



VORTEX
SUBSEA SOLUTIONS

PRODUCT PRESENTATION



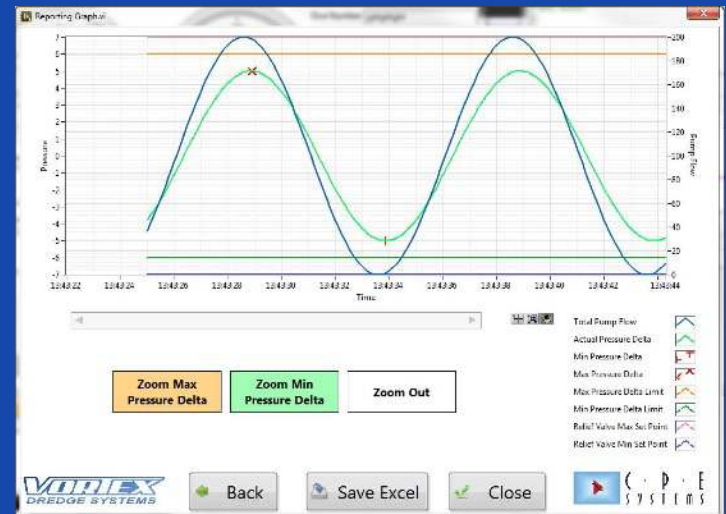
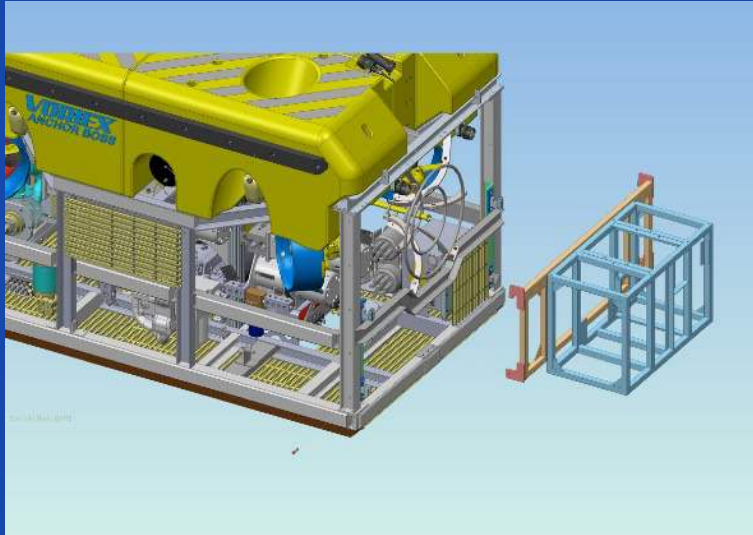
All information correct as April 2019 and subject to changes without notification.

www.vortexdredge.com

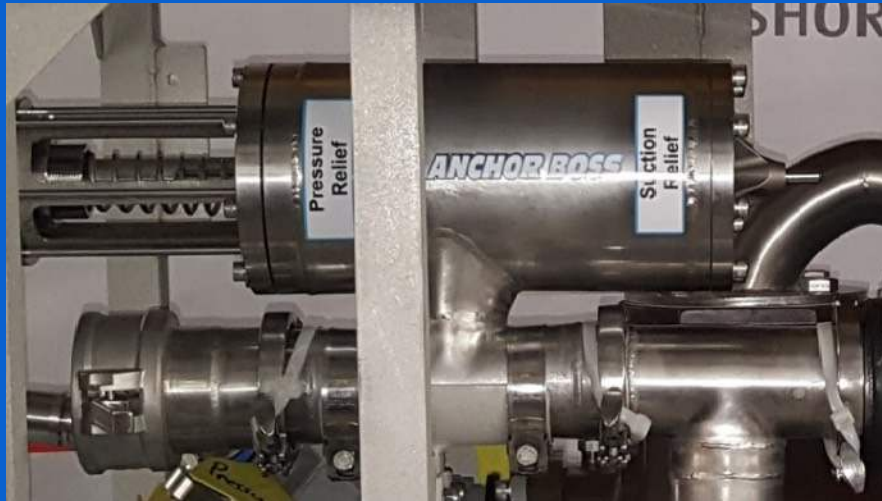
PATENTED



Anchor Boss Suction anchor pump.



