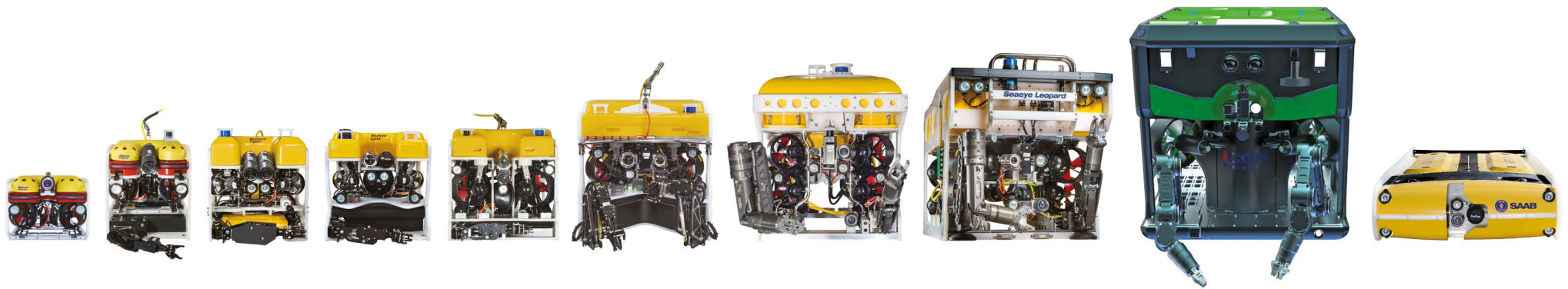


EMPOWERING

SAAB SEAEYE

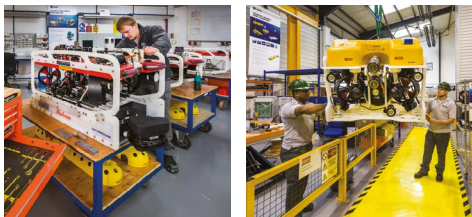


SAAB



world leader in electric underwater robotics

About Us



Contents

- 3 About Us
- 4 Falcon
- 5 Tiger
- 6 Lynx
- 7 Cougar-XT Compact
- 8 Cougar-XTi
- 9 Panther-XT Plus
- 10 Leopard
- 11 eWROV
- 12 Sabertooth
- 13 Comparison Chart
- 14 iCON
- 15 eM1-7 Electric Manipulator
- 16 Launch & Recovery Systems
- 17 Tether Management Systems
- 18 Surface Control Cabins & Workshops
- 19 Hydro-Lek

Saab Seaeeye is the world's largest manufacturer of electric underwater robotic systems. With a track record spanning over 100 years our elite technological environment continues to inspire pioneering developments that lead the industry with innovative solutions trusted to perform complex tasks in some of the most hostile environments on the planet.

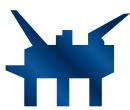
A wholly owned subsidiary of Saab, we have facilities in the UK and Sweden, along with substantial water tank and lake test facilities. Over 80% of our systems are exported to markets that span the globe.

Many different market sectors deploy our robotic systems in a vast array of demanding tasks in situations where our vehicles work tirelessly for extended periods in the most challenging conditions. Tasks include observation, inspection, repair and maintenance, diver support, survey, light construction and intervention, drill support, salvage support, deep tunnel and dam inspection, security, search and rescue operations, UXO clearance, decommissioning, marine science, archaeology and environmental monitoring.

Key to our success is the reliability and capability of our systems and the renowned support and service we offer our customers in helping find solutions to their special requirements - and afterwards being available for every moment of every day throughout the life of their vehicle, wherever it is in the world.

In a future that is electric we lead with cutting edge developments that will continue to expand the potential for electric underwater robotic systems where advances in intelligent control and miniaturisation are already creating systems that are smaller, smarter, lighter, more agile and more powerful.

Saab Seaeeye is certified by DNV·GL to ISO 9001: 2015, ISO 14001: 2015 & ISO 45001: 2018.



