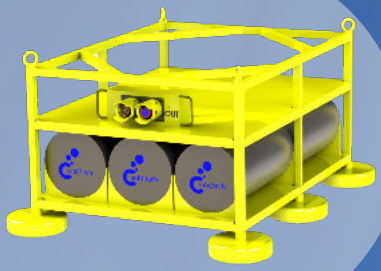
Ocean Power

Standard

Vehicle



Subsea

Li-Ion PowerPack™ - Underwater power solutions

Highly reliable, efficient and safe Li-Ion batteries
Made for harsh offshore and subsea conditions
such as offshore oil and gas, scientific and
AUV or ROV equipment

www.subCtech.com
info@subctech.com

Offshore certified

Safety tested UN 38.3 Passed Certified

ISO 9001

subCtech
Subsea Technologies

Standard Batteries

Rechargeable Li-ion batteries are amongst the most efficient batteries and SubCtech even optimized them for the use in marine and offshore technology. They provide highest capacity while being lightweight and of small volume.

Long-John
14.4V – 46/60* Ah
25.2V – 26/33* Ah
46.8V – 16/20* Ah
50.4V – 16/20* Ah
Other on request

*with optional "A" cell
UN T38.3 certificate

ø 90 mm
- Li-Ion rechargeable battery, 10 A max.
- Titanium housing ø90 mm x 512 mm (without options)
- 8,5 kg in air, 5 kg in sea water (approx.)
- Operating depths 2000 m, 3000 m, 6000 m
- Optional: ROV switch, DC/DC outputs, data interface
- NMEA-0183 or MODBUS, LED control lights, customizing

Note: length and weight increase when options such as BMS are installed.

Big-Jim
14.4V – 140/180* Ah
14.4V – 172 Ah
25.2V – 70/90* Ah
46.8V – 33/43* Ah
50.4V – 33/43* Ah

*with optional "A" cell
UN T38.3 certificate

ø 168/180 mm
- Li-Ion rechargeable battery, 10 A max., more on request
- Titanium housing -300m: ø168 mm x 350 mm (without options), 17 kg in air, 9 kg in sea water (approx.)
- deepsea: ø180 mm x 384 mm (without options), 25 kg in air, 15 kg in sea water (approx.)
- Operating depths 2000 m, 3000 m, 6000 m
- Optional: ROV switch, DC/DC outputs, data interface NMEA-0183 or MODBUS, LED control lights, customizing

Note: length and weight increase when options such as BMS are installed.

Big-Jim XL
14.4V – 280/361* Ah
14.4V - 344 Ah
25.2V – 140/181* Ah
46.8V – 70/90* Ah
50.4V – 70/90* Ah

*with optional "A" cell
UN T38.3 certificate

ø 168/180 mm
- Li-Ion rechargeable battery,10 A max., other on request
- Titanium housing - 300m: ø168 mm x 612 mm (without options), 30 kg in air, 15 kg in sea water (approx.)
- deepsea: ø180 mm x 634 mm (without options), 42 kg in air, 25 kg in sea water (approx.)
- Operating depths 2000 m, 3000 m, 6000 m
- Optional: ROV switch, DC/DC outputs, data interface NMEA-0183 or MODBUS, LED control lights, customizing

Note: length and weight increase when options such as BMS are installed.

Technology	Li-Ion rechargeable battery ● High-power, high safety, highly reliable industrial cells ● SubCtech's electronic for high voltages, capacities and currents ● UL/UN certified cells
Housing	Corrosion-free titanium ● 300 m – 6000 m operating depth ● Customizing on request
Connectors	SUBCONN® e.g. SeaBattery™ compatible ● High Power ● Data ● Others on request
Temperature	-20 … +60°C operating ● 0 … +45°C charging ● -20 … +60°C (short time) storage
Self-discharge	< 5% per year at +25°C ● Typ. < 2% per year at +4°C
Charge cycles	>300 cycles for 80% remaining capacity ● optional 3000+ cycles with special Conditioning BMS
Protection	Overcharge ● Deep discharge ● Current limit ● Overheating
Charging	Optional Standard Fully-automatic Li-Ion charger ● 100W, 300W, 750W – others on request ● Metal housing, IP65 water protected ● Input wide-range 90-264 VAC 50/60 Hz ● Just plug 'n' charge - no control elements, 3 signal LEDs ● PowerCharger™ 1kW to 10kW: see Vehicle batteries

certified by SEC ISO 9001 SEC-DE270099549-01/15

Subsea Batteries

High-Performance, high reliable and high-safety Li-Ion rechargeable batteries for the offshore subsea market. Design life up to 30 years, the electronic and Li-Ion cells are extreme reliable. Qualified according API17F.

Subsea battery 14V

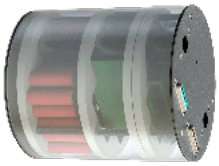
674 Wh
UN T38.3 certificate
API 17F

ø 90 mm

- Li-Ion rechargeable battery
- 7 A max. continuous current
- Titanium housing ø90 mm
- weight 9 kg
- Operating depth: 2000 m
- Optional: ROV switch, DC/DC outputs, data interface
- LED control lights, customizing

Subsea-UPS 24V

63.3 - 300 Wh
API 17F

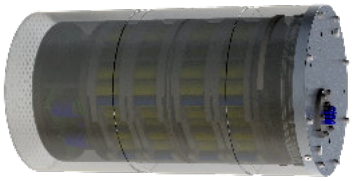


ø 184 mm

- Li-Ion rechargeable battery
- 3 - 4A input/output current,
- Automatic diagnostic test
- RS-485 MODBUS, isolated, Modicon PI-MBUS-300 / MODBUS RTU, Modicon PI-MBUS-300
- LED control lights, customizing