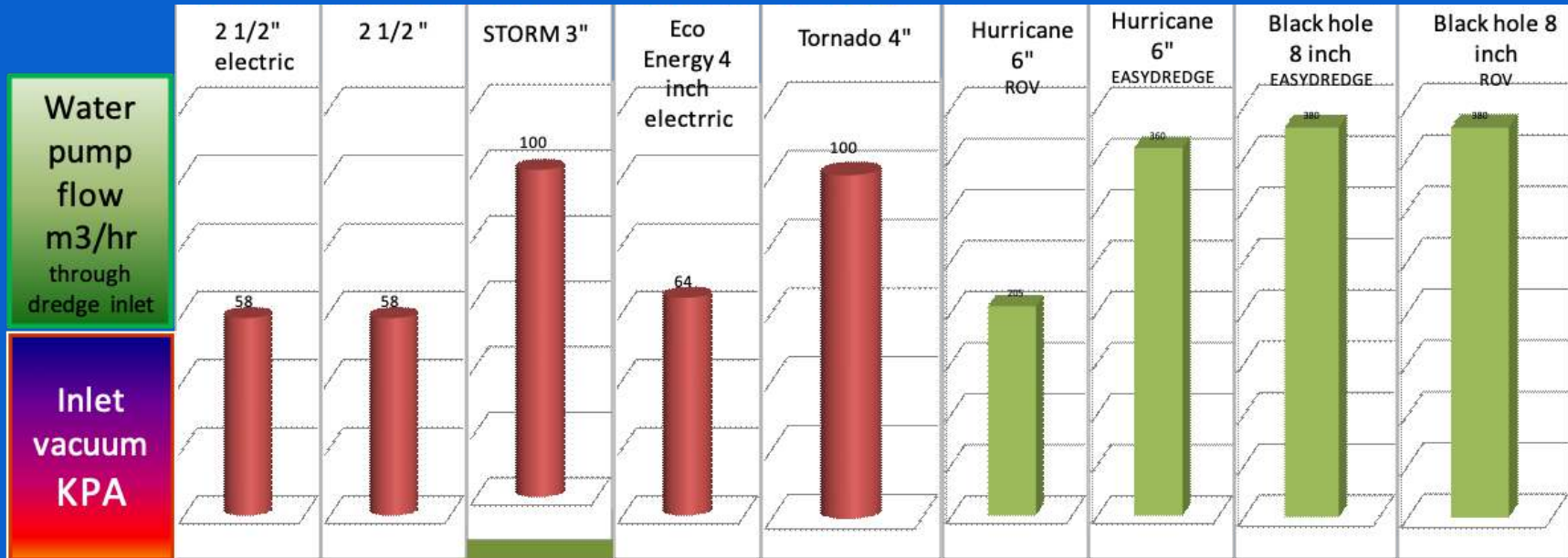
Anchor Boss Suction anchor pump.



Choose a dredge



Vortex Performance



Peak inlet Vacuum @ (Min)	58 KPa	58 KPa	100 KPa	64 KPa	100 KPa	60 Kpa	80kpa plus	42kpa plus	42kpa plus
Water pump Flow			14m3/hr	55 m3/hr	62 m3/hr	205 m3/hr	360 m3/hr	380 m3/hr	370 m3/hr
Hydraulic Flow (Min)	6.4 amp running	15 litres / min	20 to 40 lpm	3.7amp running	80 lpm	85 lpm	100 lpm	180 lpm	120 lpm
Hydraulic Pressure	620 VAC minimum	140 bar	200 bar	3kva	206 bar	206 bar	206 bar	206 bar	206 bar
Removal Rates @ (Min) flow									
ton per hour	6.8 t/hr	6.8 t/hr	25 t/hr	50 t/hr plus	60 t/hr plus	60 to 80 t/hr	120 t/hr plus	146 t/hr plus	130 t/hr plus
cubic metres per hour	4.5 m3/hr	4.5 m3/hr	10.5 m3/hr	22 m3/hr plus	27 m3/hr plus	30 m3/hr	50 m3/r plus	62 m3/r plus	59 m3/r plus
Solids by volume	6%	6%	10%	10% plus	15% plus	10 to 12%	TBA	10 to 15%	10 to 15%
Horizontal discharge	2 mtr (est)	2 mtr (est)	6 mtr max	6 mtr max	6 mtr max	6 mtr max	6 mtr max	6 mtr max	6 mtr max
	2 1/2" electric	2 1/2"	STORM 3"	Eco Energy	Tornado 4"	Standard 6"	Hurricane 6"	Black hole 8 inch	Black hole 8 inch

Note: Figures stated as of March 2020 and subject to change without notice.