OIL & GAS



RENEWABLES



TELECOMS



MARINE SCIENCE



SECURITY & EMERGENCY



SALVAGE



HYDRO & CIVIL



NUCLEAR



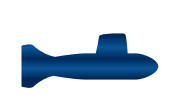
AQUACULTURE



SEABED MINERALS



LEISURE & TOURISM



DEFENCE

Falcon

The professional portable underwater vehicle

Falcon is the most successful underwater electric robotic system of its class and is proven in numerous intricate and demanding missions.

Lightweight and portable for easy deployment, the highly versatile Falcon is rated to a depth of either 300m or 1000m for the DR version.

The Falcon is equipped with the advanced iCON intelligent control software providing improved vehicle control and diagnostic data as well as the ability to customise the pilot display and enable features such as station keeping.



Trusted

Five powerful thrusters provide precise movements and maintain a stable platform in strong currents and turbulent waters.



Easy to use

Uses touch screen and joystick controls with user-friendly configuration and diagnostic features.



Portable

Lightweight and easy to transport with a quick setup for rapid deployment.

Tiger

The industry benchmark platform inspection / observation vehicle

The Tiger is widely regarded as the leading observation and inspection vehicle within the oil and gas industry. It is also increasingly being used by military and scientific customers seeking increased capability in deep water.

The Tiger is a very stable platform, with excellent manoeuvrability and is able to perform well in strong currents.

The vehicle's open frame construction and generous payload offers the possibility of adding a wide range of tools and sensors as well as interchangeable tool skids.

The Tiger is available as a free swimming ROV down to depths of 450m. For greater depths down to 1000m, a Tether Management System (TMS) is available.



Powerful

Five thrusters provide a stable platform for observation, inspection and diver support.



Reliable

Internationally regarded as the industry standard observation and inspection ROV.



Flexible

Engineered design options to deliver results even for the most challenging of projects.

Lynx

The offshore inspection vehicle with enhanced interface capability

Like the smaller Tiger, the Lynx is a leading observation and inspection vehicle used by the oil and gas industry especially for missions in water depths of up to 1,500m.

The Lynx is fitted with two vertical and four horizontal thrusters making it a very stable platform with exceptional manoeuvrability.

A wide range of tools and sensors are offered as well as interchangeable tooling skids, which are powered by a dedicated tooling power supply unit.

The Lynx vehicle is available as a free swimmer or can operate in conjunction with a Type 8 Tether Management System (TMS).



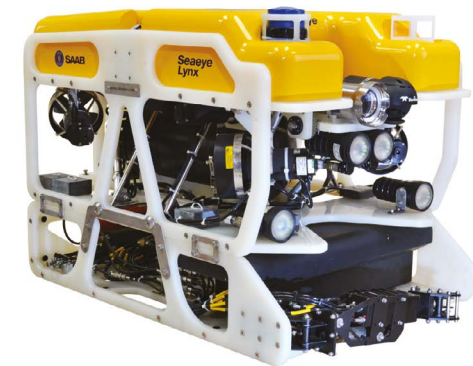
Trusted

Six thrusters provide a stable platform with an increase in vertical thrust for deep water and platform inspection projects.



Enhanced data transmission

Fibre optic data and video transmission with up to four simultaneous video channels available including an HD camera option.



Flexible

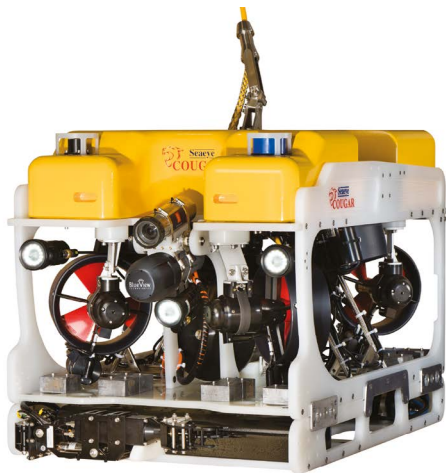
Tooling options designed to deliver results even for the most challenging of projects.

Cougar-XT Compact

The shallow water inspection vehicle with outstanding current handling capability

The Cougar-XT Compact is the shallow water version of the Cougar-XT depth rated to 300m. The Cougar-XT Compact is an extremely powerful electric ROV for use in inspection applications where strong tidal currents are experienced.

The smaller chassis results in a significantly lower profile to reduce drag, in combination with a high performance thruster arrangement and a small diameter tether, offers the market an ROV system with unrivalled performance for its size and class.



