

På bunnen legges Langeled

side 6

Langeled-utbyggingen har vært krevende. Acergy har etablert et eget trainee-program for å dyktiggjøre sine medarbeidere til utfordrende oppgaver i Nordsjøen.

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New Torgue Tool side 5

Next generation pipeline inspection technology side 9

Deep technology side 11

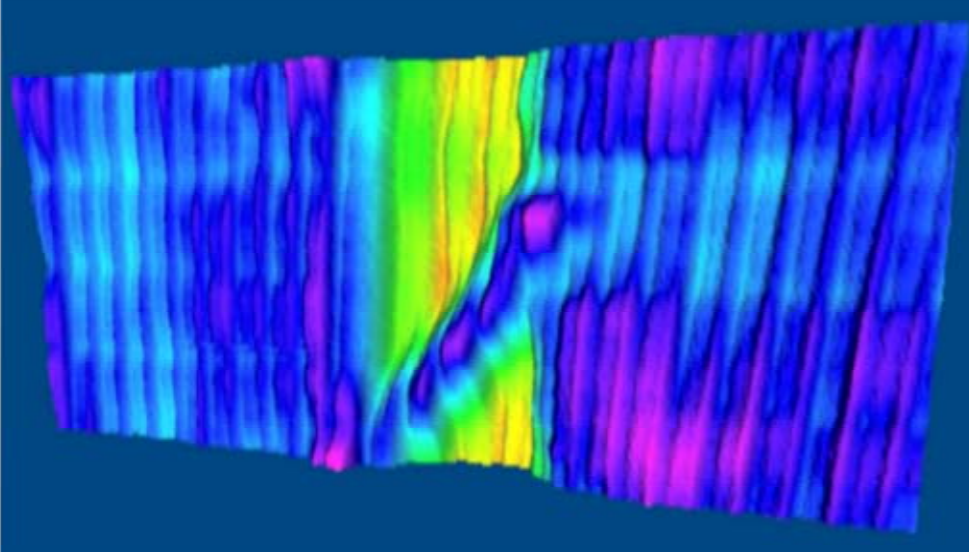
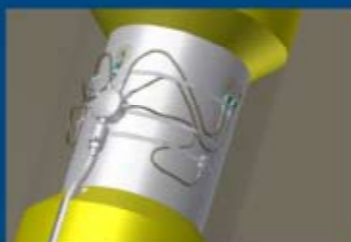
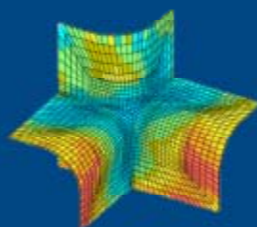
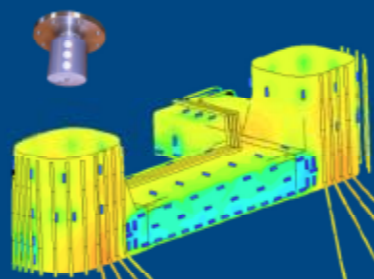
Om FFU side 15



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Vi har herved gleden av å presentere en ny utgave av FFU nytt for våre medlemmer

Årets seminar gikk som vanlig av stabelen siste torsdag i januar med stor spennvidde og høy kvalitet på foredragene. Mange hadde avsatt tid til å delta, noe som tilsier at seminarets kombinasjon av foredrag og sosialt samvær danner en fin arena for å møte andre kolleger i subsea-miljøet.

Dersom noen av våre medlemmer har gode forslag til forelesere for neste års seminar ber vi dere ta kontakt med oss i styret.

Aktiviteten i bransjen er fortsatt høy med en investeringstopp spådd i 2008. Det settes stadig krav til større kostnadseffektivitet samtidig som bedrifter sliter med å skaffe sårt tiltrengt arbeidskraft. Det store behovet for subsea-utstyr de neste årene tilsier at det er store muligheter når det gjelder utvikling av ny, mer effektiv teknologi.

Det er det siste året gjort en god del for å forbedre profileringen av av FFU. Dette har blant annet resultert i ny brosjyre, oppfriskede web-sider på ffu-nytt.no samt en ansiktsløfting av FFU nytt. Vi håper at våre medlemmer vil sette pris på dette og mer aktivt benytte seg av muligheten til å få inn artikler, både i bladet og på hjemmesiden.

