SH Group is a manufacturer and global supplier of tailor made handling systems and deck equipment for the marine, offshore and wind industry.

We are a Service company operating worldwide.
With more than 50 highly experienced engineers and technicians, we are skilled in designing solutions that technically and economically meet any demands you might have.

We have our own inhouse production- and test facilities with up-to-date machinery and educated workers. Combined, we are able to run production faster and under constant surveillance and debrief between all people involved. As a result, we can resolve issues faster and deliver a better result on time!

Our project managers all have relevant backgrounds from the Offshore, Marine and Wind industries. That allows us to put the right person on the job, often acting as your single point of contact.

Our inhouse production facilities:

- Engineering department
- Steel workshop
- Hydraulic and Mechanical workshop
- Electrical and Automation workshop

Our strategic business set-up enables us to stay competitive and offer a reliable support and service to our customers worldwide, 24/7.

A complete supply chain from one source
LAUNCH & RECOVERY SYSTEMS

ROV HANDLING SYSTEMS

Sepro™ has got one the most comprehensive product portfolios in the market for LARS (Launch & Recovery Systems) and has an extensive experience and knowledge within design, engineering, project management and production.

Sepro™ offers turnkey system deliveries including system integration as well as single product deliveries. Design, production, assembly and testing are carried out at any of SH Group’s locations. This is done deliberately in order to ensure optimum control of quality and functionality for each individual delivery.

We have an excellent track record with the majority of these systems in daily operations worldwide.
ROV HANDLING WINCHES

OceanObserver™
10 ft container dimension. Free-flying ROV Bespoke Design

OceanFighter™
Zone II Bespoke Design

OceanMaster™
Zone II Bespoke Design

OceanMaster™
Zone II. Replacable Drum Bespoke Design

DRUM Ø 1.200 mm
AHC NO
UMBILICAL YES
CABLE CAPACITY 1.900 M - Ø28.6
SPOOLING FRONT

DRUM Ø 1.300 mm
AHC NO
UMBILICAL YES
CABLE CAPACITY 3.400 M - Ø35
SPOOLING FRONT

DRUM Ø 1.200 mm
AHC NO
UMBILICAL YES
CABLE CAPACITY 1.200 M - Ø40
SPOOLING FRONT

DRUM Ø 1.600 mm
AHC YES
UMBILICAL YES
CABLE CAPACITY 2.100 M - Ø40
SPOOLING RIGHT ANGLE

DRUM Ø 1.500 mm
AHC NO
UMBILICAL YES
CABLE CAPACITY 4.300 M - Ø40
SPOOLING RIGHT ANGLE

Example

Example

Example

Example
ROV HANDLING

Deck mounted DPL™ - Compact solution for limited deck space. The DPL™ lifts the ROV and TMS between the legs. Extensive outreach and excellent dipping functionality.

Deck mounted DFL™ - Suitable for limited deck space and narrow hangars. Extensive outreach and excellent dipping functionality.

Wall-mounted Rail System WRS™ - Increased lowering capabilities and clean deck area giving space to ROV operation, service and maintenance.

Overhead Rail System ORS™ - Gantry type of LARS with extensive lowering capabilities along the ship-side rails making launch of ROV possible below splash zone.
Handling systems and deck equipment from SH Group will meet any requirements whether the research vessel is on a seismic or hydrographic survey, construction or dredging job or oil exploration. All our equipment is reliable, safe and easy to operate in any type of weather - even the toughest conditions at sea.

Design, production, assembly and testing is carried out in Denmark. This is done deliberately in order to ensure optimum control of quality and functionality for each individual delivery, hence reducing installation and testing time on site.

**Oceanographic investigations**

1. Oceanographic winch system for deploying and towing scientific devices to the seabed.
2. A-Frame Overside - Compact solution for limited deck space.
3. Small ROV Hangar - Custom-made hangar for easy storage of ROV.
4. Lifeboat Handling - Low maintenance and reliable, safe and easy to operate in any type of weather.
5. Cranes - Fixed, knuckle or telescopic. For handling overboard operations.
6. Deck Machinery for anchoring, mooring or towing.
7. A-Frame installed in hangar when clean deck area is needed for ROV maintenance.