Outstanding performance

Shallow water inspection vehicle with proven handling capabilities in strong currents and in tight spaces.



Compact

Designed to reduce drag and minimise the effect of current, the ROV is a low profile, lightweight vehicle with a smaller chassis and buoyancy than the regular XT.



Wide choice of tooling

Selection of tooling options designed for easy integration and to deliver results for any shallow water project.

Cougar-XTi

The high-power compact electric work ROV

The Seaeeye Cougar-XTi leads a new generation of compact, highly flexible and extremely powerful electric ROVs that offer users the ability to undertake a wider range of demanding tasks at lower operating costs.

The system is now based on the Saab Seaeeye's iCON ecosystem which is an advanced distributed control and power distribution system that provides features such as advanced pilot aids and diagnostics to increase reliability and maintainability. The iCON ecosystem also provides a roadmap for further developments in automation and digitalisation including features such as remote telepresence control from shore via satellite or 4G communications, making the system future ready for current and further software advances.



Smart

With Saab Seaeeye's iCON intelligent control system featuring self-diagnostics and control via touch screens.



Powerful

Highly manoeuvrable vehicle designed for work in strong currents and up to 2000 m depth.



Flexible

Designed as an inspection vehicle or light work vehicle with a range of tooling skids for additional tooling options.

Panther-XT Plus

The high current shallow water survey and light work vehicle

The Panther-XT Plus is a 1000m rated ROV fitted with ten 500 Volt DC thrusters; eight horizontal and two vertical with the option of a third vertical thruster, providing the Panther-XT Plus with exceptional handling and speeds of up to four knots.

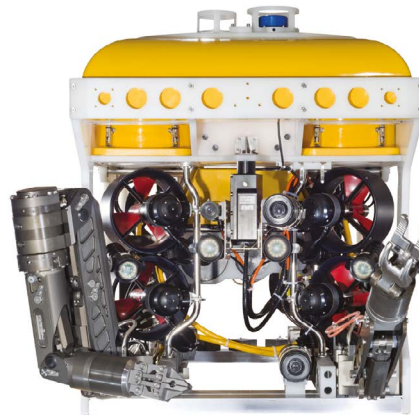
The high powered Panther-XT Plus accommodates two Schilling Orion manipulators plus a wide range of sensors and heavy duty tooling skids. Tasks include drill support, pipeline survey, IRM and salvage.

The Panther-XT Plus is available as a free swimmer or is used in conjunction with a Tether Management System (TMS) and an A Frame Launch and Recovery system (LARS). Surface equipment is available as either free standing units or integrated into a control cabin.



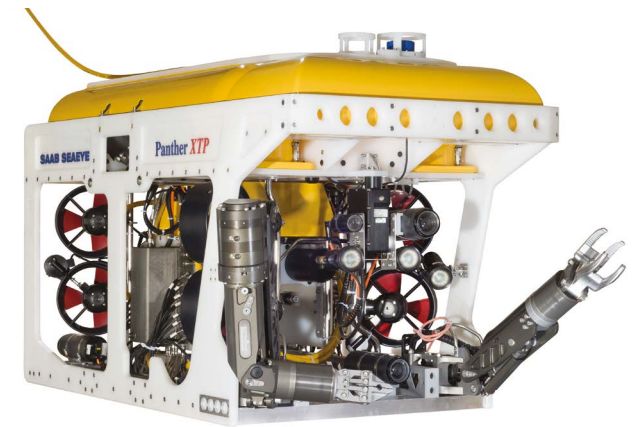
Performance

With ten powerful thrusters and a high payload, the Panther-XT Plus has exceptional handling and a speed of four knots while still maintaining a small footprint.



Versatile

Designed to fit a range of survey and heavy duty tooling options, which are fitted within the ROV.



Industry proven

Panther-XT Plus has an excellent record as a light work and survey ROV working in shallow water and in high current conditions.

