



# **INNOVATUM**

## ***Company Profile***



# ***INNOVATUM REFERENCE MANUALS***

## **Section 0-1**

# **COMPANY PROFILE**

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### SUPPORT INFORMATION

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## SYMBOLS

The following symbols are used within these manuals



**Important Note:** items of particular importance.



**Caution:** items where care is required.



**Danger:** items where a hazard may exist.



**ESD Hazard:** items where ESD precautions may be required.

## ERRORS and OMISSIONS

Innovatum will be pleased if errors or omissions are notified to our offices in **Bury St Edmunds.**



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| Date        | Issue | Amendment                                | Section | Page |
|-------------|-------|--|---------|------|
| 1 Mar 2011  | 1     | Initial Issue                            | All     |      |
| 29 Nov 2012 | 2     | Review                                   | All     |      |
| 7 Jun 2013  | 3     | Review & update                          | All     |      |
| 26 Nov 2014 | 4     | Update                                   | All     |      |
| 9 Jan 2015  | 5     | Update & Magnetised cables list added    | All     |      |
| 19 Mar 2015 | 6     | Update                                   | App. 1  |      |
| 17 Aug 2015 | 7     | Update                                   | All     |      |
| 23 Sep 2015 | 8     | Update                                   | App. 1  |      |
| 22 Oct 2015 | 9     | Update                                   | App 2   |      |
| 25 Nov 2015 | 10    | Update, personnel changes, new equipment | All     |      |
| 25 Apr 2017 | 11    | Update                                   | All     |      |
|             |       |  |         |      |
|             |       |  |         |      |



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### 0.1 Introduction

Innovatum Limited was incorporated in January 2008, by Terry Slater, Sarah Slater and Rob Nunn, by means of the purchase of the assets of Innovatum International Limited, with the aims of:

- a) Continuing the development and manufacture of submarine magnetic pipeline and cable location equipment.
- b) Carrying out inshore and inland survey of buried pipes and cables utilising purpose built towed sleds, ROVs and Tracked ROVs
- c) Providing a cable & pipeline magnetisation service to clients worldwide
- d) Design and manufacture of specialist electronic and electro-mechanical products for the sub sea and other industries

Innovatum is one of only two significant manufacturers of submarine cable & pipeline tracking equipment, and we are currently the only one to have succeeded with magnetic measurement equipment. The company currently has 14 permanent staff, and is able to call on the resources of other consultant engineers who have specialised in working with pipe and cable tracking equipment.

Innovatum Inc., was first set up in Houston, Texas, and by the early 1980s had become active with some of the very first submarine mounted pipetracking systems. Innovatum International was a joint venture company formed by Terry Slater with Innovatum Inc. Originally based in Aberdeen, Scotland, the company moved to Bury St Edmunds, England in April 2000, in order to better serve locally based cable engineering companies, and take advantage of the modern fast transport links to Europe. In 2004 the company became a wholly owned subsidiary of MDU Resources Inc., of Bismarck, North Dakota, USA. The US operating company Innovatum Inc., based in Houston, was closed in July 2007 and all business transferred to the UK. With the purchase of the assets from MDU the company became a wholly European operation. Innovatum Ltd holds a pool of pipe and cable tracking equipment, 6 ROVs, towed sleds, survey equipment and magnetisation equipment at its premises in Bury St Edmunds, Suffolk, UK. This equipment is available for world wide mobilisation at short notice.



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## 0.2 Products

Innovatum products are primarily used for the location, tracking and survey of submarine pipelines and cables. These items are located by means of their magnetic fields, and Innovatum is the world leader in the design and production of such systems. All of the following products are designed and manufactured in house:

