



Remotely Operated Vehicles of the World

**FIFTH
EDITION**



A Deeper Understanding

SMD

Remotely Operated Vehicles of the World

Fifth Edition

2002

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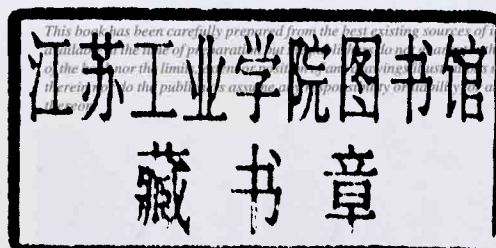
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Front Cover Illustration:

Main Image - Left: Escalibur™ is, at 900kW, the most powerful ROV ever built by SMD and was delivered to Global Marine Systems Limited, England, in September 2001. It is the second machine to use the SMD Trencherov™ technology which deploys the vehicle's power much more efficiently, achieving superior burial performance from a given power level.

Image Top Right: Multi-Depth 3 Plough (MD3) is the latest generation of SMD cable plough which includes a 500kW (700hp) patented jetting system for enhanced deep cable burial up to 3m, combined with a tow force capability of 80 tonnes. The plough is supplied with state-of-the-art control system which includes a remote bridge operating station.

Image Bottom Right: C-Trencher 2 was delivered to CTC Marine Projects, England, in 1999. This 300kW track based trencher has a capability of 2m and can operate in water depths up to 3000m. C-Trencher 2 comes complete with an SMD wide angle A-frame, rated to Sea State 7.



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Remotely Operated Vehicles of the World

Foreword

It is a great pleasure to introduce the fifth edition of **Remotely Operated Vehicles of the World**. Each edition is more comprehensive and informative than its predecessor. With over 100 more pages than the fourth edition there is much for us to learn from this superb publication. The directory is a magnificent tribute to all the painstaking hours of investigation and research by the staff at OPL. It has deservedly established itself as the principal reference document for the industry and we all owe OPL a vote of thanks for producing such an attractive, easy to read, accurate and all-embracing directory.

As we are already in the third year of the new millennium it is probably appropriate, before considering the future, to challenge the accuracy of some of the millennium predictions made by us over the past few years. It is good to report, as the following pages confirm, that the technical advances we anticipated in the AUV world are happening at a satisfyingly rapid rate. Scientific and engineering progress really only accelerates for two reasons. The first is war, which on a global scale at least, we are happily avoiding. The other is compelling economics, or more simply, the profit motive. The economics of AUVs fall into this category as operators in all industry sectors recognise the benefits of dramatically reduced support vessel costs compared with other forms of subsea intervention.

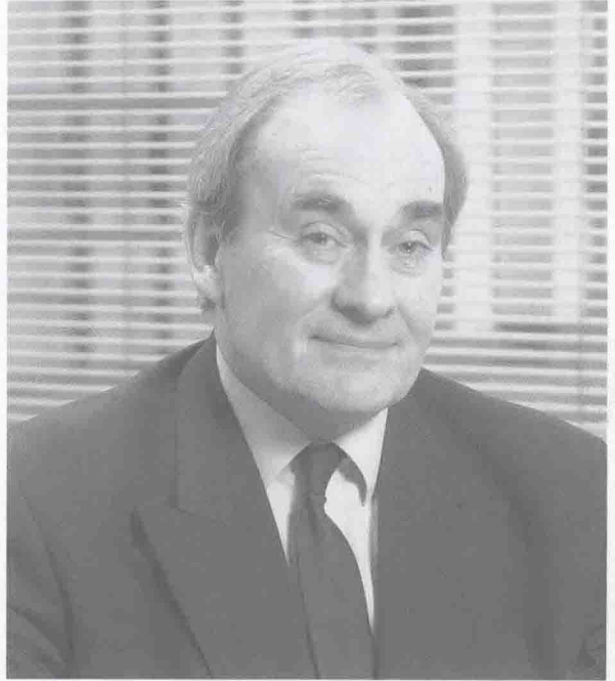
In the offshore industry it is good to see public confirmation from the oil majors that the use of AUVs is now a recognised and routine part of their subsea armoury. One of the biggest oil companies now claims it is obtaining valuable data from AUVs that could not be collected by any other method. The way is open and the opportunity is there for AUVs to take over most of the deepwater survey work in the medium term. Although it is still too early to see three to six month dive durations, with standardised subsea docking stations for data transfer and recharging, we are now seeing routine AUV operations. That is what is exciting - AUVs are becoming routine!