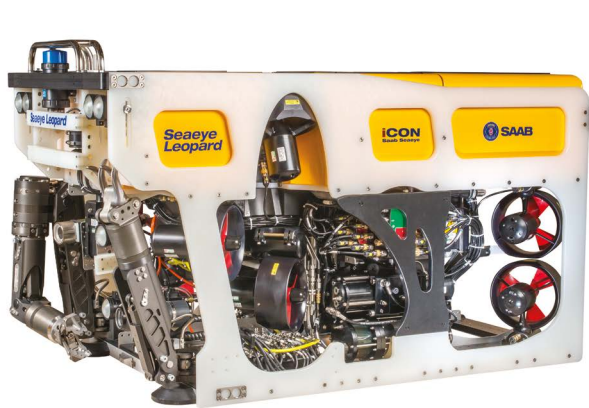
Leopard

The high power compact electric work class ROV

The Leopard is an exceptionally powerful electric work class vehicle with a minimal 20 ft x 8 ft LARS footprint. It is fitted with up to 11 thrusters to provide a forward thrust of over 500 kgf, has a 200 kg payload and is controlled by the innovative iCON intelligent control system.

For the Leopard pilot, the benefits of iCON include an enhanced user interface, simple network architecture, exceptional handling and power with advanced autopilots including pitch and roll stabilisation, built-in diagnostics, redundancy and remote internet access for upgrades and technical support. A station keeping option allows the pilot to focus on the mission's tasks while the software holds the Leopard in position even in a strong current.

The Leopard chassis design features a large open payload area for the installation of specially designed sliding trays equipped with survey sensors or tooling options. A wide range of tooling skids fitted beneath the ROV make the Leopard a versatile system capable of performing a range of work tasks in even the harshest of environments at depths of up to 3000m.



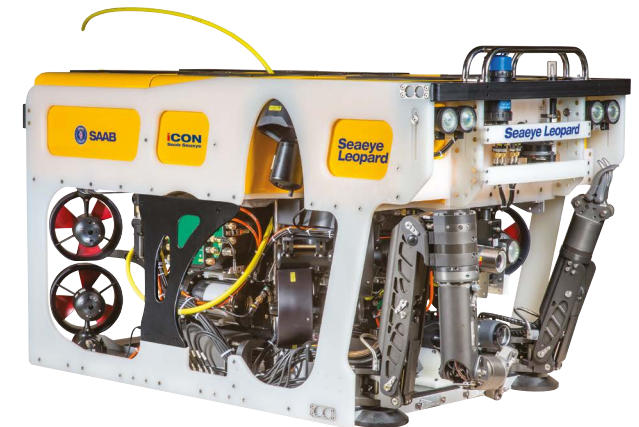
Advanced control

Using Saab Seaeeye's innovative robotics architecture iCON, the system is able to control, self-diagnose and log data from system devices. Also features advanced vehicle autopilots for heading, depth, pitch and roll, and altitude.



Competitive

An electric vehicle with eleven powerful thrusters, a large payload and the advanced control features of iCON gives the Leopard a competitive edge in a field traditionally performed by larger hydraulic vehicles.



Flexible

Designed for work at depths of 2000m or 3000m and fitted with a wide range of survey sensors and heavy duty tooling options.

eWROV

Empowering eco-responsibility

The latest addition to Saab Seaeye's underwater portfolio, the eWROV is a full-sized Class III B ROV system. Electrification is the key to improved performance, and the eWROV takes electric underwater vehicle capabilities to the next level.

The goal of carbon neutrality is a growing focus among the global community, and the eWROV has been designed with eco-responsibility in mind. As well as being more efficient, electric systems use limited oil, making the eWROV significantly more environmentally friendly than equivalent hydraulic work-class systems.



Onshore controlled

The eWROV has the in-built capability to be operated from onshore command and control centres.



iCON

A common technology ecosystem and intelligent architecture of configurable hardware and software modules, providing real-time system control and feedback.



Electric manipulators

Dual 7 function robotic manipulators offering advanced control, more precise positioning, increased dexterity and greater reliability.

Sabertooth

The intelligent AUV / ROV hybrid

The Sabertooth is a hybrid AUV / ROV capable of working in deep water either as an autonomous vehicle or via a tether. The vehicle power, tether-free operation and its 360° hovering manoeuvrability make the Sabertooth an ideal option for autonomous inspection, or maintenance and repair tasks as well as for offshore survey work.