- a) **SMARTRAK** The "INNOVATUM" SMARTRAK is a magnetic pipe and cable tracking system for use on a variety of surface and underwater vehicles. It is capable of locating, tracking and measuring the position of pipelines, cables, ferro-magnetic objects and debris, by means of their intrinsic magnetism, their distortion of the earth's magnetic field, or via an impressed DC or low frequency AC current. The SMARTRAK is designed for tracking from smaller vehicles than has previously been possible, with a much reduced size and weight of sensors and subsea electronics, coupled with an improved performance due to better sensitivity and reduced noise levels. SMARTRAK can be operated in Passive Magnetic, Active AC (Tone) and Active DC modes. SMARTRAK has recently been successfully tested on a SAAB Sabretooth AUV in autonomous mode
- b) **SMARTSEARCH** is an adaptation of the SMARTRAK unit, with special software for magnetic mapping using up to 12 sensors. It is particularly suited for locating weapons (UXO), wrecks, lost pipes and cables and archaeological remains. Position may be imported from almost any combination of surface and subsea systems.
- c) **MAGNETISERS** Enhancement of magnetic fields in submarine pipelines and cables enables a dramatic improvement in range of tracking, and more importantly of accuracy. Innovatum has produced several types of Field Enhancers (Magnetisers) for use on differing products.
- d) **iPSS**. The iPSS (Innovatum Portable Survey System) provides a compact suite of hardware and software designed for ease of use and very rapid mobilisation. The systems may host the ROV Data, ROV and surface acoustics, navigation, survey data acquisition and ROV video data.
- e) **TONE GENERATORS** Innovatum produces a variety of "Tone Generators", used for injecting tracking signals into cables and pipelines. The theory, use and maintenance of these units is described.
- f) **AREA SURVEY SYSTEM ("FLYING FISH")**. The Area Survey System is a deployment system for SMARTSEARCH which allows rapid magnetic mapping from a small vessel.
- g) **SLUG**. The SLUG is a bottom crawling AUV designed for surveying pipelines and cables through the "Surf Zone"





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### 0.3 Services

In addition to the product design and manufacture Innovatum Ltd offers services including:

- a) Rental of equipment. A list of current equipment is at appendix 1
- b) Field support of rental equipment
- c) magnetisation of submarine cables, umbilicals and pipeline. Magnetisation procedures are described in Appendix 2
- d) Survey of submarine pipelines and cables in shallow (<50m) waters. Survey services are normally carried out under the trading name of SUBMAGNETIX, and may include all services including survey planning through to final report preparation, and even provision of vessels

### 0.4 Personnel

All personnel employed by Innovatum Ltd. are widely experienced in all aspects of ROV engineering, offshore survey work, and electronic and mechanical engineering. Innovatum does not have separate operational departments, and all our personnel can carry out all aspects of the field work, including ROV operating and survey data gathering.

A brief introduction to a selection of our personnel follows, with selected full curriculum vitae in the appendix.

a) **Terry Slater**

Terry is the founder and Chairman of Innovatum Ltd. He has been involved in offshore survey and pipe & cable location work since 1979, and latterly was the founder and managing director of TWS Electronics, (which became Merpro Control Systems), who were the one of the worlds leading manufacturers of underwater bathymetric systems and ROV control systems. Terry handles many of the commercial aspects of Innovatum Ltd, and is responsible for the overall hardware design

b) **Robert Nunn**

Robert is the Managing Director of Innovatum Ltd., with responsibility for all aspects of operations and engineering maintenance. He is qualified in software engineering. He has produced exceptionally capable & innovative systems whilst with the company.

c) **Sarah Slater**

Sarah is responsible for day to day administrative functions.

d) **Chris Rayner**

Chris is the General Manager of Innovatum Ltd, with responsibility for all aspects of personnel management, manufacturing and service. Chris is an engineer of exceptional talent, with a background in manufacturing electronics.



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- f) **Tom Smith**  
Tom has a Masters degree in Physics and is a Senior Field Supervisor

## 0.5 Capabilities

- Innovatum manufactures the innovative SMARTRAK submarine pipeline and cable tracking device. This unit is in full production and Bury St Edmunds, with over 30 units now delivered. This unit was wholly designed in the UK. SMARTRAK is available in Passive Magnetic and Tone tracking modes, with combined systems in one small unit. Systems are available for sale or rental.
- SMARTRAK PLUS is the replacement for the obsolescent MAXTRAK & ULTRA systems. SMARTRAK PLUS has the capability of solving the tracking algorithms for multiple arrays simultaneously, and to track at both the front and rear of vehicles simultaneously, thus enabling cable maintenance vehicles to “dock” onto the target cable in zero visibility. Tracking in all modes is possible.
- A new software tool, SMARTSEARCH, has been developed to map buried magnetic objects. This is of particular use in site clearance, UXO detection and debris searches. Six units have been sold, and units are also held in the rental pool.
- Two towed survey sleds are held at Bury St Edmunds, complete with all support equipment, including trailers for road mobilisations. These units are often used for survey tasks on inshore installations such as marine windfarms. The company is able to carry out surveys of buried pipes and cables, and produce a high quality final report with depth of burial, derived from the pipe & cable tracker, and high precision positioning derived from GPS or DGPS systems. This unit may also be used for the location and depth measurement of underground cables and oil, gas and water pipelines on land.
- Three SAAB Seaeye “Falcon” ROVs, two SAAB Seaeye Cougar XT Compact ROVs, and a SAAB Seaeye Panther Plus ROV, all fully equipped for inshore cable survey and installation support, are fully owned by INNOVATUM Ltd., and are operated by our own staff under the SUBMAGNETIX trading name. The FALCONS normally carry a SMARTRAK unit, plus a scanning profiler and altimeter. Innovatum has full surface (DGPS) and underwater (USBL) navigation systems, plus a full suite of data acquisition and processing software. The Cougars and Panther has a dual head profiler system, plus a high resolution imaging sonar in addition to our standard suite of sensors. The Panther Plus is fitted with a highly capable dual manipulator system.
- A total of six mechanical and six electrical cable and pipeline magnetisers with capability for magnetising products up to 350mm in diameter
- An innovative tracked vehicle, the SLUG, is under development to survey cables from the beach to 5 metres water depth, which is a very challenging area.
- The company is able to provide a consultancy service to advise cable and pipeline operators, manufacturers and installation companies on all aspects of buried pipe and cable location, tracking