2 1/2 to 3 inch Electric Dredge

- **Power supply requirement:**
- 620 to 690 VAC, 60Hz
- 4 to 6.5 amp running
- Depth limitations: None.



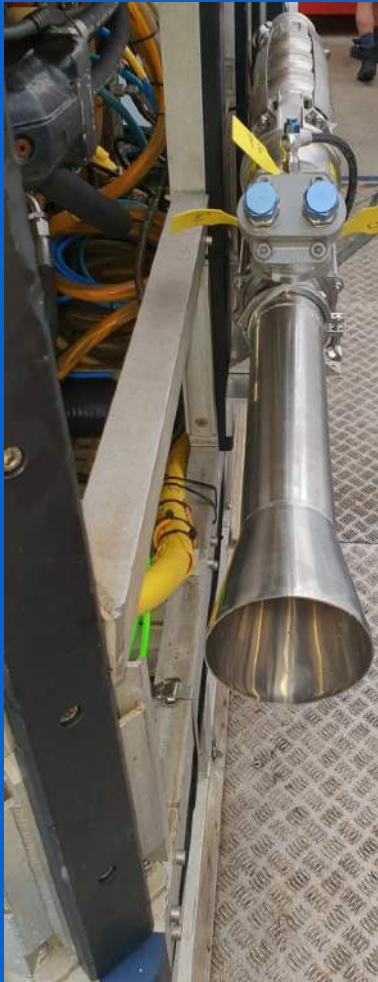
4 inch Eco-Energy Electric Dredge

Built as a plug in replacement for the Aux HPU in SAAB Leopard ROV.
Uses the same electrical connections as the Leopard HPU for plug and play swap.
The current draw on this motor is 15kW 20HP 2 Pole 3000V 60Hz is 3.7 amps.