The Sabertooth is available as a single hull or as a double hull vehicle capable of operating at depths of 1200m or up to 3000m for the double hull vehicle. The vehicle is powered by long-range batteries that can be recharged at a subsea docking station. The vehicle can be housed in the docking station for more than six months without maintenance and thereby eliminating the cost of surface vessels. The docking station also allows for data exchange.



Versatile

A hybrid vehicle that can work over a long excursion range either autonomously or manually via a tether. The Sabertooth can reside in an underwater docking station where its batteries are recharged and data can be transmitted to and from the surface.



360° Manoeuvrability

A powerful vehicle with six thrusters and a number of advanced autopilot features provide the vehicle six degrees of freedom, station keeping and obstacle avoidance.



Flexible

A range of tooling and sensor packages are available for the Sabertooth vehicles. These tooling packages can also be stored in the underwater docking station.

Comparison Chart



	Falcon	Falcon DR	Tiger	Lynx	Cougar-XT Compact	Cougar-XTi	Panther-XT Plus	Leopard	eWROV	Sabertooth Single Hull	Sabertooth Double Hull
Depth rating (m)	300	1000	1000	1500	300	2000	1000	2000 (3000)	3000 (5000)	1200	3000
Length (mm)	1000	1055	1030	1230	1300	1515	2140	2150	2800	3800	4094
Height (mm)	500	555	590	605	784	790	1217	1204	1900	500	670
Width (mm)	600	600	700	815	900	1000	1060	1160	1800	700	1350
Weight in air (kg)	60	100	150	200	270	435	800	1200	<4000	700	1400
Payload (kg)	14	15	32	34	60	80	150	205	>250		
Forward thrust (kgf)	50	50	62	66	170	170	353	500	>1200	100	100
Lateral thrust (kgf)	28	28	43	47	120	120	248	230	>1200	40	90
Vertical thrust (kgf)	13	13	22	43	110	110	105	200	>1200	80	160
Speed (knots)	>3	>3	3	3	3.5	3	>4	>4	>4	5	4
Thruster type	S1-MCT01	S1-MCT01	SM4	SM4	SM7	SM7	SM7	SM9	SM14	SM9 & SM4	SM9
Horizontal thrusters	4	4	4	4	4	4	8	4 or 8	4	2 x SM9 & 1 x SM4	3 + 1 option
Vertical thrusters	1	1	1	2	2	2	2	3	4	3 x SM4	3
Auto-depth	√	√	√	√	√	√	√	√	√	√	√
Auto-heading	√	√	√	√	√	√	√	√	√	√	√
Auto-altitude	option	option	option	option	option	option	option	√	√	√	√
Auto pitch / roll	-	-	-	-	-	-	-	√	√	√	√
Station keeping	option	option	-	-	-	option	-	option	option	√	√
Video channels	1	2	2	2/4	2/4	4	4	6	-	4	4
Video transmission	STP/FO	FO	STP/FO	STP/FO	STP/FO	FO	FO	FO	Ethernet	n/a / FO	n/a / FO
LED lights (standard quantity)	2	2	2	4	4	4	4	6	8	4	4
Tilt platform	√	√	√	√	√	-	-	option	-	√	√
Pan and tilt platform	-	-	-	-	-	√	√	√	√	-	-
iCON	√	√	-	-	-	√	-	√	√	√	√
Typical manipulator function (f)	1f or 5f	1f or 5f	1 x 4f	1 x 4f	1 x 4f	2 x 5f	1 x 7f & 1 x 4f option	1 x 7f & 1 x 4f option	eM1-7	1 x 4f	2 x 5f
Tooling 3PH power outlet	no	no	option	option	option	option			no	no	no
Power input phases	single	single	3	3	3	3	3	3	3	3	3
Voltage (Vac)	110/230	110/230	380/480	380/480	380/480	380/480	380/480	380/480	380/480	380/480	380/480
Option	-	-	690	690	690	690	690	690	690	690	690
Frequency (Hz)	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Battery capacity (kWh)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	10	30
Endurance (km@2kts)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	~40	~80

Developed to maximise the performance, reliability and maintainability of unmanned underwater vehicle systems, Saab Seaeye's iCON robotics architecture is a rugged network of distributed devices and software that provides unparalleled real time system control and feedback from the heart of every subsystem.