Handling systems and deck equipment from SH Group will meet any requirements whether the research vessel is on a seismic or hydrographic survey, construction or dredging job or oil exploration. All our equipment is reliable, safe and easy to operate in any type of weather - even the toughest conditions at sea.

Since a research voyage is planned many months ahead, it is very important that all launch and recovery equipment on board is reliable and operational when required, as you only have a specific window to carry out the planned task. Something which is vital when used and operated by different people, especially on a research vessel.

Stig Vågenes, ROV Manager - University of Bergen
Deep Sea research equipment for mounting on naval inspection vessel for Arctic use. Design temperature is -30°C to +40°C.

The LARS System consists of two hydraulic winches: 50 kN Winch/10 kN Winch and A-Frame 80 kN with a hydraulic extension boom to deploy and recover scientific instrumentation (CTD and water sampling rosette, seismic equipment and cable sheaves for up to 4000 m with 16mm rope/wire.)
## Oceanographic Winches

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>OceanObserver™</td>
<td>10ft container dimension. Free flying ROV Bespoke Design</td>
<td><img src="image1.jpg" alt="Image" /></td>
</tr>
<tr>
<td>OceanEnviro™</td>
<td>Super compact Bespoke Design</td>
<td><img src="image2.jpg" alt="Image" /></td>
</tr>
<tr>
<td>OceanReacher™</td>
<td>Bespoke Design</td>
<td><img src="image3.jpg" alt="Image" /></td>
</tr>
<tr>
<td>SDC Winch</td>
<td>Traction &amp; Storage Bespoke Design</td>
<td><img src="image4.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Small Wire Winch</td>
<td>Bespoke Design</td>
<td><img src="image5.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Water Sampler Winch</td>
<td>Traction &amp; Storage Bespoke Design</td>
<td><img src="image6.jpg" alt="Image" /></td>
</tr>
</tbody>
</table>

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Drum Ø</th>
<th>Cable Capacity</th>
<th>Umbilical</th>
<th>Spooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>OceanObserver™</td>
<td>1,200 mm</td>
<td>1,900 M - Ø28.6</td>
<td>Yes</td>
<td>Front</td>
</tr>
<tr>
<td>OceanEnviro™</td>
<td>900 mm</td>
<td>7,000 M - Ø14</td>
<td>Yes</td>
<td>Right Angle</td>
</tr>
<tr>
<td>OceanReacher™</td>
<td>800 mm</td>
<td>4,000 M - Ø5</td>
<td>Yes</td>
<td>Front</td>
</tr>
<tr>
<td>SDC Winch</td>
<td>1,250 mm</td>
<td>8,000 M - Ø9.53</td>
<td>Yes</td>
<td>Front</td>
</tr>
<tr>
<td>Small Wire Winch</td>
<td>900 mm</td>
<td>7,800 M - Ø16</td>
<td>No</td>
<td>Front</td>
</tr>
<tr>
<td>Water Sampler Winch</td>
<td>1,200 mm</td>
<td>7,000 M - Ø14</td>
<td>Yes</td>
<td>Right Angle</td>
</tr>
</tbody>
</table>
DIVE SYSTEM
HANDLING
Moonpool and Deck mounted

Dive handling systems from SH Group meets the highest standards for performance, reliability and safety. We design over-the-side systems and state-of-the-art twin bell moonpool systems for SDC. The systems can contain A-Frame, Winch, Sheave Units, Moonpool cursors, Umbilical Service Winch, Umbilical Shock Absorber and HPU’s.

Design, production, assembly and testing is carried out in Denmark. This is done deliberately in order to ensure optimum control of quality and functionality for each individual delivery, hence reducing installation and testing time on site.
DIVE SYSTEM HANDLING

Our delivery supports the 24-man twin-bell diving system installed on board DSV Deep Explorer, a DP3 class diving support vessel with a state-of-the-art dive control system.

