

FCV[®] 3000



150HP Work Class Remotely Operated Vehicle

The **FCV 3000** is designed and built in-house by Fugro and offers the next generation of performance and capability to our world-wide customer base. The **FCV 3000** reflects the Fugro commitment to Remote Technology Solutions and incorporates a range of internally developed expertise to help us deliver information from collected data, faster, better and with enhanced accuracy.

Over the years Fugro has developed a wide range of innovative technology and solutions to better address our customers' needs, so it is logical that when we turn our attention to the objectives of our ROV Business Line, we build the new generation of capability on a stable platform of field proven components and include our own particular brand of innovation.

Like its predecessors, the **FCV 3000** is part of an evolving system design that provides the customers with all of the essential demands of the deep water ROV System. Such as a 3.5 knot forward and 3.4 knot lateral speed capability, delivered by its 150hp hydraulic power system, through an 800kgf high power, vectored thrust design. This base level of standard capability, combined with the industry leading Sonar, Camera and Manipulator Systems of the 3,000msw rated **FCV 3000** will immediately allow the unit to be recognised as an acceptable solution to the rigours of deep water intervention and support.

However, it is in the implementation of the “hidden capability” that will distinguish the Fugro contribution to Remote Technology.

At the heart of the **FCV 3000** is Fugro's well-proven control & communications system based on single-mode fibre-optic technology giving an exceptionally high data throughput and features automatic switching in the event of failure of a fibre. This is complemented by high end multiplexer that handle up to 3 HD cameras or 12 conventional cameras (8 simultaneously) and provides a wide range of data communications protocols facilitating efficient integration of add-on tools and sensors.

The **FCV 3000** design features in-house developed technology that allows the original data to be time-stamped at the point of origin – the ROV Sensor.

Other key capabilities that are incorporated into the **FCV 3000** are designed to improve the efficiency of the operations and address the needs to provide greater spatial awareness to the Operations Team.

The **FCV 3000** will offer:

- Real time visualisation of the local subsea environment – helicopter view
- Mission rehearsal tools – Simulation and Planning
- Semi autonomous functionality
- 3 Dimensional Dynamic Positioning

FCV3000

Heavy Work Class Remotely Operated Vehicle

Primarily targeted at the deep water areas of the world, the **FCV 3000** has been designed to be scaled both upwards, shallower, and downwards, deeper, to cater for the varying demands of the Fugro global customer base. Initially there will be the **FCV 3000** and **FCV 1000** variants, but already we have plans, and potential customers, for a 4,000msw variant. All will share a common technology platform, making it simpler to move them from Region to Region and to support the Operations Teams on a world-wide scale. The **FCV** has been developed specifically so as to be easily configured, or re-configured, for all types of tasks, not only in the oil and gas support sector, but also in the areas of science and salvage. In all of these operations, the other Fugro capabilities can be incorporated to produce a complete package for Integrated Service Provision to the customers.

Typical operations can range from Drill Rig Support, to Flowline Connection, to Field Support, without the need for any modifications to the Core Vehicle or System. This is accomplished by the fitting of a variety of Tooling Packages that can be rapidly installed to the ROV, by means of "standard interfaces", both mechanical and control, which maps any new sensors to the surface without the need to open Pods and complete a re-wiring exercise. These interfaces ensure that operational changes can be implemented safely and efficiently, with the minimum of fuss, in a limited space environment as typically found on even the fifth generation of Drilling Units.

Typical operations for the **FCV 3000** are:

Construction Support Services

- Pipeline route surveys
- High Definition Multibeam surveys
- Route and crossing preparation
- Flowline connection
- As-laid, as-trenched and as-built surveys
- Touch down monitoring
- Pipeline and Flowline Commissioning

Field Support

- Choke / SCM changeout
- Emergency Intervention – Valve override
- Facilities enhancement
- Downhole intervention – valve opening

Inspection, Repair and Maintenance (IRM)

- Pipeline and structures inspection: CP, GFMD, ACFM
- Marine growth surveys and removal
- Mooring Chain Inspection & measurement
- Freespan correction, Dredging, Pipeline Cutting

Drill Rig Support

- All phases of Drilling support with API17D/17H Tooling
- Wellhead, Manifold and Subsea Tree intervention
- Subsea Facilities abandonment / recovery
- Well Completion and Workover support
- Choke and / or SCM changeout
- Debris clearance surveys

Vehicle Design Design Depth rating 3,000msw Dynamic Load 3g		Manipulators Manipulator 1 Schilling TITAN 4 Manipulator 2 Schilling RigMaster		Power Requirements System (typical) 550kVA, 380-500vac 3-ph supply 50/60Hz. 60kHz for optimum performance	
Dimensions Length 3.0m Height 1.7m (excl TMS) Width 1.7m (excl TMS) Weight 4.1T (incl 400kg payload)		Control System Vehicle Control Fugro Proprietary ERA-004 FO Multiplexer Enhanced Prizm Mini 4 Survey Module Fugro Proprietary StarPort		Main Lifting Umbilical 37mm Ø double armoured Optimised design with single mode fibres in robust steel tube	
Power Motor 1x 2850Vac @ 112kW (150hp) Hydraulic Pump Flow 217lpm+70lpm @ 60Hz Hydraulic Pump Pressure 225 bar (main) Single Phase Electric Supply 10KVA , 24vdc & 115vac		Sensors Heading FOG / Octans III Pitch and Roll FOG / Octans III Depth Digiquartz 8CB4000-I Altimeter Simrad 1007 Digital Altimeter Sonar Simrad MS1071 600m digital Cameras Minimum of 8x separate Video channels + 3 HDTV channels Lighting 4x 600W switch and dim channels		Umbilical Winch Winch Capacity 3,800m of 37mm diam umbilical Line Pull – Top Layer 10,000 kg Certification Design & Manufacture to DNV Rules	
Speed Forward / Aft 3.5 knots Lateral 3.4 knots Vertical up / down 2.7 knots		Tooling Mechanical Interface Fugro Proprietary – 4 point Through Frame Lift 3,000kg Tooling IHPU 70lpm @ 210 bar Bi-Directional Solenoid 20 x Solenoid Valve Channels Servo Valves 8, being 7 Thruster + 1 spare		LAR System A-Frame Outreach 4.0m Telescope Range 1.96m SWL 11,000kg to DNV Rules	
Thrusters 4 x 15° vectored Fwd: 800kg / Lateral: 800kg 3 x 15° vectored Vertical: 800kg				TMS Type Top Hat , PSSL Type 4 , 11T SWL Tether 600m of 30mm diameter tether Dimensions 1.8mm diam x 2.0m (h) Weight : In Air / Submerged 2.5Te / 1.5Te (inc 650m tether)	

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