ROV / AUV Control

- Advanced six degrees of freedom control
- Flexible PC based human machine interface using touch screens, joysticks and switch panels
- Simple power and data connectivity to all system devices
- Flexible / upgradeable system architecture
- Detailed diagnostics and data logging from within system devices
- Fault tolerant, automatically adapting in the event of device damage



Power Distribution

- Remote controlled surface and subsea power supplies with power and isolation monitoring
- Fully switchable power outputs with programmable overcurrent, voltage and earth leakage

Remote Piloting

- Vehicle control and real time video and sonar data from remote locations via 4G or Satellite link
- Step by step automated vehicle control for low bandwidth, high latency links

Navigation and Behaviours

- Advanced vehicle autopilots for heading, depth, pitch / roll and altitude
- Station keeping, cruise, transit and standoff control options
- Software interfaces for additional 3rd party sensors to augment vehicle navigation and control
- Adaptive autonomous vehicle behaviours, using real-world data triggers

eM1-7

The world's most advanced seven-function electric work class manipulator

To fully realise the environmental and efficiency benefits of electric ROVs, Saab Seaeye has developed the eM1-7 electric manipulator, the world's most advanced electric manipulator yet.

The Seaeye eM1-7 electric manipulator features an advanced control system allowing both manual and automated operation. Highly accurate, modular electric joints enable enhanced arm control, path planning solutions and actuator re-use. Lift capacity and range of motion exceed the eM1-7 manipulator's hydraulic equivalents, while its aluminium construction ensures high reliability.

Active power management

Active power management helps regulate demand and manages the regenerative power created with free-fall loads. Dual seven-function electric manipulator configurations provide maximum dexterity.

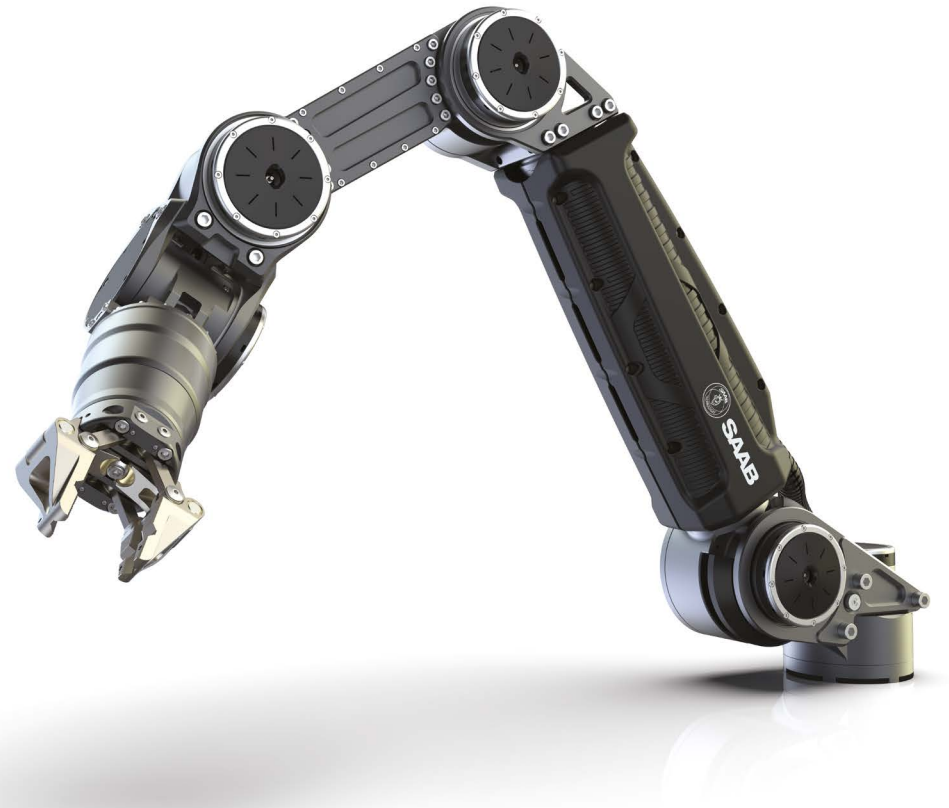
Significant advantages

The Seaeye eM1-7 offers significant advantages over hydraulic alternatives, including more precise positioning with force feedback, increased dexterity, lower water weight and greater reliability - expanding the potential for more autonomous and resident applications.

