North East England
Subsea and offshore excellence add depth to our economy
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North East England’s subsea and offshore technology excellence is a story of world-class engineering and manufacturing, of bold industry pioneers and of a bright future based on innovation.

Drawing on a proud history of providing innovative solutions for industry in extreme and hazardous conditions, it is using technological advancements to enable present day and future operations to move into ever deeper and more challenging waters.

Its world-renowned engineering and manufacturing capabilities have withstood the battering winds of many recessions.

And such is the importance of subsea and offshore technology to the regional economy, that the North East Local Enterprise Partnership has pinpointed the sector as a ‘smart specialisation’ area. It is an innovation-led industry with the economic power to help the region in its goal of creating 100,000 new jobs in the North East economy over the next decade.

Some of the North East’s most recognisable industry names underpin its success, including BEL Valves, GE Oil and Gas, SMD, Technip Umbilicals and Shepherd Offshore, to name but a few. All are highly innovative, entrepreneurial and delivering huge benefits to the regional economy.

There are more than 50 companies in the North East working on subsea technology application, employing 15,000 people in highly skilled, well-paid jobs and generating an annual turnover of £1.5bn.

And the sheer scale of the contracts they deliver operating in some of the world’s harshest environments, such as the North Sea oilfields, has helped build the North East’s reputation as the ‘go-to’ location for technological excellence and performance.

Subsea and offshore technology is used in processes and operations beneath the waves and in the interface between the sea and connected activities above the water.

An £8.9bn sector, with the UK enjoying 45% of the £20bn global market.

The size, scale and value of the subsea industry alone to the UK economy is enormous.

The industry supports 66,000 jobs nationally. 16,000 of those posts having been created in just the past five years. In North East England, the industry benefits from a powerful package of innovation assets, physical infrastructure, local cluster organisations with strong national and international connectivity and the support of an outstanding academic base in the North East’s five universities.

The public sector enjoys a close working relationship with private business and is investing heavily in laying the groundwork for new business growth, jobs and inward investment. There is a comprehensive strategy to ensure that the North East remains at the forefront of industrial development and opportunity.

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North East capability

The region offers the full spectrum of products and services to the subsea and offshore technology industries.
**Physical Assets**

North East England is able to do business across the globe from its outstanding asset base.

- **Superb access from North East England to UK Continental Shelf oil and gas and offshore wind areas.**
- The North East lies close to the largest development zone, Dogger Bank, and is centrally located to service other wind farms.
- **Ideal location for manufacturing equipment and providing services with excellent air, road and rail infrastructure.**
- World class Port of Tyne, Port of Sunderland and Port of Blyth facilities.
- **Load out quay operated by Shepherd Offshore Services at the Walker Offshore Technology Park and Neptune Energy Park.**
- Neptune Energy Park boasts a 700m operational quay edge, deep water access and heavy load out capability up to 700 tonnes.
- 800m quay frontage at Walker Offshore Technology Park equipped with one of the UK’s largest hammerhead cranes to allow deeper hulled vessels to berth.

**Cluster Organisations**

The North East is well served by organisations which promote connectivity in the industry and support access to markets.

- **Subsea North East** – senior executives meet to discuss the challenges and opportunities the sector faces, across four themes of global prominence, business development, skills and resources and technology.
- **NOF Energy** – membership drawn from oil, gas, nuclear and offshore renewable businesses, generating £167m in new business for its members in the last three years.
- **Energi Coast** – representing the region’s offshore renewable sector, promoting the North East’s expertise and offer to the industry.

"Neptune Energy Park boasts a 700m operational quay edge, deep water access and heavy load out capability up to 700 tonnes."

- Port of Sunderland’s new Liebherr LHM 420 Harbour Mobile Crane, able to lift 121 tonnes, more than double the capacity of existing equipment.
- North Tyneside Council plans to turn the former Swan Hunter shipyard in Wallsend into a centre for renewable energy, advanced engineering and offshore sectors.
- North East England is able to do business across the globe from its outstanding asset base.
GE Oil and Gas and Technip Umbilicals have both established dedicated innovation/research and development centres in the region.

Meanwhile, North East Innovators SME, BEL Valves, IHC Engineering Business and Subsea Innovation all invest heavily in research and development.

The Offshore Renewable Energy Catapult's National Renewable Energy Centre in Blyth, Northumberland has invested over £150m establishing world-leading and independent research, testing and demonstration facilities to enable the development of innovative technology for the advancement of the offshore renewable energy sector.

The facilities, along with their highly experienced multi-disciplinary team of experts and engineers, help to de-risk and commercialise the offshore renewable energy industry in the UK. Durham University’s Energy Research Group, within its School of Engineering and Computing Sciences, is active in research looking at the commercial development of wind power.

