

Novel micro-biotest for oilfield monitoring

By Dr Peter Green, research and development manager, NCIMB Ltd.

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NCIMB Ltd., the Aberdeen based specialist microbiology company have developed novel multi-species microbial arrays to perform rapid toxicity testing of environmental samples. The full potential and applicability of these products for the oil industry is now being examined.

The Microbial Array for Toxic Risk Assessment (MARA) unlike other biological toxicity testing systems uses eleven different microbial strains to test the effect of toxic chemicals present in a sample. Toxic compounds in the sample inhibit the growth of the microorganisms and with each microorganism having a different susceptibility to the toxic compound a unique toxic 'fingerprint' or profile can be obtained for the sample. Dedicated software calculates the toxicity rating for each strain in the array to give information on the toxic profile of the sample and alerts the analyst by a user friendly traffic light warning system.

The unique fingerprinting capability of NCIMB's MARA technology allows much more detailed

analysis and monitoring functions to be performed than is possible with other current single species toxicity tests.

NCIMB currently has two product lines in the MARA portfolio; one of which is based on the inhibition of growth by any toxic chemical present in a sample, and the second uses naturally luminescent (light producing) bacteria which respond to toxicants by reducing their light output. Both systems are easy to use, have low set up and running costs and can provide toxic fingerprints of samples from between 30 min to 24 hours.

The following are some examples of uses for MARA technology in the oil industry:

- As a pre-screening selection tool for new chemicals and formulations
- As an in situ assessment of biocide efficacy during a dosing application
- Monitoring process and/or discharge waters (for both overall toxicity and any change in composition)

MARA/LumiMARA can detect sometimes subtle changes within the toxic profile of different samples, thus making it a valuable tool, not only in terms of detecting what may be unacceptable discharges but also in terms of monitoring the effectiveness or otherwise of any remedial steps taken. MARA arrays have already been tested successfully in a number of small oilfield studies.

NCIMB provides environmental consultancy and testing services to the oil and gas industries including NORM testing services, chemical characterisation, effluent monitoring and microbial corrosion monitoring in partnership with NECE Ltd. NCIMB is ISO 9001:2008 certified and licensed by the Scottish Environmental Protection Agency. ■

To find out more about MARA and NCIMB's range of oilfield services please visit our website at www.ncimb.com

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Cavotec strengthens UK offshore industry presence with Scottish base

“Our new Scottish base will help us to expand our coverage in the region – one that we hope to develop in the medium term to long term”



Stuart Stafford

Global engineering group, Cavotec MSL, is expanding its presence at the heart of the UK's offshore energy sector, with the establishment of a satellite office in Aberdeen, on the east coast of Scotland.

“Our new Scottish base will help us to expand our coverage in the region – one that we hope to develop in the medium term to long term,” says Cavotec UK managing director, Gary Matthews.

Offshore industry expert, Stuart Stafford, heads Cavotec's Scotland operations. Stafford has considerable experience in the offshore sector, having worked as a business development projects manager, a project manager at Nautronix plc., a key account manager at J&S Marine and a project engineering manager at Aker Kvaerner Subsea Ltd.

Cavotec designs and manufactures a wide range of advanced systems for the maritime, oil, gas and offshore industries including a range of sophisticated radio remote control systems (RRCs), vacuum mooring, AMP systems, motorised cable reels, spring driven cable reels, power connectors, power chains, crane controllers, steel chains, cables, marine propulsion slip rings and slip ring columns.

Cavotec's advanced RRCs in particular perform diverse applications in the offshore sector. From standard hand-held push button terminals to more sophisticated and customised models, Cavotec continues to innovate and introduce new products onto the market. For example, Cavotec's MC-3-5-Ex terminal recently gained ATEX certification, and follows IEC EX certification.

The MC-3-5-Ex is intrinsically safe and meets the most stringent requirements for gas and mining applications; gas zone 0 and 1, equipment class II, category 1G and mining equipment class I, category M1 (methane), gas group is IIB (ethylene), and T4 temperatures.

Recent product launches also include the MC-3300 and MC-3200; RRCs designed to provide secure and flexible control for a vast range of machinery. Typical applications for these systems are offshore and maritime cranes and winches. In addition to features common to standard RRCs, these units can also be delivered to use cable control.

Cavotec RRCs can be supplied with duplex communication. Duplex allows operators to receive messages, such as alarms and status

indications, via LEDs, control LCD display and indicator instruments.

Base units can be delivered with a serial interface for the most common bus standards on the market today. On request, these systems can be delivered with explosion proofing and increased safety encapsulation. The unit's batteries can be safely changed in explosive areas.

Recent orders include two MC-3000-Ex Operator Terminals with associated Field Base units that will be used to control winches on tanker loader units on offshore platforms in the Sakhalin 2 oil and gas facility. Built on an island off the eastern coast of Siberia, the Sakhalin 2 development is one of the largest integrated oil and gas projects in the world, designed to supply energy in Russia's Far East and the Asia Pacific region.

Cavotec has also recently received an order from Swedish maritime and offshore equipment innovator TTS Ships Equipment AB for eight MC-2-3 systems. The application is for ramps on eight new build Ro-Ro ships due to be built in Flensburg, Germany.

Cavotec has also delivered the first RCC system for use on a land-based oilrig in the Middle East. The MC-3300 unit will be used on a National Oilwell Varco rig, currently being built in the Jebel Ali Free Zone in Dubai. If the initial order proves successful, National Oilwell Varco could install MC-3300s on a further six rigs.

The MC-3300 is a remote control terminal designed to perform several applications simultaneously. Twin battery slots allow operators to change batteries while continuing to use the system, reducing downtime.

The system is designed to operate any direct hydraulic and electric control function and provide serial communication with most known PLC and frequency converters. The MC-3300's housing exceeds ingress protection norm IP66/67 and is constructed from special impact and chemical resistant plastic.

Cavotec MSL is a leading global engineering group, supplying innovative and environmentally friendly systems to the maritime, airports, mining, and general industry sectors. ■

To find out more about the Cavotec group, visit our website at www.cavotec.com. For updates on Cavotec projects, technologies and industry news, take a look at our blog: <http://blog.cavotec.com>

Cavotec innovation powering UK industry



As part of the Cavotec engineering group, Cavotec UK provides a broad range of innovative power systems including Brevetti steel and nylon chains, Cavotec power connectors, Cavotec Micro-control radio remote controls and Cavotec Alfo cable reels and sliprings. Drawing on Cavotec's forty-year industry experience, Cavotec UK delivers customised solutions to meet specific customer requirements.

Cavotec MSL is a leading global engineering group, supplying innovative and environmentally friendly systems to the maritime, airports, mining, tunnelling and general industry sectors. To find out more about Cavotec and our product range, please visit www.cavotec.com