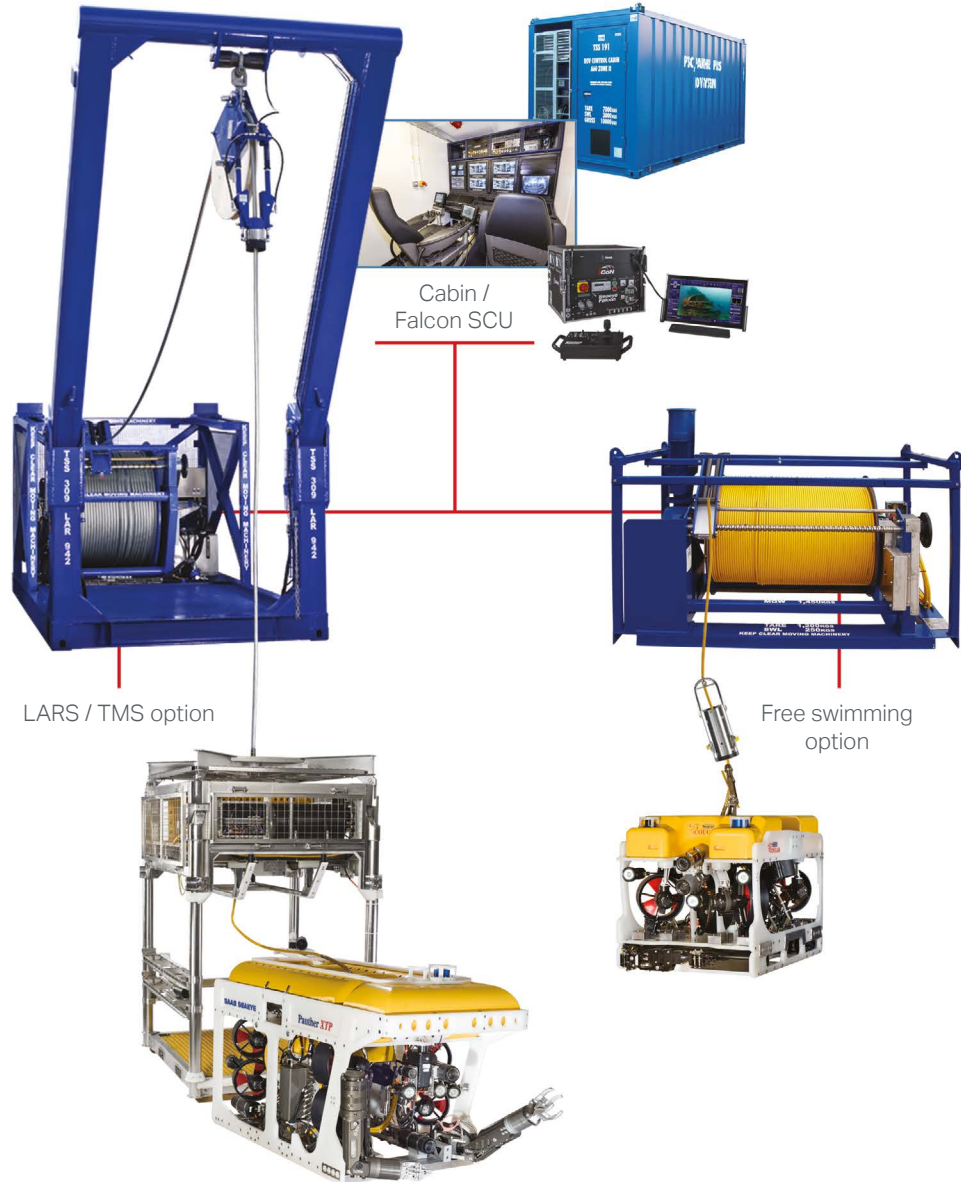
Increased automation

Advanced arm control comes from position and force feedback, repeatability and in-built intelligence. Direct end effector control can be achieved when coupled with an intuitive human input device and an inverse kinematics system.