And Newcastle University is developing the £7m Neptune National Centre for Subsea and Offshore Engineering on the North Bank of the Tyne.

The facility, housed on the Neptune Energy Park owned by Shepherd Offshore, will be fully operational in 2016. Led by Subsea North East, it will foster academic and industrial collaboration across a range of fields. The centre will provide crucial infrastructure for emerging research opportunities based on the university’s strengths in high pressure materials, extreme environment electronics, underwater communications and pipeline engineering.

The centre will develop highly skilled graduates through project work and address the UK-wide skills shortage in the sector.

Many of the key businesses are pursuing collaborative research projects to build on a successful track record of funded projects. Successes include IHC Engineering Business’s Hi-Traq vehicle that meets the challenges of cable laying to develop offshore wind farms. The Hi-Traq vehicle uses patented technology to improve manoeuvrability, traction and trenching capability.

The subsea ecosystem spans many sectoral boundaries. Innovation ensures that the region is winning global contracts and offering unrivalled inward investment opportunities.

“Many of the key businesses are pursuing collaborative research projects to build on a successful track record of funded projects.”

“Innovation brings cutting edge research to the region.”

“Beneath the waves of the North Sea, innovation and research is fuelling future success.”

“Innovation ensures that the region is winning global contracts and offering unrivalled inward investment opportunities.”

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Like all technology and innovation driven industries, a pool of new, talented workers to fill the highly skilled posts industry success creates is vital.

Skills

Universities and colleges are working hard to meet demand:

- Durham University offers a wide range of engineering degrees and New and Renewable Energy MSc and PhD.
- Newcastle College’s Energy Academy provides innovation, training and development for renewable energy technologies.
- Newcastle University has a wide range of engineering degrees including Offshore Engineering BEng, Marine and Offshore Power Systems MSc, Pipeline Engineering MSc and Subsea Engineering and Management MSc.
- Northumbria University has a broad spread of engineering degrees such as Electrical Power Engineering MSc and Wind Energy and Power Systems PhD.
- Teesside University offers an Electrical and Electronic Engineering BEng, Renewable Energy Engineering BEng and Mechanical Engineering MSc.
- Subsea North East also works with colleges and universities to promote the industry as an outstanding career choice to school pupils.
Pioneers

North East pioneers were among the first to recognise the huge commercial potential of subsea technology in the 1970s and 1980s.

Visionary entrepreneurs such as Charles Tompkins, Alan Reece and Tony Trapp were ahead of their time and companies like Northern Ocean Services (NOS), SMD, the Engineering Business (EB) and CTC Marine Projects blazed a trail as industrial opportunities developed.

These businesses flourished during the telecommunications boom, with SMD and EB making revolutionary seabed intervention equipment, such as ploughs, trenchers and pipe and cable lay equipment. NOS and CTC deployed the technology to lay and bury the pipelines and cables.

SMD was founded in 1971 by Dr Alan Reece, a Reader of Engineering at Newcastle University, as Soil Machine Dynamics Limited and developed a reputation for supplying innovative equipment for the burial of pipelines and cables.

CTC Marine Projects was established in 1993 by Charles Tompkins and its core business was the provision of fibre optic cable lay and burial solutions for the global telecommunication market.

And the Engineering Business was formed in 1997 by a four-man team of engineers led by Dr Tony Trapp. EB grew to a team of 150 people, predominantly graduate professional engineers, specialising in designing, building and supplying engineering solutions for the offshore oil and gas, submarine telecom, defence and offshore renewables industries.

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North East ‘family tree’ branching out from pioneering success

The revolutionary work of the early North East entrepreneurs has been built upon, creating a ‘family tree’ of new industrial growth across the region.

OSBIT Power (OP) was founded by Tony Trapp after he left the IHC Engineering Business. Based in Northumberland, it provides innovative engineering solutions in many offshore markets, with specialist expertise in technology for subsea trenching, offshore handling, pipe and cable lay.

OP’s MaXcess offshore access system was developed to meet demands for safer, more weather-tolerant crew transfers.

After extensive sea trials, MaXcess is now in service with systems deployed for Siemens and Scira (Statoil and Statkraft), improving safety and reducing cost in installation and O&M activities.

The Reece Group, having focused on defence since the sale of SMD, bought Team Valley-based Responsive Engineering which operates in the subsea, offshore oil and gas, power generation and specialist engineering markets.

The company supplies a subcontract machining, pressing, laser and water cutting and fabrication service.

Modus Seabed Intervention was established by Jake Tompkins – Charles Tompkins’ son – and Nigel Ward in Darlington in 2008.

It has grown rapidly into a business generating revenues of £15m a year and employing 50 staff.