1. Passive Cursor Frame and Telescopic trunk to diver’s quarters
2. Umbilical Shock Absorber
3. Hydraulic support arms for SDC
4. Shock Absorber
5. Umbilical Shock Absorber
6. Redundant HPU’s
7. Umbilical Service Winch
8. 3 pcs. SDC lift winches

Watch the video from the depths of DSV Deep Explorer: www.shgroup.dk/content/deep-explorer.aspx
CABLE ENGINES

Cable laying is a complex task, because of the low tolerances on cable elongation. Dynamic forces such as cable weight in water, bottom tension caused by negative slack, and vessel speed, affect the elongation of the cable, thus the tension on the cable must be controlled at all times.

SH Groups 4-track and 2-track tensioners are designed to give the best possible effectiveness, by using a feed-back loop to adjust the tension on the cable. This way we control the effects of the dynamic forces with our products.

4 Track Cable Engine
Drive: Electrical/Hydraulic
Cable diameters: ø50mm – ø800mm
Speed: 0 – 1,000 m/h

2 Track Cable Engine
Drive: Electrical/Hydraulic
Cable diameters: ø20mm – ø500mm
Speed: 0 – 1,000 m/h
CABLE ENGINES

High Speed Wheel Tensioner

Drive: Electrical/Hydraulic
Cable diameters: ø20mm – ø300mm
Speed: 0 – 11,000 m/h

6T Wheel Tensioner

Drive: Electrical/Hydraulic
Cable diameters: ø20mm – ø500mm
Speed: 0 – 1,800 m/h

Carousels / Turntables

Drive: Electrical/Hydraulic
Cable diameters: ø50mm – ø800mm
Speed: 0 – 1,000 m/h

Reel Drive Systems

Drive: Electrical/Hydraulic
Cable diameters: ø50mm – ø800mm
Speed: 0 – 1,000 m/h
The Xervo™ NORSOK system is the top of the line. The specification includes not less than four winch Brakes, mode-selector where the user can choose between training and emergency modes for optimized safety in all situations, and use of redundancy and back-up systems.

The result is a superior safety level with purely mechanical back-up functionalities, at the same time yielding a reliable system which is able to be used in no-power conditions.

The system includes:
- Box design for protection of four winch brake system
- Triple winch brake system
- Climate control inside box
- Service door and platform inside the box
- Built-in material handling system
- Redundant Drop-In-Ball™ hook system
- Diagnosis system monitoring the state of Crucial components

The Xervo™ SOLAS system has been developed on the basis of the original Xervo design. The goal has been to achieve the best possible safety level while complying with commercial and regulatory requirements.

The system has been developed using risk assessments and our knowledge base from existing projects complying with the NORSOK safety standard.

The system includes:
- Unique maintenance concept
- Double winch brake system
- High quality materials and paint systems
- Soft start & stop
- Box design for protection of boat (optional)
- Nadiro Drop-In-Ball™ hook system (optional)

For extreme environment, Xervo™ offers the Arctic upgrade as per the new IMO Polar Code. Implemented 1. jan. 2017 to both SOLAS and NORSOK systems. The Specification is compliant with classification standards for Arctic operation.

The system includes:
- Box design for protection of four winch brake system
- Engineered for ice load and low temperature Steel grades
- Air heating and trace heating applied
- Special materials and sealings applied

LIFEBOAT AND RESCUE BOAT SYSTEMS
Boat-In-A-Box™ davit system
Xervo™ is the inventor and manufacturer of the unique Boat-In-A-Box™ davit system suitable for marine and offshore applications. The system protects the boat, the winch, the hook system, as well as all components and wires. The modular concept is suitable for both newbuildings and retrofits.

The Boat-In-A-Box™ system is installed with either hydraulically controlled davit arms or as a fixed station. The modular concept means easy installation and easy maintenance, which reduces the cost of ownership over the lifetime of the system.

Boat-In-A-Box™ - SOLAS System

Inside the Boat-In-A-Box™ System

Jack-up - Boat-In-A-Box™ - NORSOK System
4 lifeboats and 1 rescue boat
DECK EQUIPMENT

NorCrane™ is specialized in design and manufacturing of deck equipment systems for the marine and offshore industries. We have developed a wide range of products to supply shipyards and shipowners with flexible solutions covering cranes, winches and overall mooring equipment for all types of vessels.