Adding our advanced perception systems will lead to a blend of supervised and fully autonomous manipulation. These future control options will be backward compatible and available as upgrades to existing manipulators.



Launch & Recovery Systems



Leopard LARS stowed for transport



Hiab crane LARS stowed for transport

Tether Management Systems



Leopard Top Hat TMS system



TMS 8 bail arm system

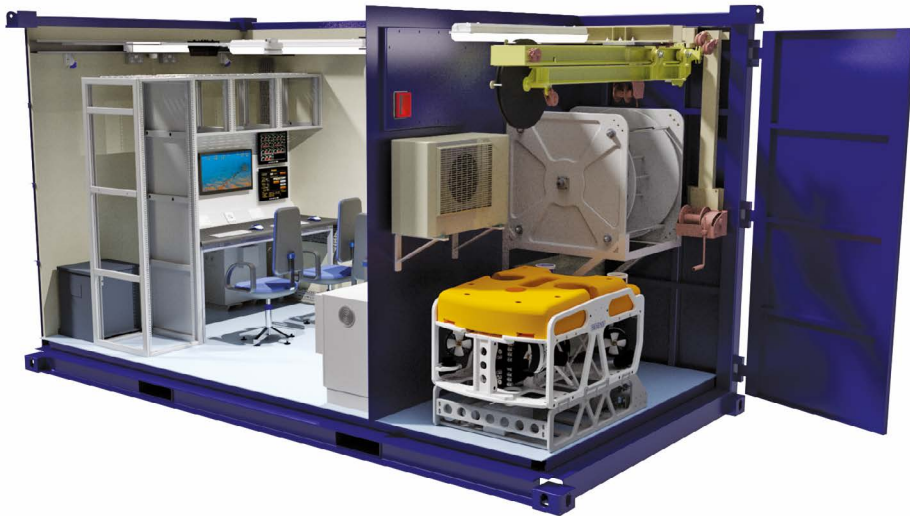
Surface Control Cabins & Workshops



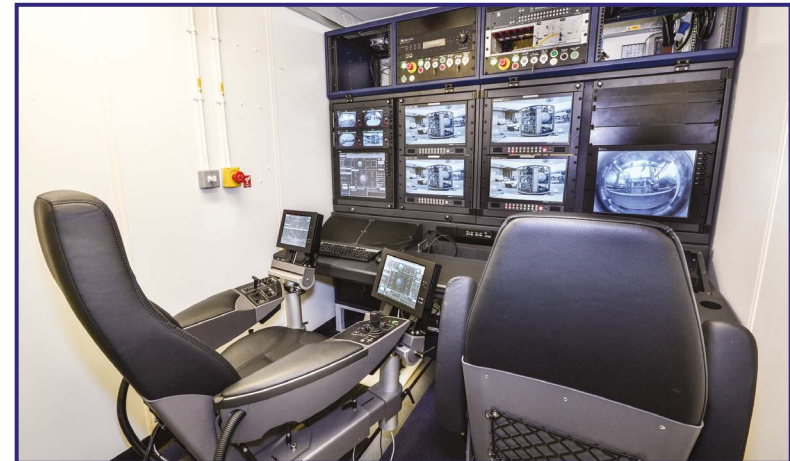
16ft ROV control cabin system



20ft split ROV control cabin and workshop



16ft split ROV control cabin and containerised LARS system



20ft ROV control cabin with console and cyber chairs

HYDRO-LEK

Subsea Tooling & Equipment

The Hydro-Lek product range comes from years of experience in subsea tooling, providing customer solutions in nuclear, leisure & tourism, marine science, oil & gas and many other sectors.

A range of manipulators, valve packs, power packs, rotary and anvil cutting options, camera booms, cylinders and hydraulic fittings are offered. We also supply complete custom tooling system packages for a wide variety of subsea tasks.



All Hydro-Lek products are simple, compact and cost effective.



SAAB SEAEYE



Saab Seaeye Ltd

20 Brunel Way, Segensworth East, Fareham, Hampshire, PO15 5SD, United Kingdom
Tel: +44 (0) 1489 898000 Fax: +44 (0) 1489 898001 e-mail: solutions@saabseaeeye.com www.saabseaeeye.com