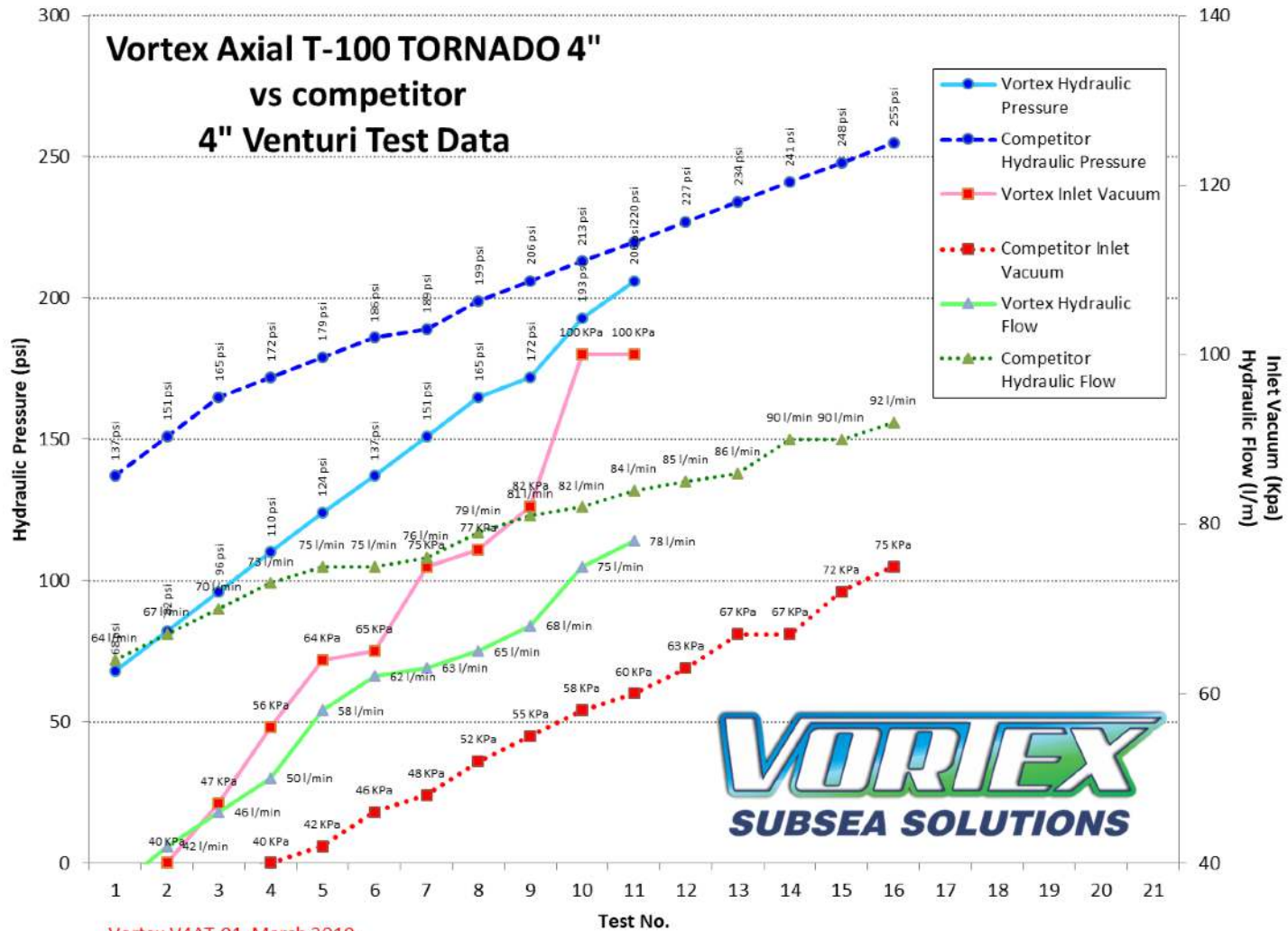


4-inch Dredge T100 TORNADO

World's most powerful suction at 100kpa



Vortex: The most powerful Venturi dredge on the market at 100kpa



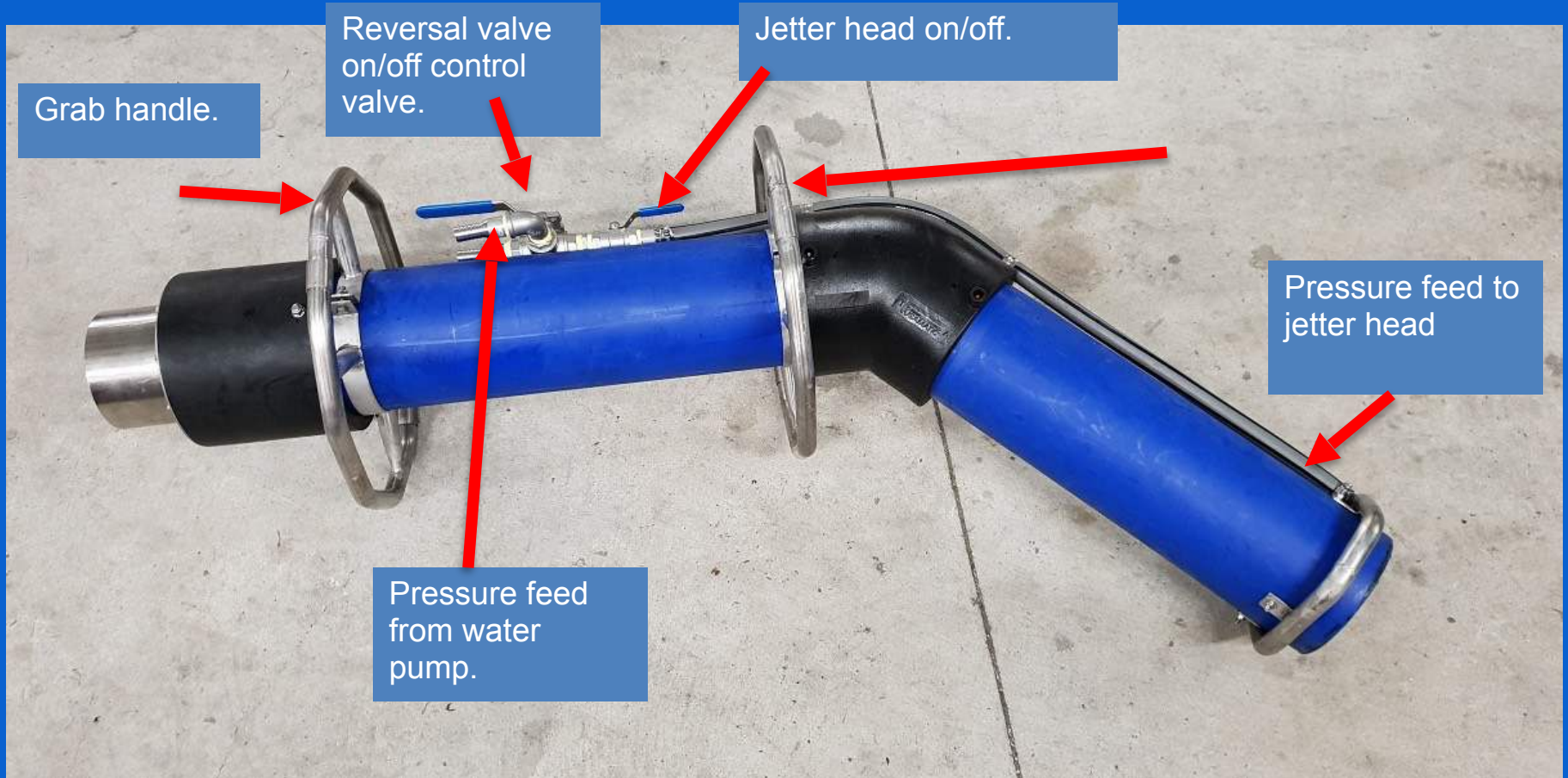
Vortex V4AT-01. March 2019.