I denne utgaven begynner vi en artikkelserie hvor vi intervjuer personer i de enkelte medlemsbedriftene. Først ute er Alf-Kristian Aadland hos Oceaneering. I tillegg har vi bl.a. en artikkel om MacArneys nye farkost for rørledningsinspeksjon, Focus 2.

Styret ønsker alle medlemmene en riktig god sommer. Neste utgave av FFU nytt kommer ut i oktober.



Med vennlig hilsen

Gunnar Ulland
Leder FFU



Forening for Fjernstyrt
Undervannsteknologi

www.ffu-nytt.no

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Norsk teknologiutvikling i front

– Norske selskap tør å ta risikoen med å prøve ut og teste nytt utstyr. Derfor er norsk olje-industri ledende innen en rekke områder. Også vi i Oceaneering er innovative, og har kontinuerlig fokus på å løse oppgaven for kundene.



Alf-Kristian Aadland

Dette sier Alf-Kristian Aadland, mangeårig ansatt i Oceaneering. Avdelingslederen har siden 1993 gått gradene i selskapet, og ser at nordmenn har vært villige til å teste ut nytt utstyr og finne nye løsninger.

– Også i eget selskap ser vi at vi er dristigere når det gjelder innovasjon. Vi er en del av et stort amerikansk internasjonalt selskap. Men mange av de nyeste verktøyene kommer fra Norge. Andre land har ikke vært like ivrige til å prøve ut nye ting. Jeg ser at det også innen norske olje- og gasselskap, er stor villighet til å utvikle nye løsninger og tenke innovasjon.

Oceaneering har hatt relativt stor frihet til å utvikle seg slik de ønsker, og har vært dyktige til å utvikle nye produkter som resten av selskapet også trenger. Derfor har Alf-Kristian Aadland ikke opplevd det som problematisk å være en del av et stort amerikansk konsern med rundt 8 000 ansatte på verdensbasis.

Som en traktor uten plog

Oceaneering AS har jobbet innen subsea, og spesielt med Remotely Operated Vehicle (ROV), i Norge siden 1973. I dag er det 450 ansatte i Norge – de aller fleste er engasjerte med prosjekter i havet.

– Hovedgjefteften vår er ROV-operasjoner i Nordsjøen. Men bare ROV'en er som en traktor uten plog eller harv. Den trenger verktøy for å kunne utføre jobben den blir satt til under vann. Vi er hele tiden avhengig av å finne løsninger. Derfor har vi ingeniører som utvikler nye fikse løsninger og en simuleringssjette som prøver ut løsningene, forklarer Aadland.



ROV eller dykker?

– ROV'en er menneskets øye under vann. I Nordsjøen var det langt flere dykkere i aktivitet tidligere enn det er i dag. Oceaneering i Norge startet også som et dykkerselskap. Etter hvert har miniubåtene tatt mer og mer over, og i 1988/89 sluttet de siste dykkerne hos oss. Det er flere grunner til det, en av dem er at vi beveger oss på så dypt vann at det ikke er mulig å dykke.

Utviklingen innen undervannsteknologi har vært betydelig i de senere årene. Aadland trekker blant annet frem de nye mulighetene vi har sett innen elektronikk og sensorer. Driftssikkerheten på selve ubåten har dessuten blitt betraktelig bedre.

Nordsjøen viktigst

For Oceaneering i Norge er olje- og gassaktiviteten i Nordsjøen det viktigste markedet. Og Alf-Kristian Aadland kan ikke

se annet enn at fremtiden for hans nisje i industrien, er lys.

– Med alle de installasjonene vi har i Nordsjøen som skal vedlikeholdes, så tror jeg det vil være nok å gjøre i overskuelig fremtid. Det som er viktig for oss er hele tiden å følge utviklingen.

70 prosent eksport

Vi var innom innovasjon og nettopp fordi Oceaneering i Stavanger satser på innovasjon og å løse kompliserte oppgaver under vann for kundene, eksporterer selskapet mye av det verktøyet de produserer. Denne eksporten går både internt i konsernet og til andre store selskap som kjøper det verktøyet de har utviklet.

– Hele 70 prosent av dette eksporterer vi, og det er bra, mener Aadland.

New Torque Tool



Oceaneering is currently operating over 300 torque tools world wide. On request from Norsk Hydro Oceaneering have developed a new generation torque tool to meet the requirements of the future.