Modus operates a fleet of trenching and work class ROV spreads and equipment and recently began an Autonomous Underwater Vehicle division.


Ardmore Craig Ltd, a specialist engineering consulting business in oil and gas, marine, subsea and offshore renewables, was formed in 2011 by Andrew Stevenson, previously of IHC Engineering Business.

The Newton Aycliffe firm’s Modular Offshore Reel won a UKTI award for innovation. Its technology is focused on reducing costs for clients and helping them operate in harsher environments.

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Express Engineering

Growing from its origins as a precision engineering and tool-making company in 1973, Express Engineering is now a leading global contract manufacturing group. It supplies the global oil and gas market with a range of highly integrated precision machined components. All manufacturing takes place at its headquarters in Gateshead or its facility in Brazil, which provide approximately 80,000 sq ft of manufacturing space and a workforce of more than 230 people.

BEL Valves

Part of the Newcastle-based British Engines Group, BEL Valves markets high integrity critical valves, actuators and controls for the oil and gas markets. Formed in the 1950s to meet the needs of the petrochemicals industry, BEL Valves diversified into oil and gas in the mid-1970s. It has around 500,000 valves installed globally in some of the world’s harshest environmental conditions, high performance components operating at extreme depth, pressure, corrosion and temperature.

BEL Valves is developing the Neptune Hyperbaric Test Centre in partnership with Newcastle University, supported by the North East LEP, to provide a deep water high capacity commercial test facility for the subsea industry.

A&P

A&P was originally founded as a centre of expertise in ship design and construction in 1971. It remains privately-owned and operates from North East bases on the Rivers Tyne and Tees with a base in Falmouth.

As well as its core ship repair and conversion business, it operates in the oil and gas sector with projects topside and subsea.

The Tyne Yard has the largest commercial dry dock on the east coast of England, supplemented with two deep water berths and modern fabrication facility complete with panel line, rolling, plasma and gas burning machines.

Homegrown success – exporting world-class excellence from the North East

With their foundations firmly rooted in the North East, they are the home-grown success stories with stellar reputations around the world.

Pallion Engineering Limited

The company owns and operates a well established dry dock and construction yard in Sunderland. The yard covers 7.5 acres with a dry dock, two construction sheds, 184m river frontage, engineering workshops, joinery workshop and covered fabrication workshops.

Pallion provides a wide range of services including ship repairs, conversions and maintenance and is also involved in fabrication and engineering projects for offshore oil and gas.
Inward investment

The North East’s proud industrial history and reputation for cutting-edge innovation and technology in the subsea and offshore sector makes it a magnet for investment by UK and overseas companies.

GE Oil and Gas

Formerly Wellstream, GE Oil and Gas designs and manufactures world-leading flexible pipes and opened a major manufacturing facility on Walker Riverside, Newcastle, in 1997. It was the first company to qualify products for operation in 2000m water depth after years of work with Brazilian oil company Petrobras.

“GE bought Wellstream in 2011, allowing it to capitalise on the growth in the floating production, storage and offloading market.”

In 2013, its manufacturing facility received £15m investment into two storage carousels for pipeline systems and last year opened its Newcastle Innovation Centre.

Technip Umbilicals

Technip Umbilicals – formerly Duco – is part of the French conglomerate Technip. It designs and makes subsea umbilicals from a large facility on Walker Riverside. The company has built a new steel tube umbilical plant with Regional Growth Fund support, which allows it to accommodate bigger diameter and longer lengths of umbilicals. Technip also has an R&D facility in Newcastle.

Tekmar Subsea

In 1995, the Norwegian company relocated to North-East England to take advantage of manufacturing skills developed in the shipbuilding industry. The Tekmar Group was split in 2010. Subsea Innovation, a world leader in the design and build of launch recovery systems, tether management systems and module handling systems, now operates as a stand-alone firm in Darlington, County Durham.

Tekmar Energy, based in Newton Aycliffe, also County Durham, is a market leader in the design, manufacture and supply of subsea cables, umbilicals and flexible protection systems for renewable energy and the oil and gas industry. In 2015, the company was selected to provide its innovative TekTube on a Netherlands wind farm as well as supplying TekLink cable protection systems to the United States’ first offshore wind farm, Block Island.

Fabricom Offshore Services

Part of the Safely Fabricom GDF Suez oil and gas group, Fabricom Offshore Services set up in the region from a North Tyneside base.

“The company now has offices in Teesside and Aberdeen and employs more than 300 people, mainly in its regional Quorum Business Park office.”

Supplying engineering services to the brownfield offshore oil and gas sector, it has secured blue chip customers and long-term contracts.

Fabricom now works predominantly with clients in the North Sea offshore region.