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and survey. Innovatum equipment is also be used for buried ordnance location surveys, both in water and on land.

- Innovatum Ltd has the in-house expertise and facilities to design and build a wide variety of electromechanical and electronic products to support the manufacturing processes.
- Pressure testing equipment is available for in house products to 3000 metres sea water depth
- Fully moulded underwater cable joints are produced in-house.

## 0.6 Premises & Equipment

Innovatum occupies premises at Woodlands Business Park, Ingham, Bury St Edmunds, adjacent to the A14 trunk road, with easy access to the East Coast ports, cross Channel ferries and the London Airports. The accommodation consists of 175 square metres of workshop space, 75 square metres of laboratory and electronic workshop space and 75 square metres of office space. 415 volt 3-phase electric power is available in the workshop area. Access to the workshop areas is via 2 roller doors. A further 1000 square meters of covered space is in a adjoining building, equipped for maintenance and storage of offshore equipment including our ROVs and accessories. A test tank for the ROVs and acoustics is in the store. Tools available include a fully equipped electronic workshop, and basic mechanical engineering facilities including a welding plant.

CAD facilities are available for the production of :

- a) PCB layouts
- b) Electrical and electronic schematic drawings
- c) Engineering and production drawings
- d) Survey charts

## 0.7 Approvals

Innovatum Ltd holds approvals to EN ISO 9001-2008, OHSAS 18001 and ISO 14001

## 0.8 Professional Bodies

Innovatum Ltd is a Member of IMCA (International Marine Contractors Association), SUT (Society for Underwater Technology) and THSUK (The Hydrographic Society UK)



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### 1. Appendix 1 Rental Equipment List

| Item  | Quantity |
|---|----------|
| SMARTRAK 3 (Passive Magnetic Only)  | 4        |
| SMARTRAK 9 (Passive Magnetic & Tone Tracking)                                 | 3        |
| ULTRA 04 (Tone Tracking only)   | 1        |
| Survey Sled (Fitted for SMARTRAK or ULTRA)                                    | 2        |
| Tone Generator  | 6        |
| Tone Generator HV Unit  | 2        |
| SMARTSEARCH 12  | 3        |
| MAXTRAK (Passive Magnetic for DC Cables)                                      | 1        |
| FALCON ROV, complete with storage winch and spares                            | 3        |
| COUGAR COMPACT ROV, complete with handling winch, spares                      | 2        |
| PANTHER Plus WROV, complete with LARS, Container & Spares                     | 1        |
| Micron Nav USBL (Complete with pole mount)                                    | 3        |
| HEMISPHERE DGPS + Heading unit  | 2        |
| Easytrack Lite USBL   | 3        |
| iPSS Systems  | 9        |
| ROV Lasers  | 2        |
| Super Sea King Scanning Profiler  | 7        |
| Tritech Gemini Imaging Sonar  | 3        |
| Small Diameter Mechanical Cable Magnetiser units (Up to 40 mm dia)            | 3        |
| Large Diameter Electrical Cable Magnetiser Units (Various diameters to 300mm) | 6        |
| "SLUG"  | 1        |
| "FLYING FISH"   | 1        |
| Portable Generator 33 KVA   | 1        |
| ROV Launch & Recovery Crane   | 1        |
| Control Container 10 foot   | 2        |
| Stores Container 10 foot  | 2        |
| Subsea Gyro Ocean Tools   | 1        |
| Subsea Gyro Ixsea Octans Nano   | 2        |
| "InnoCapture" Video Capture & Overlay Units 4 Channel                         | 4        |
| VideoRay Pro4 ROV System  | 1        |
| Seaonics SeaMESH Wireless Data transmission unit                              | 2        |