Oceaneering's New ISO 13628-8 Class 1-4 Torque Tool is based on long operational experience combined with new innovative design to meet the requirements of the future. The tool is a compact stand-alone unit that can operate over the whole class 1-4 range without motor change-outs. A dedicated docking interface is used to switch torque mode. The integrated display shows torque and turns, and valve operation history is logged.

The Torque Tool comes with a 3 line Stab with integrated mechanical check valves and IR transmittal of data. This will allow the tool to be operated by use of a Remote Control System (RCU) even when launched separately from the W- Rov.

The new Torque Tool will expand the ROV's operational capability, resulting in improved continuity, longer operational hours, less wear and tear and finally better economy.

Specifications:

- Full torque range (ISO 13628-8 class 1 to 4) without change of hydraulic motor
- Compact design - 450 mm total length
- Torque read off on the tool in addition to electronic counter
- Indicators for torque mode (low/high)
- Subsea interchangeable end effectors
- Interface for body latch and fin latch (easy to replace)
- Mechanical counter / position indicator directly from end effector
- Standard SAE interface to hydraulic motor
- The toolbody is hydraulically separated from the hydraulic motor
- Hydraulic compensator integrated in toolbody with level indikator



THE DEEPWATER SUBSEA SERVICES PROVIDER

DeepOcean's business is IRM, Survey and Construction Support

Using modern DP2 vessels, state of the art ROV's and subsea equipment and a personnel resource group of very experienced people, DeepOcean has moved fast to be one of the growing international subsea service providers assisting both oil companies and the major contractors worldwide. Supported by our owners we have access to a fleet of more than 50 vessels to support you.



Seabed mapping / Survey and Positioning

DeepOcean operates complete spreads for Hydrographic Mapping Surveys, Geotechnical Surveys, Route and Site Surveys including vessel and ROV-mounted multibeam echosounders for various depths and data quality. Our expertise and experience enables us to perform high quality surveys in all water depths worldwide.



Pipeline Inspections

DeepOcean operates a modern fleet of Survey ROV's and equipment especially developed for safe and cost-effective pipeline inspection work. Furthermore, DeepOcean has a large number of employees with long experience in the branch and have tailor-made procedures and software systems for work of this type.



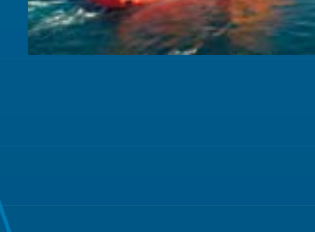
Subsea Construction Support

DeepOcean's portfolio of highly specialized vessels, dedicated equipment and skilled personnel makes the company an attractive partner for sub sea construction support. This niche of the industry is important to us. We see ourselves as a global provider of specialized services to major construction contractors.



Trenching

Through its subsidiary CTC Marine Projects, DeepOcean is the world's leading independent marine trenching contractor, operating in the subsea oil & gas, telecommunications, military and utilities sectors of the offshore construction industry. CTC owns and operates the largest, most comprehensive and technically advanced fleet of trenching equipment in the world and provides a key component of the international subsea construction market.





Acergy offers a comprehensive two-year training package through its Graduate Engineers Development Scheme 2006. These graduated in 2006.

Tackling the skills demand

The demand for graduates in the subsea oil and gas industry has never been so high. An aging workforce, and a lack of young people keen to pursue careers in engineering and the sciences, is widening the generation gap and putting an increased strain on a sector already buoyed by high prices and demand for services.

Acergy, a leading seabed-to-surface engineering and construction contractor for the global oil and gas industry, is tackling the challenge head on. The company, which currently employs around 500 personnel with 21 nationalities and 15 spoken languages in Stavanger, is undergoing an active recruitment campaign to entice fresh talent and fill more than 100 vacancies in the city during 2007.

Acergy's senior project technical manager Chris Wagg says there is a general scarcity of young, experienced workers at all levels to fill a variety of roles in the subsea sector.

– All areas of the oil and gas industry are feeling the pressure as the shortage of skills and the age gap continues to widen. The subsea sector in particular, which continues to flourish, is particularly feeling the pinch.

– At Acergy our people are central to our

success and offering an enviable and competitive training and development scheme for graduates demonstrates our commitment to the future of the company and the industry as a whole.