Subsea-UPS 400V

1 - 3.4 kWh HP
- 15kW LFP
UN T38.3 certificate
API 17F



ø 298 mm

- Li-Ion or LFP rechargeable battery
- LFP: up to 15000W 45s, 3cycles, every 4h
- Buffer time 1 hour @1kw
- OEM or SEM housing
- GISMA penetrator, other on request
- RS-485 galvanic isolated MODBUS RTU,
- LED control lights, customizing

Energy Storage System

100+ kWh
14.4 V - 400 V

Power Switch & Distribution Unit

- Protection, Switch & Fuse for high voltages (max. 600V) and high power (max. 100A) output controls
- Bi-directional switching, optional melting fuse
- MODBUS RTU, galvanic isolated interface

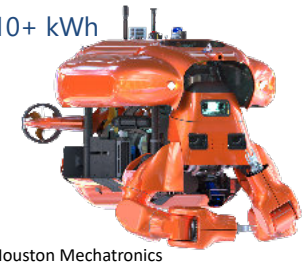
Lifetime	10 years minimum, 30 years design life
Temperature	Li-Ion: -20 ... +60°C operating ● 0 ... +45°C charging ● -20 ... +60°C (short time) storage LFP: -30 ... +60°C operating ● -40 ... +60°C (short time) storage
Self-discharge	< 5% per year at +25°C , lower subsea
Charge cycles	300 up to 3000+ cycles
Protection	Overcharge ● Deep discharge ● Current limit ● Overheating
Certification	Type approval examples: MIL-STD 810G (Shock & Vibration) ● MIL-STD 461F for EMC ● ISO 13628-6 and API17f Offshore Oil+Gas ● NATO AECTP-400 and AQAP ● DNV-GL VI-7

Vehicle Batteries

Proven and rechargeable Li-ion batteries are built in the Li-Ion PowerPack™ for AUVs and other vehicles. SmartBMS™ observes the battery + delivers data to the AUV host system.

AUV PowerPack™ 260

1 - 10+ kWh



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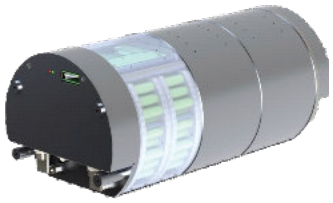
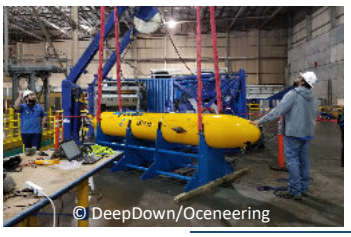


ø 260 mm

- Cost-effective solution
- Li-Ion rechargeable Battery
- 50 - 150 V – others on request
- 50 A max. current – others on request
- Pressure housings for depths up to 6000 m
- SmartBMS™ with optional logging to 32 GB SD card

AUV PowerPack™ 310

10 - 100+ kWh



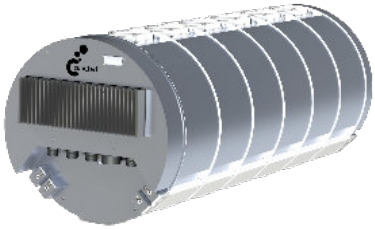
© DeepDown/Oceneering

ø 310 mm

- Li-Ion rechargeable Battery, divided into SmartPowerBlocks™ (SPB) connected via internal power and BMS bus
- Master-BMS module on the top side
- 14.4 V, 25.2 V, 46.8 V, 50.4 V up to 600 V
- 50 A max. current – others on request
- Pressure housings up to 6000 m available (titanium)
- SmartBMS™ with logging to 32 GB SD card
- Redundant design for highest safety and reliability

AUV PowerPack™ 416

7-300+ kWh



ø 416 mm

- Li-Ion rechargeable Battery, divided into SmartPowerBlocks™ (SPB) connected via internal power and BMS bus
- Master-BMS module on the top side
- 14.4 V, 25.2 V, 46.8 V, 50.4 V up to 600 V
- 50 A max. current – others on request
- Pressure housings up to 6000 m available (titanium)
- Optional embedded Li-Ion PowerCharger™
- Redundant design for highest safety and reliability

Technology	Reliable high-capacity Li-Ion rechargeable batteries with highest energy density, high safety by proven technology ● Collaboration with battery cell manufacturer ● UL & UN certified cells
BMS	Highly sophisticated Battery Management System SmartBMS™ ● Redundant safety design ● Full monitoring and control over all battery parameters ● Configurable functions ● Fail-safe
Data Interface	User friendly interface to host system with RS-485 or RS-232 ● Fully isolated ● NMEA-0183 (ASCII) or MODBUS RTU data format for easy integration into your system ● CAN bus on request
Handling	Easy handling by single blocks SmartPowerBlocks™ (SPB) of max. 30 kg and max. 60V each for personal maintenance ● Mechanical support for installation ● Standard industrial connectors
Vehicle Safety	Optional redundant battery concept guarantees 50% remaining capacity per battery in case of any fatal failure for emergency procedures ● Mechanical & electrical protections
Certification	Type approval examples: MIL-STD 810G (Shock & Vibration) ● MIL-STD 461F for EMC ● ISO 13628-6 and API17f Offshore Oil+Gas ● NATO AECTP-400 and AQAP ● DNV-GL VI-7 ● UN T38.3 on request

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