We offer turnkey system deliveries including system integration as well as single product deliveries. Our strategic business set-up enables us to stay competitive and offer a reliable support and service to our customers worldwide, 24/7.

All equipment will be designed according to international class rules and be delivered with full class certificates. NorCrane™ offers efficient, easy to use equipment, built on Scandinavian quality and know-how.

Deck machinery

1. Anchor Handler Winch
2. Cranes - Offshore, Marine or Cargo
3. Mooring Winches
4. Anchor Windlass combined Towing or Mooring
5. Shark Jaws and Towing Pins
6. Sternrollers
7. Towing Winch with Towing Hook
8. Tugger Winch
9. Capstans
CRANES
OFFSHORE . MARINE . CARGO

Whatever the configuration, our NorCrane™ Cranes can be modified to do the job. We have supplied shipyards and shipowners all over the world with cranes for all types of vessels.

Offshore Cranes
Knuckle or Fixed jib configurations up to 140T.

Marine Cranes
Can be delivered with all three configurations for Fixed, Knuckle or Telescopic Jibs up to 120T.

Cargo Cranes
27T @ 30 meter radius, standard bulk configuration.

All cranes are designed according to international class rules and can be delivered with full class certificates. All offshore cranes can be delivered according to latest API 2 C specifications.
Diesel driven Offshore Crane with wire luffing
Bespoke Design
Knuckle Jib
Bespoke Design
Fixed boom crane
Bespoke Design
Telescopic Jib
Bespoke Design
Telescopic Jib
Bespoke Design

- SWL: 50T
- HEAVE COMP.: Yes
- OUTREACH: Customer spec.

- SWL: 20T
- HEAVE COMP.: No
- OUTREACH: 25 METRES

- SWL: 50T
- HEAVE COMP.: No
- OUTREACH: Customer spec.

- SWL: 100T
- HEAVE COMP.: Yes
- OUTREACH: Customer spec.

- SWL: 5T
- HEAVE COMP.: No, but constant tension
- OUTREACH: 40 METRES

CRANES
JACK-UP

New innovative Jack-Up system for vessels offering offshore wind installations.

SH Group along with owner and partners has developed and produced this innovative Jack-Up system, control system and new form of shock absorbers that reduces the impact from the jacking rigging from the hammer for new types of vessels and jack-ups vessels. These vessels are designed for many different operations and therefore need to be flexible operating in varying sea beds and environments in water depths up to 45 m.
Production of more than 430-meter long racks and repair work of tubes.

The 2.3-metre thick and 54-metre long legs and racks are made of high tensile steel which requires special treatment and handling. They are welded approximately eight times in the full length on each side of each individual rack. When the racks are welded to the rig legs, they are heated to 120°C. The detailed work around heating the tubes demands experience and the right competences. The four 160-tonnes legs belong to a jack-up rig.
WIND INDUSTRY

SH Group specializes in design, engineering and production of equipment and handling systems for global players in the wind industry.

Proven track record supplying to the wind industry
- Electrical rack and pinion Jack up system
- Static blade test equipment
- Fatigue blade test equipment
- Installation/relaying tools, production side
- Tower guide system
- Sea fastening
- Tower gripper
- Tower stabilizer brackets
- Lifting yokes
- Tag wire winches
- Equipment exchange winches
- Boat landing
- Gangways
- On site annual inspections

Production - Nacelle Lift Yoke
SH Group’s activity comprises sales, marketing, development and design as well as production, installation and servicing of hydraulic, electric and mechanical constructions for the offshore, marine and industrial sectors.

SH Group and its subbrands Sepro™, NorCrane™ and Xervo™ provides a wide range of high-end technology solutions and services within customized deck equipment solutions, systems for subsea handling operations and lifeboat solutions approved for SOLAS and NORSOK.

Founded in 1974, SH Group currently employ about 250 employees at the headquarters in Svendborg and its service departments in Esbjerg and Linde, Denmark. SH Group is present with sales Offices in Stavanger, Norway, Houston, U.S.A., Singapore and TianJin, China.

For further information and references, please visit www.shgroup.dk
Contact: +45 6221 7810 . sh@shgroup.dk