Training package

Acergy offers a comprehensive, two-year training package through its Graduate Engineers Development Scheme (GEDS). This provides participants with a framework to develop new skills and experiences in order to build a strong talent pool of globally networked high quality engineers. Graduates on the course receive training both on- and offshore in a wide variety of challenging projects both in Norway and overseas. Throughout the duration of the course, participants are offered a competitive salary and benefits package.

Audun Indrehus from Sogn og Fjordane, North West Norway joined GEDS in 2005

having completed an MSc degree at NTNU Trondheim. He is now a project engineer with Acergy and says the training prepared him for the opportunity to play a role in many key projects.

– The scheme has enabled me to see my work progress from the design phase to offshore installation and has allowed me to develop competence and to grow in confidence, this has essentially prepared me for my job today. I would highly recommend it to anyone looking for a foothold in the subsea sector.

Commercial experience

It's not just engineers who are in high demand in the industry, graduates with a flair for business and management ambitions are also required to fill a variety of roles in the commercial arm of the organisation. Acergy runs a Commercial Graduate Scheme, which like GEDS, takes them on a step-by-step journey through the processes and practices of the business, offering hands-on experience in different departments including risk and planning,

cost control, contracts and supply chain management.

Upon completion, successful students will move in to a new position in one of the commercial departments. It's an exciting and intense programme which develops skills and knowledge necessary for the pressures and challenges of the commercial field.

Acergy Academy

Recently, Acergy announced it is establishing 'Acergy Academy' to provide more training courses and development opportunities on technical subjects for all functions, effectively sharing Acergy's internal know-how. The Academy will consolidate training to improve standards, offer more opportunities and advise on internal and external 'fit for purpose' training specific to the needs of its participants.

Good environment

Acergy understands the importance of the work environment to its current and prospective employees and the office in

Stavanger addresses the work-life balance perfectly. Located in a stunning setting overlooking the fjord, the office canteen sits on the tranquil waterfront where Acergy boasts its own private marina on its doorstep.

For those who like to wind down after work, Acergy is one of the few companies in the area offering on-site sports and leisure facilities exclusively for its staff and their families. The sports hall, which comprises of a squash court, gym and solarium, also hosts five-a-side football and basketball tournaments and is the venue for spinning and yoga classes as well as a variety of clubs.

By seriously addressing the issue of recruitment and retention, Acergy believes the current skills shortage can be turned around. Through initiatives like the GEDS and Commercial Graduate schemes, today's young rookie could be tomorrow's leader and innovator.

Framo Subsea Multiphase Pumps

Framo Engineering has delivered complete Multiphase Pump Systems to the subsea market for more than 10 years. Our total integrated solutions provide increased production and added value for our customers - every day - world wide.

Our innovative technology development, unique experience and close cooperation with our customers, constitute the foundation for our ambition of maintaining the role as the leading supplier within this technology area.

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Next generation pipeline inspection technology



The new Nexus Multiplexers.

The MacArtney Group has recently finalised the development of next generation of the successful "Focus" Remotely Operated Towed Vehicle (ROTV) system.

The new "state of the art" electronics package and a very fast and accurate vehicle control system, which all comes in a smaller package allowing for interfacing of even more 3rd party sensors and instruments.

The FOCUS-2 System

The Focus-2 system comprises apart from the Focus-2 vehicle and the top side control system also of a dedicated winch and tow cable. The tow cable is a purpose built double armoured steel cable offering an optimal cable diameter to cable drag relation. The cable holds both electrical conductors as well as 2 pcs. Single Mode optical fibres. The topside control system consists of a portable 19" rack system with vehicle power supply unit, surface control PC, operator console and the topside part of the NEXUS multiplexer.

The unique and highly flexible payload capacity for a variety of hydrographic and other survey related sensors, ensured by the onboard fibre optic telemetry system based on MacArtnes renowned NEXUS family of fibre optic multiplexers makes the Focus-2 the perfect choice for the Survey companies.

The Focus-2 systems delivered since the introduction in 2005 have been supplied with a multitude of interfaces and hydrographic/survey sensors; Simrad EM3002 Multibeam System, EdgeTech 4200 Side Scan Sonar and 424 Subbottom profiler, Kongsberg MRU, Ring Laser Gyro, Sound Velocity Sensors and underwater positioning systems.