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### Appendix 2 SUBMAGNETIX Work History

| Date                   | Client                        | Location            | Task   | Vessel                      |
|------------------------|-------------------------------|---------------------|--|-----------------------------|
| Sept to October 2010   | JD Contractor, Denmark        | Baltic Sea          | ROV Survey of Baltic 1 Windfarm Infield Cables     | Sea Master                  |
| October 2010           | Cadden, France                | English Channel     | Sled Survey of FO cable                            |                             |
| April & May 2011       | Diving del Peru               | Pacific             | Set up ROV Survey system complete                  |                             |
| March 2011             | Fugro Survey Ltd              | N Sea               | ROV survey Greater Gabbard Wind Farm Export cables |                             |
| April 2011             | GeoXYZ, Belgium               | N Sea               | ROV Survey Thornton Bank Power cables              | GeoSurveyor 4               |
| July to September 2011 | Fugro Survey Ltd              | N Sea               | ROV survey Greater Gabbard Wind Farm Export cables | GeoSurveyor 4               |
| September 2011         | Cadden, France                | English Channel     | Sled Survey of FO cable                            |                             |
| September 2011         | GeoXYZ, Belgium               | English Channel     | ROV Video survey of seabed                         | Geo Ocean                   |
| September 2011         | Mutual Energy Ltd             | Irish Sea/N Channel | ROV survey to locate cable fault                   | Challenger of Leith         |
| September 2011         | Fugro Survey Ltd              | Irish Sea           | Sled survey of power cable                         |                             |
| March 2012             | Fugro Survey Ltd              | N Sea               | ROV Survey of Leiston 1 cables                     | GeoSurveyor 4               |
| February 2012          | GEOMYTSA, Spain               | Atlantic Ocean      | Pipeline survey with GEOMYTSA ROV                  |                             |
| March to May 2012      | Fugro Survey Ltd              | N Sea               | ROV Survey of Greater Gabbard wind farm Cables     | GeoSurveyor 4               |
| February 2012          | J F White Company, Boston USA | Inland              | Locate FO cable                                    | None                        |
| March 2012             | Fugro Survey Ltd              | Thames Estuary      | Sled survey of London Array Windfarm cables        | Coral Wind                  |
| June & July 2012       | Fugro Survey Ltd              | N Sea               | ROV Survey Greater Gabbard Windfarm Cables         | Coral wind                  |
| Oct 2012 to Oct 2015   | NSW                           | Baltic              | ROV Services onboard cable lay vessel              | Aura                        |
| Nov 2013 to Oct 2015   | NSW                           | Baltic              | ROV Services onboard cable lay vessel              | Nostag 10 & Pioneer         |
| April/May 2014         | RWE                           | Irish Sea           | UXO Survey Gwynt y Mor OWF                         | Neptune & Ernest Shackleton |



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|                               |                     |                 |                                       |                     |
|-------------------------------|---------------------|-----------------|---------------------------------------|---------------------|
| Aug/Oct 2014                  | Geo Ings, Germany   | Baltic          | Survey Nordstream PL                  |                     |
| June 2014                     | GeoXYZ              | N Sea           | ROV Survey Concerto cable             | GeoSurveyor 4       |
| December 2014                 | CaleSurvey, Norwich | Moray Firth     | Visual Pipeline Survey                | Kommandor Calum     |
| October 2014                  | Cadden, France      | English Channel | Sled Survey of FO cable               |                     |
| November 2014                 | Fugro EMU           | Irish Sea       | Pipeline Visual ROV survey            | Fugro Seeker        |
| February 2015 to October 2015 | NSW                 | Baltic          | ROV Services onboard cable lay vessel | Pioneer             |
| March 2015                    | Briggs Marine       | E Channel       | Sled survey Thanet OWF                | Solent Guardian     |
| June 2015                     | Fugro EMU           | Irish Sea       | ROV cable survey                      | Fugro Seeker        |
| August 2015                   | Vattenfall          | E Channel       | ROV cable survey Thanet OWF           | GeoSurveyor 4       |
| September 2015                | Vattenfall          | E Channel       | ROV cable survey Kentish Flats OWF    | Vulcan              |
| September 2015                | NSW                 | N Sea           | Dual ROV System                       | Elektron            |
| October 2015                  | Insight Marine      | Irish Sea       | Gwynt Y Mor OWF Cable ROV survey      | Channel Chieftain 7 |
| November 2015                 | Fugro               | Baltic          | Visual Inspection UXO targets         | Caernarfon Bay      |
| February 2016                 | Network Rail        | S England       | River survey with sonar               |                     |
| April 2016                    | Statnett            | N Sea           | UXO recovery                          | Elektron            |
| May 2016                      | N-Sea               | S North Sea     | UXO search with Cougar                | Neptunus            |
| May 2016                      | Hughes Subsea       | S North Sea     | UXO Disposal with Panther             | Relume              |