6 inch Dredge HURRICANE



Diver's dredge handle



Very lightweight suction nozzles. In water weights:
8 inch = 10kg, 6 inch = 6kg, 4 inch = 4kg. Less diver fatigue. Easy.

Diver operated reversal valve and jetter. Diver can control suction power / dredge on - off. Safe and Easy.

Rock and sand bag relocation.



Bolt a bar across the front if dredging or leave open to suck onto large rocks or sand bags to lift away for relocation.

- 4 inch capable of 70kg of suction / rock lift.
- 6 inch capable of 146kg of suction / rock lift.
- 8 inch capable of 107 of suction / rock lift.

Connect tugger line to suction nozzle to lift rock or sand bag. Diver simply functions water operated reversal valve to drop the rock. Less diver fatigue. Designed so diver stands upright, arms outstretched and relaxed. Safer, EASY. More than just a dredge. Vortex EASYDREDGE is a multi purpose tool. Proven, powerful performance.

EASYDREDGE diver and ROV dredge skid



Frame is deployed with 30mtr of suction hose and reversal valve control / jetter hose coiled, connected and ready to go. No need for lowering two loads to seabed. One lift. Easy.

No need for diver to connect anything on seabed. Huge bottom time savings. Easy.

Diver simply un clips hose retaining loop, picks up the suction handle, walks over to work site pulling suction and reversal valve / jetter hoses off as they need it and straight to work. Easy.

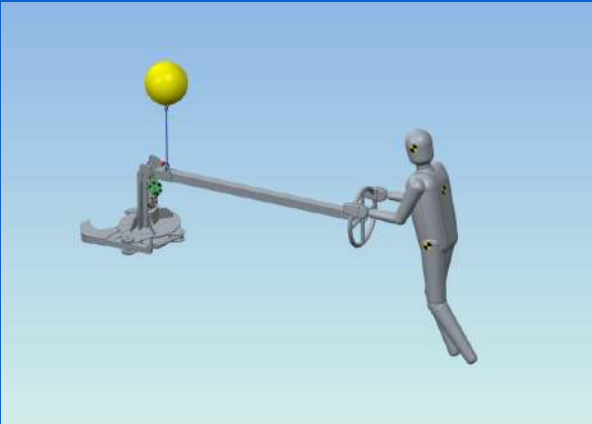
ROV mounted camera winch



Camera winch designed to be mounted inside or on ROV frame to deploy camera vertically inside hole for visual inspection. Heavy duty and medium duty winches. 4 way and 8 way slip rings. FO slip rings optional



Multi Cutter



Multi Cutter

Sample Cuts:



1. 3 inch pennant wire. 120 seconds to cut
2. 5000kg lifting sling. 1 second to cut
3. 40 x 40 x 3 aluminum. 2 seconds to cut
4. 1 1/4 inch crane wire. 30 seconds to cut
5. 1 inch, 2 wire 5000psi hydraulic hose. 7 seconds to cut
6. 2 inch scaffold tube. 5 seconds to cut
7. 7 inch drill casing 10mm thick. 3 minutes to cut 150mm deep.
8. 6 inch Mooring line. 4 seconds to cut
9. 3 inch SK75 Dyneema. 2 seconds to cut
10. 3 inch Mooring line. 2 seconds to cut
11. 4 inch dredge hose. 2 seconds to cut
12. 5 inch mooring chain 4 minutes to cut

Multi Cutter

Assembly Options:



Cutter comes assembled as full grab cutter.



Remove components as desired to operate as basic half blade cutter.



Full grab cutter with grab arm mounts and mechanism installed. Weight = 30 kg in air (66lb)



Basic half blade cutter with grab arm mounts and mechanism removed. Weight = 24 kg in air (52lb)

Operation:



ROV flies into product – in this case 160mm diameter mooring line, closes clamp onto rope and feeds rope into blade with clamp arm

160 mm diameter Mooring master mooring line.

Blade Options:



1. 400mm diameter metal cutting disc.



2. 400mm multi purpose serrated, tungsten edge.



3. 400mm diameter custom made fiber ROPE cutting blade.



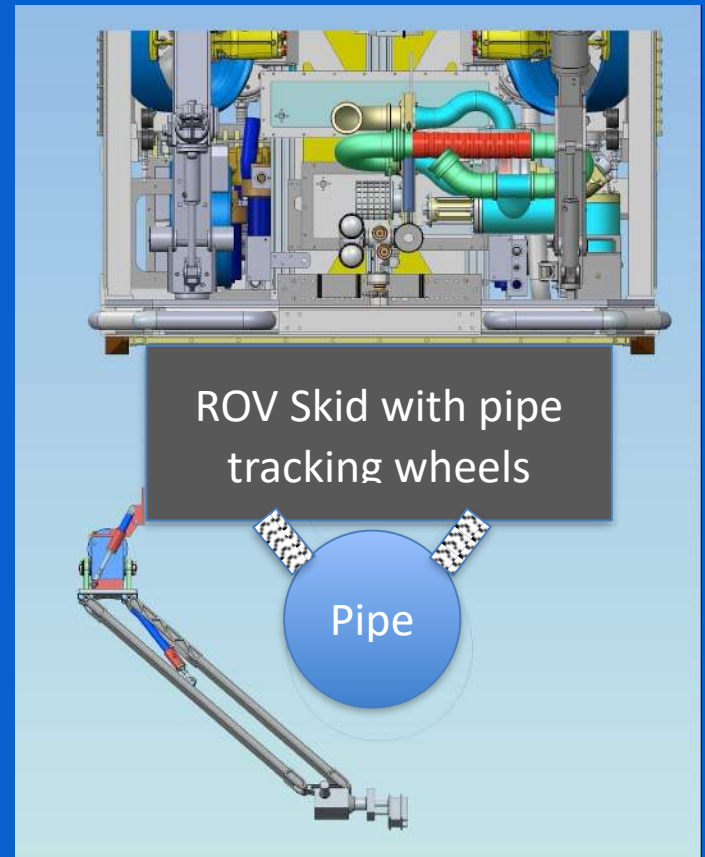
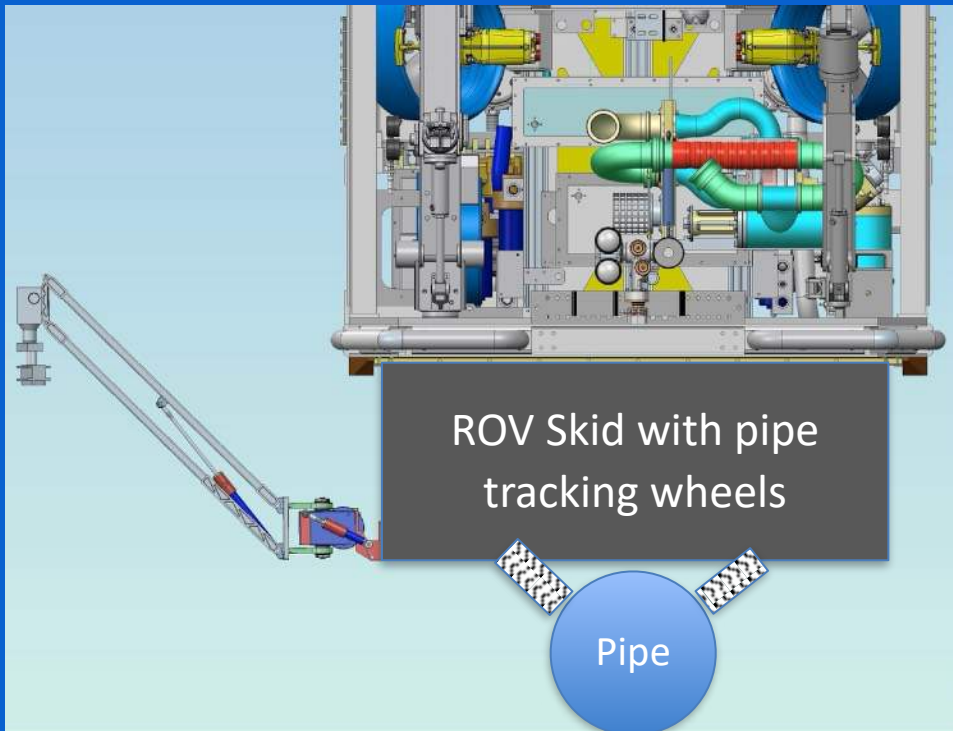
Dyneema / Soft Line Cutter