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ROV JET PUMP DREDGES

- Rental services of ROV Jet Pump dredges from 4" to 10"

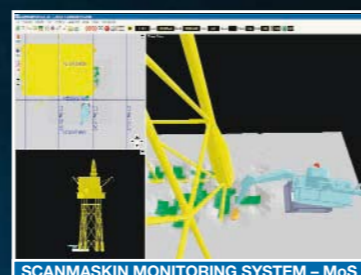
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Dimensions: ø83 mm
Length: 172 mm



DHR REKLAMEBYRÅ

■ MiniCamera Colour

Imenco's Mini colour camera can also be configured with internal light diodes to provide light for close-up video. Standard delivery is as shown on photo above. The camera can be used in a Helium atmosphere. The camera is housed in a high strength stainless housing with POM end screw hoods that act as protection. News: New slimmer version will be out soon!



■ Manipulator Camera

Our new manipulator camera for the T2/T3/T4 Schilling manipulators making the most advanced and complicated manipulator operation easier with two built-in light sources. Utilising the internal manipulator wiring, no external cabling is necessary. The camera becomes an integrated part of the manipulator system.



■ 18XZoom, 82° WA

A 18x Zoom camera will in most cases enhance manipulator operation with an ROV when mounted on main P&T unit. Also very useful for close-up inspections in narrow places. The 18x Zoom camera is ideal for most ROV work.

It has improved optics and "night shot" function.



■ ROV accessories



3-finger jaws for Schilling manipulators



Lifting/rescue Latch 1,5-10 ton SWL



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smart solutions

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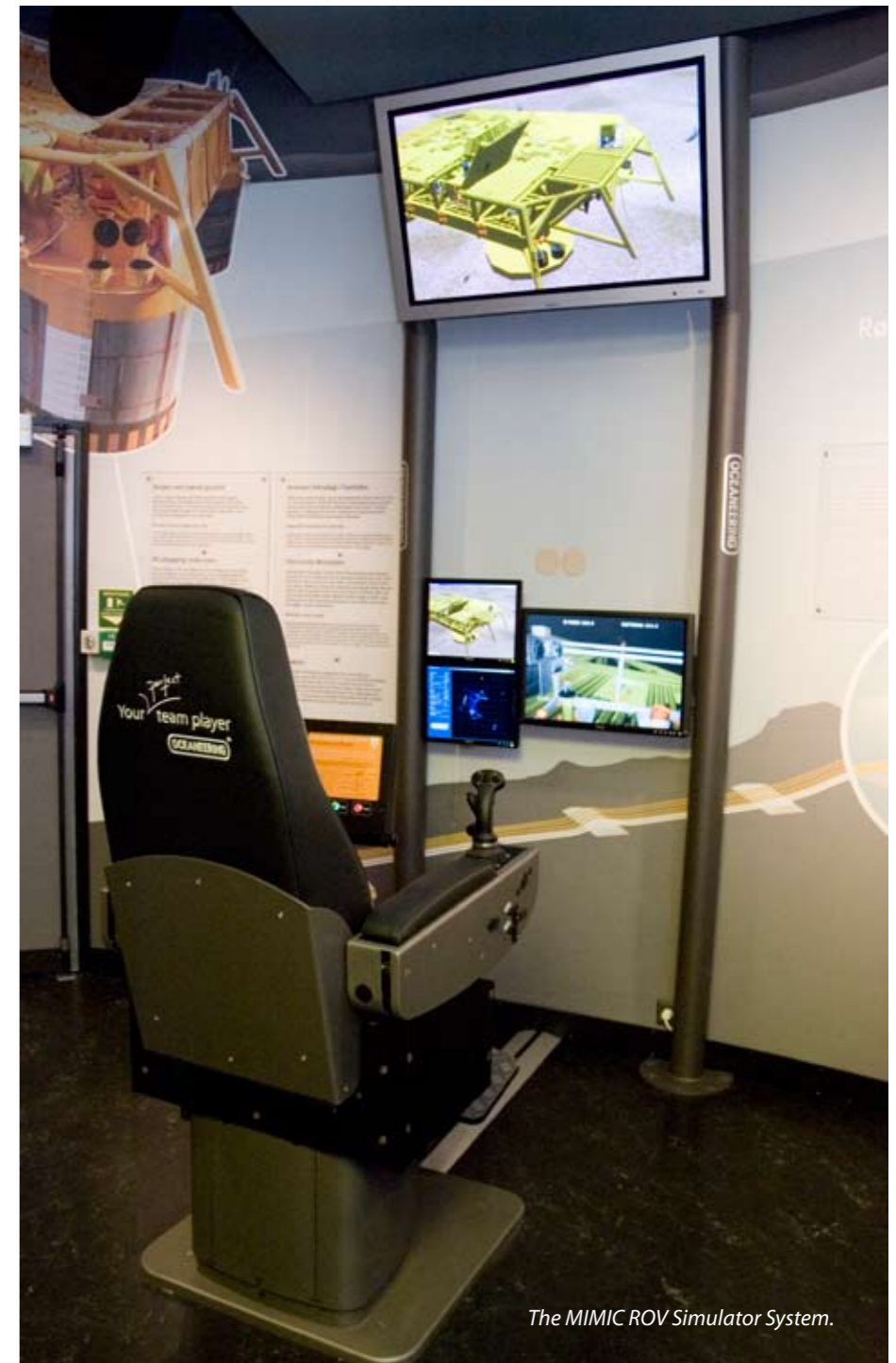
«Deep technology» - an Exhibition about Ormen Lange

