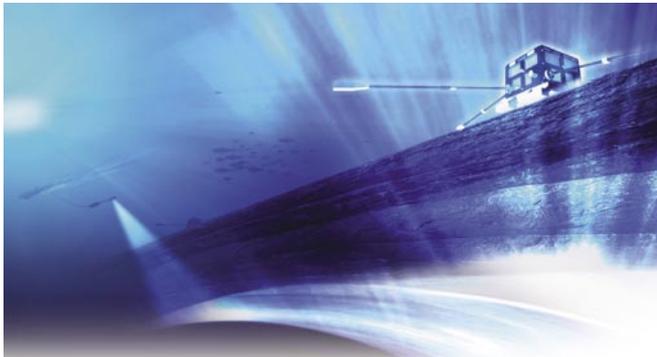


emgs

Seabed Logging wins industry vote



The extraordinary growth emgs has enjoyed since receiving a World Oil award in 2003 can be attributed to its innovative technology for finding hydrocarbons, which has the power to slash exploration risks.

Electromagnetic Geoservices AS, widely known as emgs, won *World Oil's* Best Exploration Technology Award in 2003. This was in recognition of the work done by this innovative Norwegian company in developing seabed logging, a revolutionary electromagnetic survey technique for locating oil and gas beneath the seabed.

Since winning the award, emgs' business fortunes have rocketed and more than 35 companies are now using its services. These include Shell and ExxonMobil, both of which have recently presented seabed-logging success stories at influential industry forums in different parts of the world. At the latest count, emgs had completed over 200 commercial surveys. To support this level of international activity, the company now employs over 135 people—it had just 27 at the time of the award—and has added comprehensive service facilities in Houston and Kuala Lumpur, plus sales offices in most of the major oil industry centers, to its headquarters in Trondheim, Norway. The emgs survey fleet now comprises four vessels, each boasting the latest seabed-logging equipment and recognized to be operating to the highest safety and environmental standards.

A welcome development earlier this year was the ending of a protracted battle to establish the intellectual property rights to seabed logging, when a ruling in the UK courts confirmed emgs as the inventors of the technique. And emgs has continued to pick up prizes, notably Hart's Meritorious Award for Engineering Innovation and the Norwegian government's Growth and Innovation Company of the Year Award.

The principle behind seabed logging is simple: the electrical resistance of a rock formation relies heavily on any fluids—hydrocarbons or water—contained in its pores. This observation has been used for around 75 years, of course, by the borehole logging community to confirm oil in place.

What emgs has achieved, where many others have previously failed, is to apply this principle to the remote location of hydrocarbons—that is, to measure subsurface resistivity from the seabed. After a great deal of hard work, emgs scien-

tists discovered that low-frequency electromagnetic energy emitted by a high-powered source close to the seafloor is able to propagate to reservoir depths where it is guided with low attenuation over long distances. When receivers are placed at appropriate locations relative to the source, the signals received back from the reservoir can be used to determine the presence of hydrocarbons. Rather than going into detail on the technology, it is perhaps more important to note that a number of major oil companies have reported that seabed logging can raise exploration drilling success rates from 15–20% to over 90% in a growing number of geological settings. It is this that has driven the explosive growth in interest in seabed logging—and emgs—over the last couple of years.

One use of seabed logging, perhaps the most obvious, has been to confirm or discount prospects identified by seismic surveys, sometimes called target-oriented seabed logging. On occasions, however, seabed logging has identified resistive anomalies, indicating new potential reserves, where the seismic data had drawn a blank. This has already led several oil companies to re-evaluate their approach to seabed logging. Many oil explorers now believe that the future of seabed logging will include the collection of data over sparse grids in frontier areas. This process, described as electromagnetic prospect scanning, could revolutionize the exploration process, enabling expensive seismic and drilling assets to be focused exclusively on areas that actually contain hydrocarbons and reducing the time to first oil.

Seabed logging is still a new technology, and it has massive potential for further development—and not just of the scanning technique. For example, emgs is growing the market for its services by undertaking research to enable the technique to be used to see deeper into the earth. And in the future, detailed 3-D and 4-D seabed-logging applications will provide a level of reservoir knowledge unimaginable just a few years ago. In fact, it seems likely that the 25-year technology adoption cycle experienced in the case of 3-D seismic will be compressed into only five years.

The *World Oil* award in 2003 recognized the immense potential of seabed logging. It has taken just three years for emgs to turn seabed logging into a widely adopted reality. The feeling within the company, though, is that there is still a great deal more to be achieved.

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