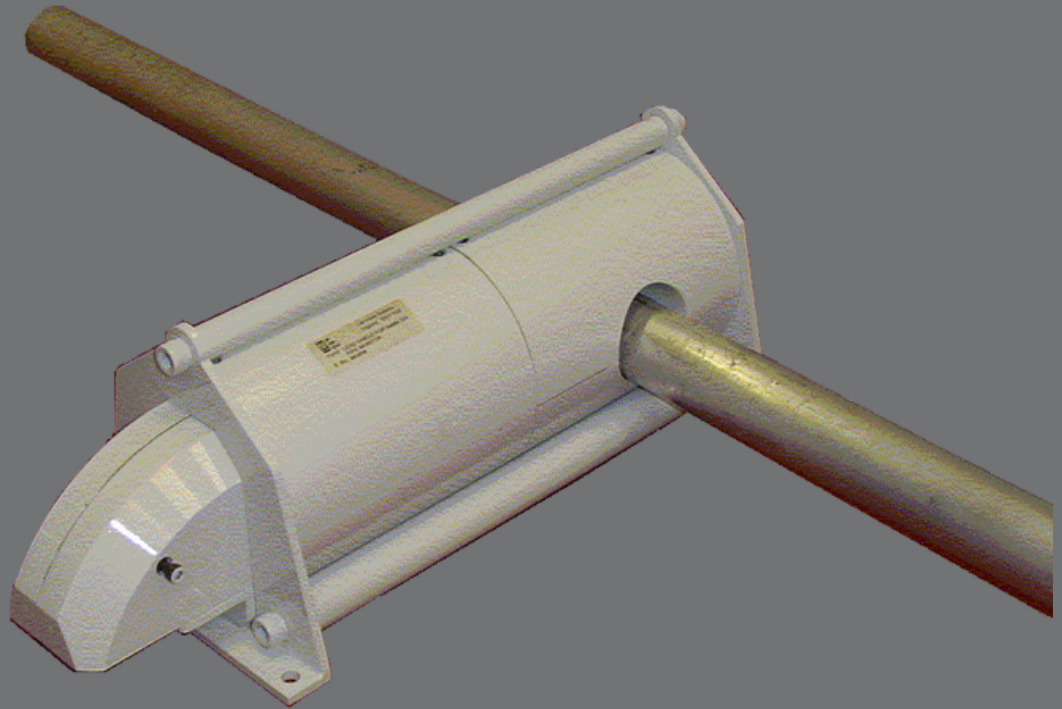


On-line Liquid Effluent Monitor

OLEM



Key features

- Fast indication of genuine Releases through advance alarm algorithm
- Unique lead design facilitates shielded installation
- NaI and CsI detector options
- Versatile design for horizontal and vertical pipe runs
- High safety integrity, with optional SSM board providing redundancy circuit

Overview

Curtiss-Wright's On-line Liquid Effluent Monitor (OLEM) continuously measures radioactive gamma emitting isotopes in process lines. OLEM's 'clamp-on' arrangement makes it easy to install. Its shielding can be mounted horizontally or vertically to accommodate process pipe runs, and a mounting plinth may be supplied to raise the OLEM above the floor line if necessary.

The OLEM system includes detector, electronics and lead shielding. The detector and shield assembly is non-invasive to the process line, with no need for a pumping system or tapoff points for sample removal and return.

Technical specifications

High efficiency

OLEM can be configured to measure gross gamma radiation, or isotopic specific radiation in the process line. A high efficiency NaI(Tl) or CsI(Tl) detector (sized depending on the diameter of the process line), is used to take the measurement. The detector is optionally temperature stabilized and can also possess an in-built radioactive pulser that allows the user to perform routine performance checks on the system.

CMS digital ratemeter

The standard OLEM shielding solution uses two inches of lead around the detector and pipe to minimize interference from background. Alternative shielding assemblies are available and if required, the system may be furnished with an optional cooling jacket for high temperature process applications.

After amplification and pulse shaping, the detector signal is transmitted to a Continuous Monitoring Station (CMS). The CMS is an advanced digital ratemeter providing a continuously updating display of result values and generating audible-visual alarm indications in the event of an activity event or system fail.

Low detectable limit

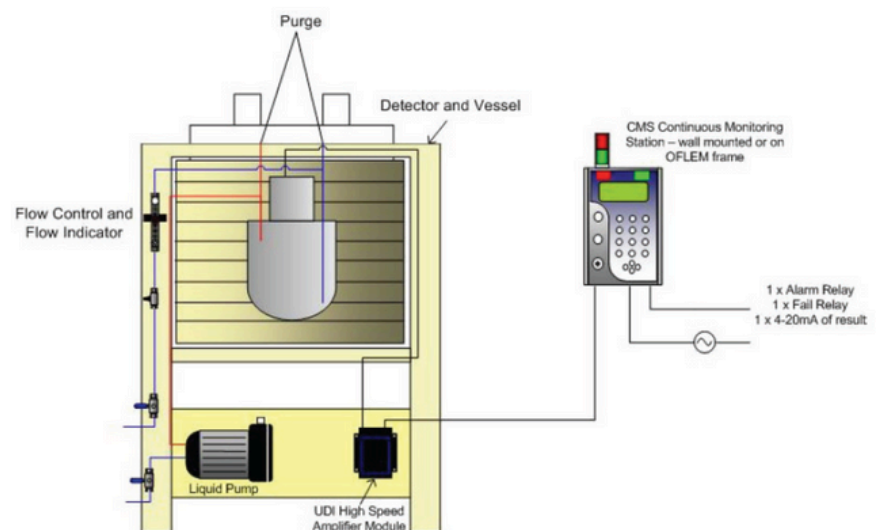
The CMS can be configured to report

in raw count-rate (cps or cpm) or engineered units (i.e. $\mu\text{Ci/ml}$). Under typical conditions and using a 60 second count time the OLEM offers a minimal detectable activity (MDA) of well below 1×10^{-6} $\mu\text{Ci/ml}$.