On the 6th of December the Norwegian Minister of Petroleum and Energy, Mr. Odd Roger Enoksen, opened the new exhibition "Teknologi i dypet - en utstilling om Ormen Lange" ("Deep technology - an exhibition about Ormen Lange") at the Norwegian Oil Museum in Stavanger.

Ormen Lange is the second largest gas field in Norway, and has been a huge technological challenge due to great sea depths and extreme temperatures and powerful subsea currents. The development has utilized the latest technological solutions to complete the project on 800-1000m depths without the use of surface structures. The gas from Ormen Lange will run through 1200km of subsea pipeline to Great Britain, where it



The Norwegian Minister of Petroleum and Energy, Odd Roger Enoksen are watching the MIMIC ROV Simulator in action.



The MIMIC ROV Simulator System.

will cover approximately 20% of the need for gas for the next 40 years! Using interactive experiments, simulators, models and movies the exhibition shows the cutting edge technology used to realise the Ormen Lange development. Visitors can

try their skills as an ROV pilot and help plan the world's longest subsea gas pipeline. As a collaborating partner, Oceaneering have supplied the exhibition with an ROV simulator. Other partners are Hydro, Shell and DNV (Det Norske Veritas).

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Argus Mariner XL for heavy work
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Down Hole
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Mechanical
VX Ring Tool



Tubing Hanger
Orientation Tool

Take a deeper look

Background image © Hydro

The ROV Tooling Specialist

www.oceaneering.com

Oceaneering continues to lead the industry in innovative tooling hardware and deepwater intervention techniques. The company has the unique resources and capability to offer a complete subsea intervention package ranging from ROV operations, engineering services, access verification, virtual simulations and simulator training prior to offshore operations. Our ability to offer comprehensive tooling packages further amplifies the commitment to being the worldwide leader in deepwater intervention.

Your *Perfect* team player
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INNOVA = underwater technology

INNOVA MATRIX

NEW



Stand-alone fibre-optical telemetry system

Innova's Matrix telemetry system is a simple and cost-efficient way of providing multiple data and video lines to ROV systems and underwater tools. Based on fibre-optical multiplexer technology by Prizm, the Matrix system provides serial, Ethernet and sonar data channels as well as multiple video lines with focus, zoom and light control, all over one single mode fibre.

INNOVA QUATTRO



Compact Valve Control Module

The QUATTRO is an ultra-compact hydraulic controller unit with 4 valves each capable of providing up to 22 lpm hydraulic flow, proportionally controlled over a serial line. The system is ideal for increasing the capacity of any ROV or tooling system in a simple manner.

FFU - Forening for Fjernstyrt Undervannsteknologi

www.ffu-nytt.no

FFU vil arbeide for å:

- Formidle kunnskaper og erfaring innen fjernstyrte undervannsoperasjoner
- Skape kontakt mellom utdanningsinstitusjoner, forskning, brukere, operatører, produsenter og offentlige instanser.
- Holde kontakt med andre aktuelle foreninger
- Skape god kontakt innen det undervannsteknologiske miljøet

FFU i dag

FFU har siden opprettelsen i 1988 opparbeidet en solid økonomi. FFU har ca. 230 medlemmer og har gjennomført flere utredninger knyttet til aktuelle undervannsteknologiske problemstillinger. Resultatet av disse tilflytter medlemmene gjennom blant annet temakveldene.

Hvem kan bli medlem?