Ploughs and Trenchers are proliferating and in spite of short-term economic hiccups the inevitable global growth of the IT industry is such that these splendid pieces of engineering will continue to operate in a buoyant and busy marketplace. These vehicles offer tremendous opportunities to the sensor and tooling specialists around the world. A lot of physics and onshore scientific and engineering research has yet to find its way to the seabed! Several exciting new products are in the wings for high resolution imaging and measuring both in the water column and in the first few metres of the seabed.

As a more mature technology, ROV progress has been steady rather than spectacular. In the latest generation, we are seeing an overdue and welcome move back to electric vehicles of all sizes, which is where the industry began a quarter of a century ago. We are also seeing evermore capable and powerful vehicles with better payloads, and we are seeing large vehicles parenting smaller vehicles or "fleas".

There is an important area in which the use of ROVs should be developed further. For over twenty years oil companies have been using, and indeed have become wholly dependent, on ROVs for many installation and maintenance activities in their fields. In spite of this, and almost without exception, field installations are still not designed from the outset to develop the full potential of the ROV. Intelligent field concept planning from day one would offer big savings for the operators. This could be realised by incorporating the ROV as a permanent fixture into the infrastructure of the field and ensuring that everything in that field is designed to interface with the ROV system. If the ROV is transportable between fixed docking stations installed with subsea umbilical control and surface power running from platforms, large economic benefits could be enjoyed. This is because, as with the AUV, support vessel days and system day rates would be dramatically reduced.

There is enormous scope for innovation in the subsea world - AUVs, ROVs, Ploughs, Trenchers and many variations on these themes are going to be with us for centuries to come. No one type of remotely operated system will replace the other as each has its own uses, merits and marketplaces. The whole area of subsea technology offers tremendous engineering and business opportunities. In the following pages you will find details of some of the most exciting products in the world. Past, present and future editions of **Remotely Operated Vehicles of the World** will certainly remain the definitive summary and reference directory of our industry.



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Omni MAX

The All Electric Ocean Survey Class ROV



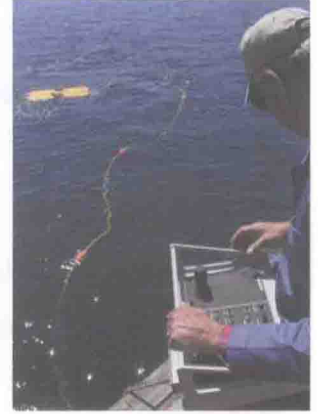
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The Omni MAX is one of the world's most advanced "Ocean Survey" class ROVs. It is an outgrowth of the popular MAX Rover ROV series and is designed to support ocean bottom survey operations with pinpoint accuracy.

The vehicle's navigation suite includes an integrated navigation system which inputs data from a shipboard DGPS receiver, and a short baseline acoustic navigation system, along with data from an extensive array of ROV mounted sensors. The ROV sensors include a doppler velocity log, a gyrocompass, a precision depth sensor, and an Inertial grade dynamic motion sensor. Together all of these sensors provide highly accurate and repeatable vehicle positioning. The Omni MAX is also highly stable and is equipped with an array of high precision sonar profiling sensors along with a sophisticated imaging suite of TV and digital stills cameras and a laser scaling system. A C-MAP information management system is used to compile all of the navigation and imaging data into a user defined coordinated data base for real time or future review. Together all of these features make the Omni MAX ROV system one of the most advanced ocean survey systems in the world. It is ideally suited to a wide variety of Military, Science and Commercial applications.