### Appendix 3

### List of Magnetised Cables

| Date | Client            | Location      | Details  |
|------|-------------------|---------------|--|
| 1999 | Interoute         | N Sea         | Concerto communications FO cable               |
| 1999 | Nexans Norway     | Oslo Fjord    | FO cable Moss to Horten                        |
| 2000 | SubOcean Aberdeen | N Sea         | Lynn & Inner Dowsing OWF array & export cables |
|      | NSW               | Caribbean Sea | ARCOS Network FO Cables                        |
|      | NSW               | Malaysia      | EW Link FO network                             |
|      | Mohn Drilling     | Norway        | Enitel FO Cable network                        |
|      | ABB Karlskrona    |               | NordEon OWF cables                             |
|      | Nkt cables        | N Sea         | Riffgat OWF cables                             |



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|  |                       |                 |                                       |
|--|-----------------------|-----------------|---------------------------------------|
|  | Technip               | N Sea           | Oseberg Oilfield Umbilical            |
|  | VSMC                  | N Sea           | Thornton Bank 2 OWF                   |
|  | SubOcean Aberdeen     | English Channel | Thanet OWF Array & Export cables      |
|  | Global Marine Systems | N Sea           | Part of BRITNED interconnector        |
|  | Fluor                 | N Sea           | Greater Gabbard OWF Export cables (2) |
|  |                       | N Sea           | Thornton Bank OWF Export cables       |
|  | Nexans                | N Sea           | Borkum Riffgrund OWF Array Cables     |
|  | Tennet                | N Sea           | Alpha Ventus Cables                   |
|  | Siem Offshore         | N Sea           | Amrumbak OWF array cables             |
|  | Siem Offshore         | Baltic Sea      | Baltic 2 OWF Array cables             |
|  | NSW Cables            | Baltic Sea      | Baltic 2 Export cables                |
|  | ABB                   | Baltic Sea      | Dolwin A OWF Cable                    |
|  | Prysmian              | N Sea           | Borwin 2 OWF cables                   |
|  | Prysmian              | N Sea           | Helwin 1 Cables                       |
|  | Technip Aberdeen      | N Sea           | Goliat Oilfield Umbilical             |
|  | Prysmian              | N Sea           | Sylwin 1 OWF                          |
|  | ABB                   | N Sea           | Butendiek OWF Export Cable            |
|  |                       |                 |                                       |



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### Appendix 4

### List of ROVs & Vehicles

| Vehicle              | Equipment   |
|----------------------|---|
| Falcon #12209        | Hand Winch, B+W Camera, Colour Zoom Camera, Super SeaPrince Obstacle Avoidance Sonar, SMARTRAK 9, Scanning Profiler, iPSS Computer System, Single Function Gripper  |
| Falcon #12232        | Hand Winch, B+W Camera, Colour Zoom Camera, Gemini Imaging Sonar, Super SeaPrince Obstacle Avoidance Sonar, SMARTRAK 9, Scanning Profiler, iPSS Computer System, Single Function Gripper  |
| Falcon #12319        | Hand Winch, B+W Camera, Colour Zoom Camera, Gemini Imaging Sonar, Super SeaPrince Obstacle Avoidance Sonar, SMARTRAK 9, Scanning Profiler, iPSS Computer System, Single Function Gripper  |
| Cougar Compact #1453 | Powered Winch, B+W Camera, Colour Zoom Camera, Rear Camera, Gemini Imaging Sonar, Super SeaPrince Obstacle Avoidance Sonar, SMARTRAK 9, 2x Scanning Profiler, iPSS Computer System, Octans Nano Gyro, 4 – Function Manipulator  |
| Cougar Compact #1466 | Powered Winch, B+W Camera, Colour Zoom Camera, Rear Camera, Gemini Imaging Sonar, Super SeaPrince Obstacle Avoidance Sonar, SMARTRAK 9, 2x Scanning Profiler, iPSS Computer System, Octans Nano Gyro, 4 – Function Manipulator  |
| Panther XT Plus #980 | Powered Winch, LARS, B+W Camera, Colour Zoom Camera, Rear Camera, Gemini Imaging Sonar, Super SeaKing Obstacle Avoidance Sonar, SMARTRAK 9, 2x Scanning Profiler, iPSS Computer System, Octans Nano Gyro, 4–Function Manipulator, 7-Function Manipulator, Bathymetry System |