

Listening with Light[®]

Sensing technology using light has been developed and commercialised by a British company to detect oil reserves which could be worth more than \$10bn to the UK economy.



The need

Typically, only 30% of oil and gas reserves are recovered from an oil field beneath the ocean floor. Increasing recovery by only 2-3% could be worth more than \$1bn for the average field.

As we approach the end of easy-to-access oil and gas worldwide, more cost-effective technologies are needed to improve the recovery of existing reserves to 40%, 50% or even 60%.

The results

To identify untapped oil reserves, companies build detailed 3D images of offshore fields. The seismic data is obtained from sensing systems which measure sound waves. These are transmitted through the earth and reflected back from the various layers of rock. But conventional electrical systems are costly, prone to failure and have high maintenance costs. They can also be a safety hazard.

Developed with the help of more than £1m from the Technology Strategy Board, the Fosar[®] system does not need subsea electrical power and could now provide a more reliable and cost-effective way of maximising oil and gas recovery.

By commercialising a fibre-optic technology first developed in the UK for anti-submarine warfare and security purposes, British company Stingray has shown how operators can 'listen with light' to detect levels of oil and gas beneath the sea.

The Fosar system consists of a permanently installed network of optical sensors (potentially running hundreds of kilometres across the sea floor) which send signals to recording equipment above. The sensing arrays are small, lightweight and easy to install in deep water and around subsea installations.

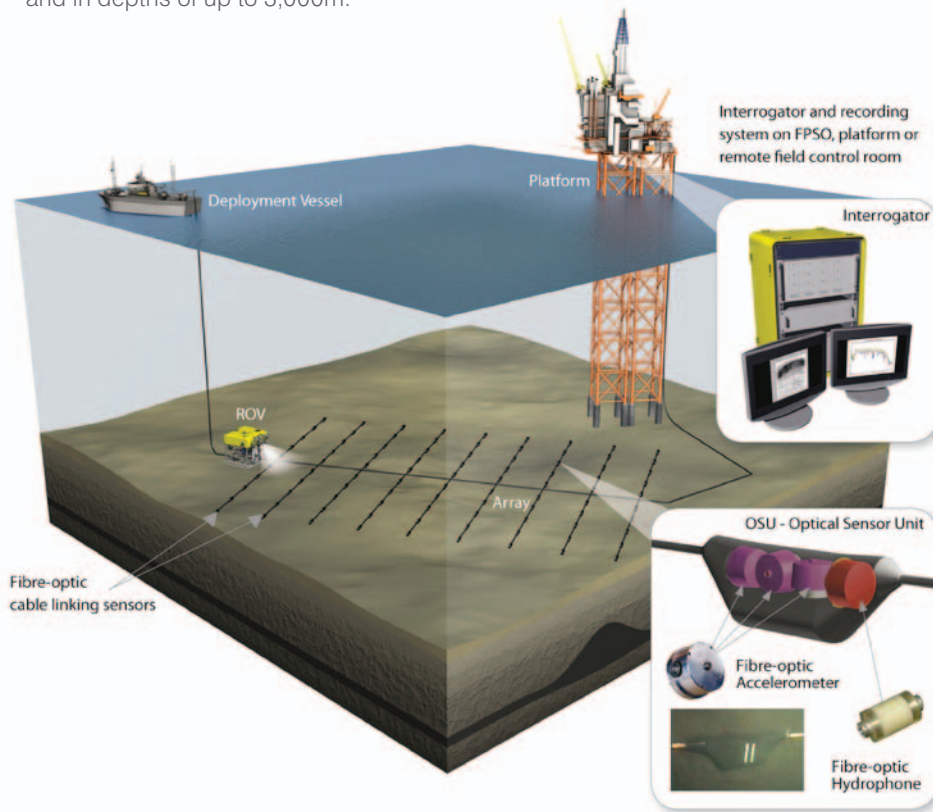
A series of successful trials was held in the North Sea which led to the commercial launch of the Fosar system in May 2009.

As oil reserves dwindle the race is on to extract what's left. With the market for permanent oilfield monitoring estimated to be worth between \$500m and \$1bn a year by 2015 it is no surprise that the venture capitalists and oil companies who have already invested more than £10m in Stingray are watching future product developments keenly.

Next steps

With approximately 50% of the future market potential for time-lapse oilfield monitoring (known as Seismic PRM) being in deep water, the Technology Strategy Board is also supporting the FosarDeep programme. This will extend the capability of the original Fosar system to be installed in congested areas and in depths of up to 3,000m.

By combining subsea sensing technology with new tools and techniques, installation costs and risk will be further reduced. Project partners include VerdErg Connectors, Atlas Elektronik UK Ltd and the Optoelectronics Research Centre at Southampton University.



New contracts

As a result of its early success Stingray Geophysical has been awarded a contract by BP, which is recognised as an industry leader, to conduct two feasibility studies into the requirements for installing permanent systems on the Clair and Schiehallion fields in the UK's North Sea.



‘Our ground-breaking technology which allows us to ‘listen with light’ has pushed boundaries to address a significant environmental and economic challenge in oil production which would not have been possible without the support of the Technology Strategy Board.’

MARTIN BETT, CHIEF EXECUTIVE OF STINGRAY GEOPHYSICAL LTD.

Technology Strategy Board

Driving Innovation

Collaborative research and development projects are one of the tools that the Technology Strategy Board uses to drive innovation in the UK. The Technology Strategy Board is a business-led executive non-departmental public

body, established by the Government. Its role is to promote and support research into, and development and exploitation of, technology and innovation for the benefit of UK business, in order to increase economic growth and improve the quality of life. It is sponsored by the Department for Business, Innovation and Skills (BIS).

Tel: 01793 442700 www.innovateuk.org

Project no. HO299E

Project partners

Stingray Geophysical Limited (lead partner)
Atlas Elektronik UK Ltd

Project duration

June 2006 – December 2008

Technology Strategy

Board investment £1.2m

Total project

investment £5m

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