Survey camera boom arms



Arm shown here in full 180 degree down position when second stage "knuckle" is functioned allowing exclusive access to underneath asset or fee span.



Oil and gas sample tool.

For WROV and diver use. HIGH pressure sample collected.



Oil and gas sample tool.



For small electric ROV and WROV.
Low pressure sample collected.



Oil and gas sample tool.



**For small electric ROV and WROV.
Low pressure sample collected.**

Seabed sample grab. For heavy sea deployments.



Marine growth sampler.



Oil absorption tool.

Oil / water separator.



Hydrate removal brush.

Rotary brush with water jets.



Bi directional hydraulic water pump



Marine Rotary Hoe.

Drill cutting removal.



Hydrate removal / sea water heating.

A very basic test to look into a constant flow sea water heater.

Initial testing suggests a doubling of water flow is possible with larger ROV.

Power consumption the equivalent of 80 to 100lpm (21 to 26 gpm) at 200 bar (3000 psi) hydraulic input from ROV tooling supply.

4 lpm (1gpm) water flow.

Tank temperature was 5 to 6 degree Celsius (42 F).

Temperature of water flowing from 4mm diameter nozzle at 17psi when submerged in water is:

1/2" from nozzle = 36 to 39 deg C (96 to 102 F)

1" from nozzle = 31 deg C (87 F)

1 1/2" from nozzle = 23 deg C (73 F)



Hydrate removal / sea water heating.

Hydrate ice 'melting' tool simulation test.

4 lpm water flow.

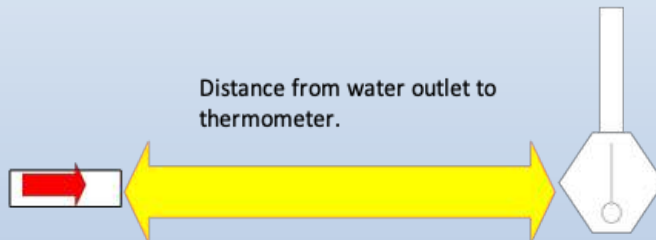
5 to 6 degree Celsius (42 F) ambient tank temp.

5300ltr (1320 gallon) tank filled with fresh water and salt ice.

4mm pipe nozzle water outlet for heated water.

17 psi water pressure.

1 July 2015



Distance from water outlet to thermometer **IN** the water.

0.5 inch results = 36 to 39 degree Celsius. (96 to 102 F)

1 inch results = 31 degree Celsius. (87 F)

1 1/2 inch results = 23 degree Celsius. (73 F)

Distance from water outlet to thermometer **OUT OF** the water

0.5 inch results = 48 degree Celsius. (118 F)

1 inch results = 48 degree Celsius. (118 F)

1 1/2 inch results = 48 degree Celsius. (118 F)