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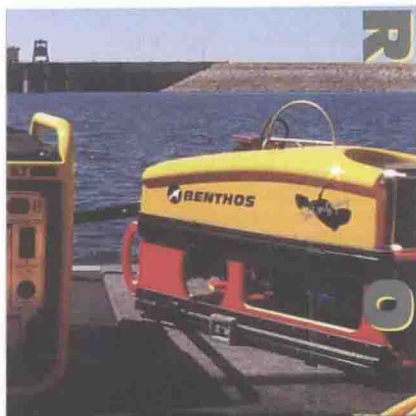
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Stingray, built small but with the characteristics of bigger ROVs. Its modular design can be configured for a wide range of inspections, using cameras, NDT devices, navigation, and a choice of manipulators. Stingray's expandable control system permits this small electric inspection class vehicle to take on jobs that were previously possible only with larger, more expensive systems.



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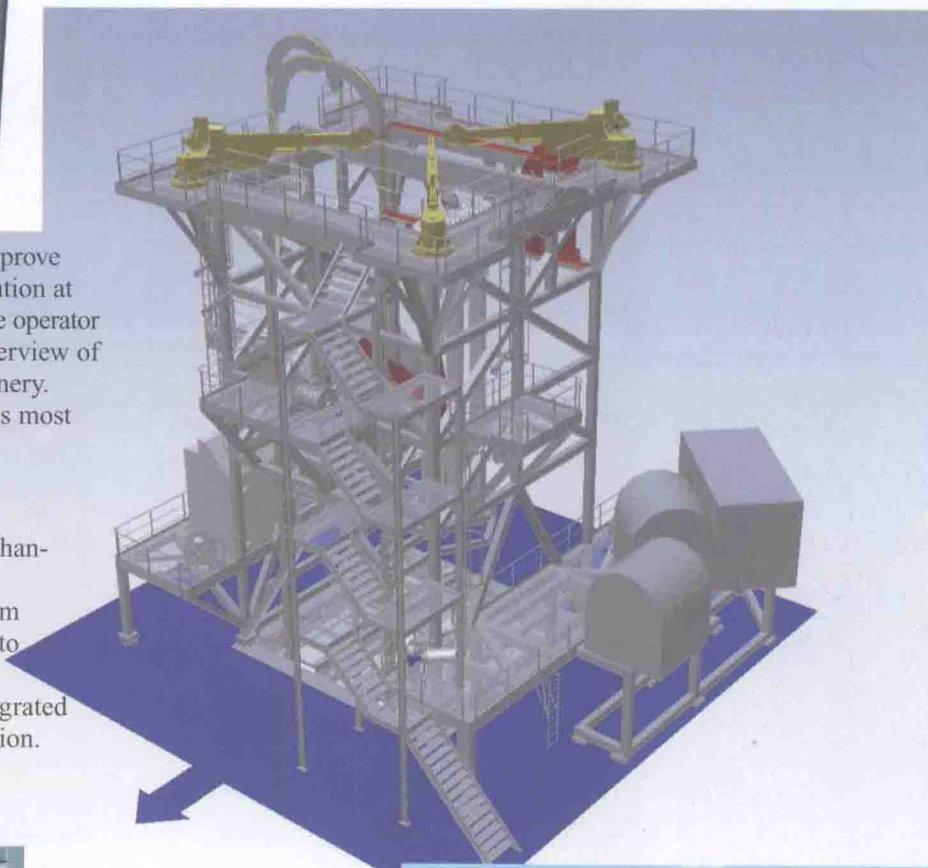
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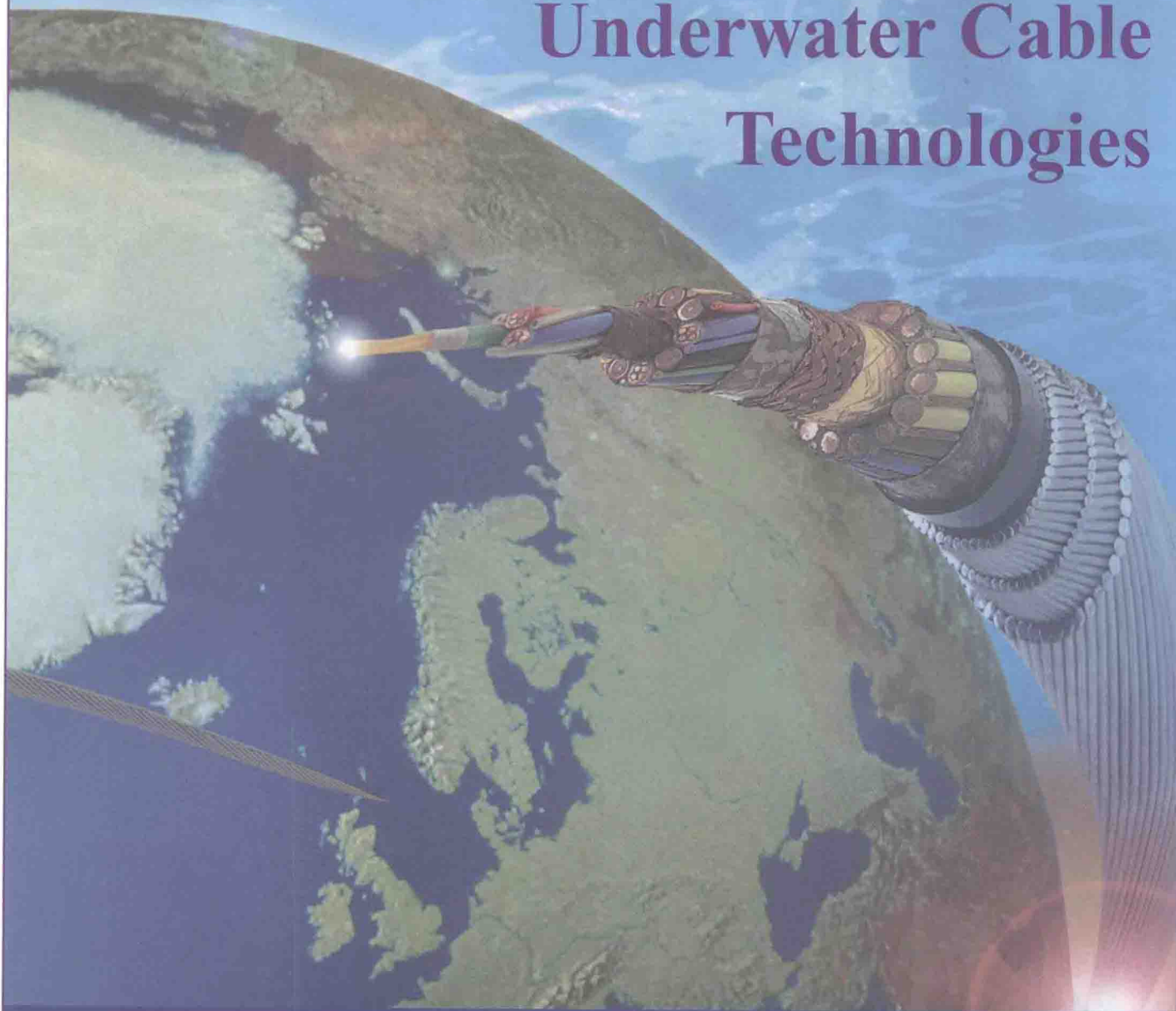
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