Medlemmene kommer fra oljeselskaper, engineering-selskaper, kontraktører, offentlig forvaltning, forskning og utdanningsinstitusjoner. Se under for priser og kategorier.

Temakvelder

Gjennom temakveldene tilbys medlemmene faglige foredrag innen aktuelle temaer eller visning av nytt utstyr. Foreningen har blant annet som mål med temakveldene å formidle informasjon mellom ulike interessegrupper innen bransjen.

Utstillinger, konferanser, fellesreiser

FFU er faglig representert ved undervannsteknologiske arrangementer i Norge. På denne måten søker foreningen å bidra til at tidsaktuelle temaer blir tatt opp. FFU arbeider også for at undervannsrelaterte konferanser, kongresser og møter blir lagt til Norge. FFU arrangerer fellesturer for medlemmene til konferanser og utstillinger som ligger innenfor foreningens virksomhetsområde.

Utredninger

Som et ledd i foreningens virksomhet har FFU initiert og gjennomført følgende utredninger finansiert av flere oljeselskaper:

- * Behovskartlegging av forskning og utvikling innen fagfeltet fjernstyrte undervannsoperasjoner
- * Behovskartlegging for utdanning innen fagfeltet fjernstyrte undervannsoperasjoner.

Norsk Oljemuseum

FFU vil gjennom sin virksomhet gi støtte til Norsk Oljemuseum og bidra til at utrangert, men faglig interessant utstyr blir tatt vare på.

INDUSTRY-LEADING SUPPLIERS:

- SCHILLING. MANIPULATORS, ROV
- IXSEA. POSITIONING SYSTEMS
- SUB-ATLANTIC. THRUSTERS, ROV
- ALLSPEEDS. WIRECUTTERS
- TRITECH. SONARS, CAMERAS
- BURTON. CONNECTORS
- PRIZM. FIBER OPTIC COMMS AND SLIPRINGS
- OPTIONS VIDEO OVERLAY



INNOVA POWERMASTER



Full range of submersible hydraulic power units

The INNOVA POWERMASTER represents a full range of submersible electro hydraulic power units. These robust HPUs reflect demanding needs on submerged intervention spreads. A wide range of variable displacement pumps and regulator options allow tight adaptation to application specific requirements.

NEW

NEW EMPLOYEES AT INNOVA

Vidar Nordstrand started working as Sales & Marketing Manager at Innova 1st April 2007. Vidar came from PetroMarker in Stavanger where he held the position as Sales & Marketing Manager.
Øyvind Tjølsen started working as Product Development Manager at Innova 1st April 2007. Øyvind came from Laerdal Medical where he held the position as Manager R&D Mechatronic.

RENTAL:

- SCHILLING. MANIPULATORS
- DPS. SURVEY EQUIPMENT
- TRITECH. SONARS, CAMERAS

Visitor adress: Lagerveien 10, 4033 Stavanger.

Mail adress: P.O. Box 390, 4067 Stavanger.
 Phone: +47 51 96 17 00. Fax: +47 51 96 17 01.
 E-mail: post@innova.no
 Web: www.innova.no

INNOVA
underwater technology

TYPE MEDLEMSKAP:

Bedriftsmedlem

Personlig medlem

Offentlig instans - Ny kategori!

Studentmedlem

RETTIGHETER:

Deltakelse på FFUs arrangementer og aktiviteter åpen for alle ansatte - 25% rabatt

Som bedriftsmedlemskap, men ingen rabatt. Rettigheter begrenset til kun innehaver.

Samme rettigheter som bedriftsmedlem, men kun for den offentlige forvaltning.

Som personlig medlem, men redusert kontingent (hvis student)

KONTINGENT:

kr. 4.000,-

kr. 950,-

kr. 500,-

kr. 100,-

Synthetic Aperture Sonar, HISAS



Synthetic aperture sonars combine a number of acoustic pings to form an image with much higher resolution than conventional sonars, typically 10 times higher.

The HISAS sonar is part of the HUGIN system solution for mine countermeasures, which has been ordered by the Norwegian Navy and Finnish Navy.

HISAS is a wideband SAS sonar with frequency range of 70-100 kHz, capable of producing ultra high resolution acoustic images as well as co-registered bathymetry. The sonar is tightly integrated with the INS navigation and motion sensing platform of the HUGIN AUV, and makes use of modern signal processing such as DPCA (Displaced Phase Centre Analysis) to process the raw data into images.

Kongsberg Maritime

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