 with a resolution of 0.01 µg/m3.

## GOLD FILM SENSOR:

Validated in the field and in the lab for over 35 years, our proprietary gold film sensor ensures repeatable results across a wide range of applications.

## VERSATILE:

The J405 is in active use by many environmental agencies, industrial hygienists, waste recyclers, miners and first response teams across the world.

## OPTIONAL DATA LOGGING:

When equipped with data logging capabilities, the J405 can store data for up to 20,000 samples including date, time and up to 80 locations.

## DURABLE:

Housed in a light, ergonomically designed, durable metal casing.

## REGULATORY COMPLIANCE:

With a lower detection limit of 0.5 µg/m3, the J405 meets and exceeds EPA and ATSDR standards for industrial and residential remediation actions as well as OSHA, NIOSH, ACGIH and MSHA action levels.

## SURVEY MODE:

While in survey mode, the J405 continuously draws in samples of air to help users locate the source of mercury contamination and enable corrective action to be taken.

## FIELD REGENERATION:

The J405 boasts a battery life of 24 hours and offers battery powered sensor regeneration that can be performed wherever and whenever you need it, allowing for extended testing in the field.

## INTUITIVE INTERFACE:

The J405 offers simple, menu-driven operation as well as easy-to-understand diagnostics and error detection. It is supplied with a USB interface for easy data transfer.

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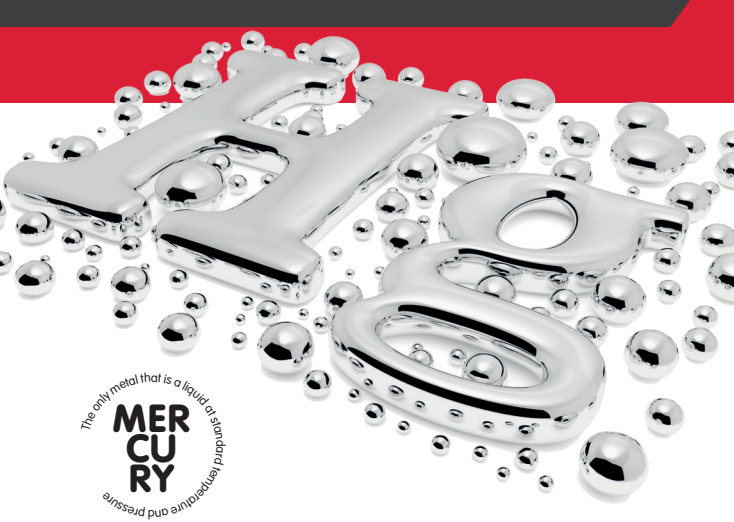



# TOXICITY AND SAFETY – THE IMPORTANCE OF EFFECTIVE MONITORING

Mercury is extremely toxic, with inhalation of the vapour producing harmful effects on the brain, nervous, digestive and immune systems, lungs and kidneys. Symptoms of mercury poisoning typically include sensory impairment (vision, hearing, and speech), disturbed sensation and a lack of coordination. The type and degree of symptoms exhibited depend upon the individual toxin, the dose, and the method and duration of exposure.

> ***Humans are mainly exposed by inhaling vapours. These are absorbed into the body via the lungs and move easily from the bloodstream into the brain. However, when elemental mercury is ingested, little is absorbed into the body.***

Short-term exposure to high levels of metallic mercury vapours may cause lung damage, nausea, vomiting, diarrhoea, high blood pressure, skin rash and eye irritation. Therefore, industries which involve the potential of personnel to be exposed to mercury vapour have a duty of care towards their employees which involves accurate monitoring of mercury levels across the plant.

# MERCURY MONITORING IN THE ELECTRICAL WASTE RECYCLING INDUSTRY

The presence of mercury in flat panel displays (FPDs), such as laptop monitors and LCD TVs, means that end-of-life FPDs are classed as hazardous waste. This has highlighted prospective health and safety issues via the WRAP (The Waste Resources Action Programme) commissioned study into the technical and commercial potential for recycling the items. WRAP anticipates that the number of FPDs in the WEEE (Waste Electrical and Electronic Equipment) waste stream will rise dramatically in the next few years bringing pressure to automate suitable commercial recycling processes in the UK and Europe.

> ***The conclusion of the WRAP study highlighted that employees at an FPD recycling facility would be subjected to levels of mercury "higher than is acceptable". However, it suggested that this could be reduced with personal protective equipment and local extract ventilation.***

ABLE's Jerome J405 gold film mercury vapour analyser is used extensively throughout the electrical waste recycling industry. In our experience, companies typically want to implement both a mobile monitoring capability for general plant safety use and a stand-alone fixed-point analyser to police a potential vapour "hot spot". The go-to instrument for both applications is the proven Jerome J405 Gold Film Mercury Vapour Analyser. ABLE design and custom build system enclosures, applying our knowledge of delivering trace level sample concentrations with full integrity. Being able to detect mercury vapour in air at levels as low as 0.05 µg/m3 (0.0005 mg/m3), the J405's LDL is well below the EU indicative occupational exposure limit value (IOELV) for mercury and its inorganic compounds of 0.02 mg/m3 (8-hour time-weighted average (TWA)).

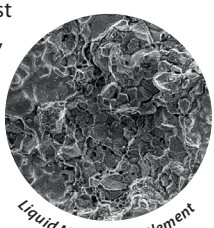
*Jerome J405 Fixed Monitoring System*

For more information regarding the Jerome J405 Mercury Vapour Analyser, please email **info@able.co.uk**

# THE INVISIBLE DANGER IN OIL AND GAS – THE SOURCE AND RISKS OF MERCURY IN THE OFFSHORE INDUSTRY

Mercury is a naturally occurring trace component of fossil fuels such as natural gas, coal, crude oil, gas condensates and tar sands and, because mercury exists naturally in vapour form, it is readily drawn up by the drilling process along with the gas product, subsequently condensing to its liquid form in various vessels throughout the separation train.

When a pressurised vessel that contains mercury droplets is depressurised, these vapours will start to be released. When breaking containment, despite a thorough gas test demonstrating there is no flammable gas present, the vessel could still present a risk from invisible mercury vapour.



*Liquid Metal Embrittlement*

In addition to forming toxic vapours, a major safety hazard associated with mercury's presence in the petrochemical industry is it's tendency to form amalgams with several metals, particularly aluminium, which leads to liquid metal embrittlement (LME). This can affect pipeline welds, cryogenic components, aluminium heat exchangers and hydrogenation catalysts. Failure of these components can lead to a plant shutdown, with severe economic implications, or, in extreme cases, uncontrolled loss of containment or complete plant failure with catastrophic results.

For these reasons of critical safety, ABLE has been particularly successful in selling the Jerome into offshore oil & gas applications where mercury can be detected in levels ranging from a few ppb to thousands of ppm, depending on the well and the location. This is of critical importance as crude oil is the feedstock for many petrochemical applications. The J405, combining sensitivity, specificity and rugged design, has become the de facto mercury analyser for the offshore industry.

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