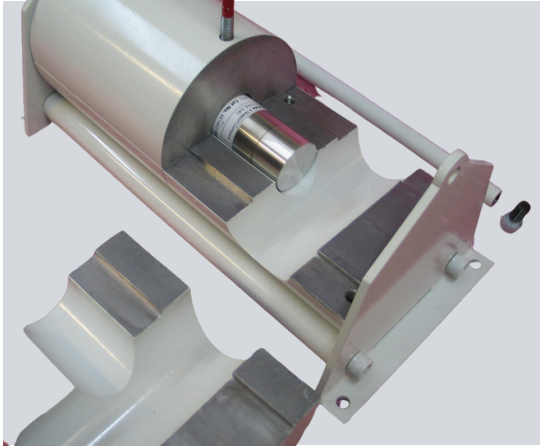
High safety integrity

The CMS can be provided with additional hardware for high safety integrity. The SIL Safety Module (SSM) conforms to Safety Integrity Level 2 (SIL2) in accordance with IEC 61508. The SSM independently monitors the detector output with a separate scaler circuit. Detector counts are evaluated in this way and the SSM activates alarms in the event of a high detector count. No software is used with the SSM and each component has been evaluated using a detailed failure mode and effects analysis. Although the SSM is resident within the CMS, the board is fully isolated and possesses its own power supply, power backup and output relays for audible and visual alarms and interlocks.

By offering users a SIL2 compliant solution, the OLEM gives added protection over conventional systems. The SSM provides a safeguard in the event the main CMS processor fails and reduces the overall risk of fail to alarm' scenarios. This is especially important when a failure of the system could indirectly expose people, the process or equipment to radiological or other hazardous conditions.



Performance specifications



The lead shielding design of the OLEM detector assembly makes installation and mounting of the system extremely easy

OLEM performance specifications	
Detector assembly	
Detector type	<ul style="list-style-type: none"> • NaI(Tl) or CsI(Tl), depending on application. • Crystal size selected to suit
Shielding	<ul style="list-style-type: none"> • 2" to 4" (50.8mm to 101.6mm) as required
Pipe size	<ul style="list-style-type: none"> • Can accommodate 1" to 12" (25.4mm to 203.8mm) diameter pipework
Measuring range	<ul style="list-style-type: none"> • $<1 \times 10^{-6} \mu\text{Ci/ml}$ - $1 \times 10^{-1} \mu\text{Ci/ml}$
Temperature range	<ul style="list-style-type: none"> • 0°C to 50°C (32°F - 122°F) • Ramp rate (max) - 2°C/hour
Shield dimension	<ul style="list-style-type: none"> • 8"x 8" x 16" (203.2mm x 203.2mm x 406.4mm) • (2"/ 50.8mm shield)
Calibration/check source	<ul style="list-style-type: none"> • Stick mounted for manual check • Optional solenoid operated automatic source

Performance specifications

The CMS Gamma is a compact, mains-powered, continuous monitoring station for measurement of gamma dose rate, providing essential, reliable information to personnel.



OLEM performance specifications	
CMS Gamma	
Dimensions	<ul style="list-style-type: none"> • 18"x 8" x 5½" • 457.2mm x 203.2mm x 139.7mm
Enclosure	<ul style="list-style-type: none"> • 304 Stainless Steel
Display	<ul style="list-style-type: none"> • Large LCD graphic display with backlight
Alarm indication	<ul style="list-style-type: none"> • Two layer status light column (totem pole, red and green LED) • Audible alarm sounder with two tones alternating at 1.2Hz > 100dB
System output	<ul style="list-style-type: none"> • Up to four relay outputs (Alarm 1, Alarm 2, Alarm3 and Fault) • RS-232 • RS-485 • Two x analogue outputs • Ethernet 10baseT
Power	<ul style="list-style-type: none"> • 85 to 260 VAC • 47 to 60 Hz

United States of America

707 Jeffrey Way
Round Rock
Texas 78665-2408
USA

Tel: +1 512-434-2800

United Kingdom

Innovation House
Lancaster Road
Ferndown Industrial Estate
Wimborne
Dorset BH21 7SQ
UK

Tel: +44 (0) 1202 850 450

For more information

Web: cwic.curtisswright.com

Email: sales@nspi.curtisswright.com

About Curtiss-Wright

Curtiss-Wright Round Rock and Wimborne have worked with nuclear and industrial customers for over 60 years. We support customers across the world from facilities located in the US and UK. Our solutions are embedded in strategic national infrastructure and our people are active partners in customer programs that are focused on delivering advanced future nuclear and industrial capabilities.

Curtiss-Wright Corporation (NYSE: CW) is a global integrated business that provides highly engineered products, solutions and services mainly to Aerospace & Defense markets, as well as critical technologies in demanding commercial power, process and industrial markets. We leverage a workforce of approximately 8,600 highly skilled employees who develop, design and build what we believe are the best engineered solutions to the markets we serve. Building on the heritage of Glenn Curtiss and the Wright brothers, Curtiss-Wright has a long tradition of providing innovative solutions through trusted customer relationships.