



BELUGA

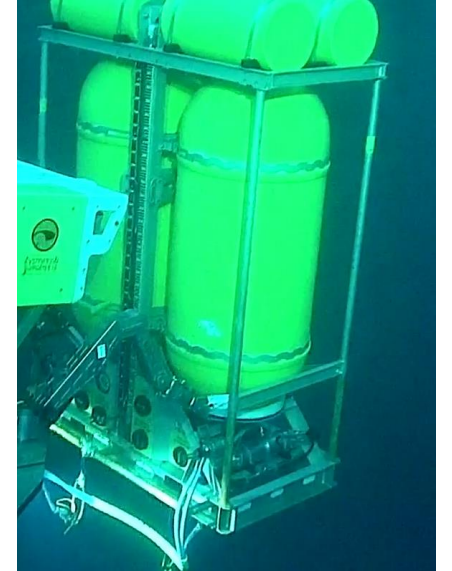
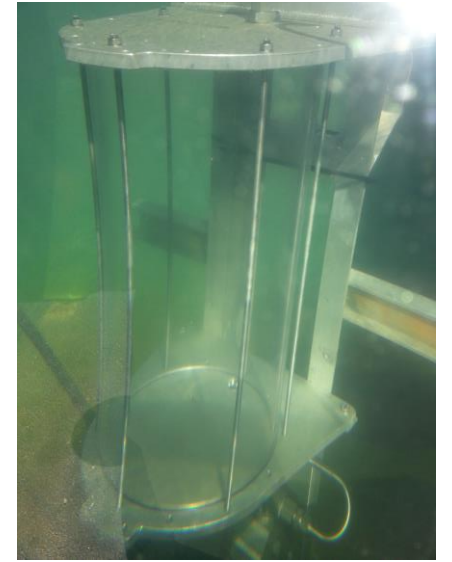
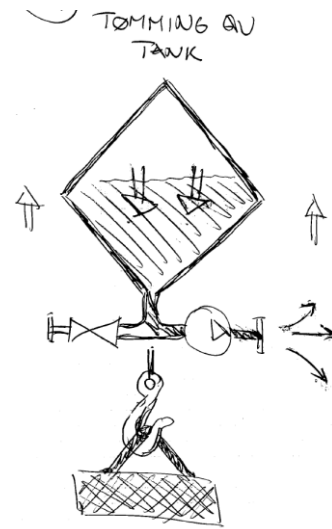
SUBSEA

Beluga Subsea Lifting System

VBS

The when and why

Our Variable Buoyancy System idea was born late 2012 in order to simplify subsea lifting





Why, what's so special?

- Unique thus simple method; remove water from tanks
- Accept that a generated void actually creates uplift
- No pressurized gas used
- Enable variable lifting subsea through the water column





The Technology

- Archimedes Principles
- Special developed pump solution
- Based on the fact that water is always on the lowest point
- Cope with and enjoy underpressure

Archimede's Principle states that *"a body immersed in a fluid experiences an upthrust equal to the weight of the fluid displaced"*

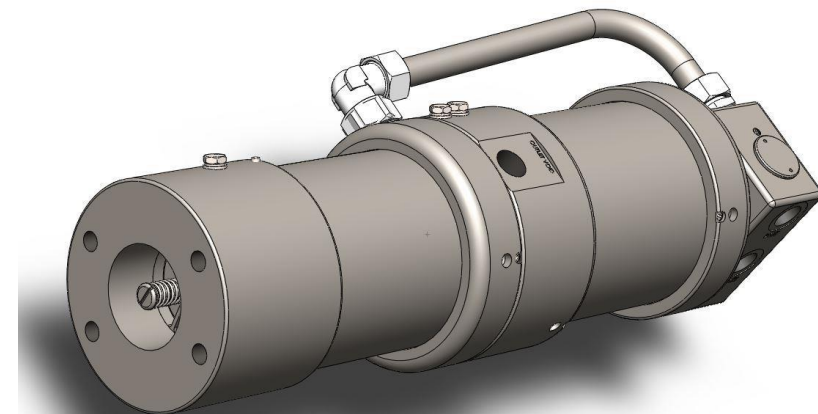


The Benefits

- No waiting on weather for subsea lift as soon as VBS is in water
- Low cost, less rigging, limited deck space required, easy control
- Unlimited reuse subsea
- No compressed gas / nor dangerous chemicals / can be driven with water-glycol or mineral oil
- The tanks applied can be reused at numerous times before maintenance is required
- Very high precision
- Easy to use where crane boom cannot access or at depths where airbags provide severely reduced control
- Can be submerged without change in buoyancy for weeks and months

Challenges

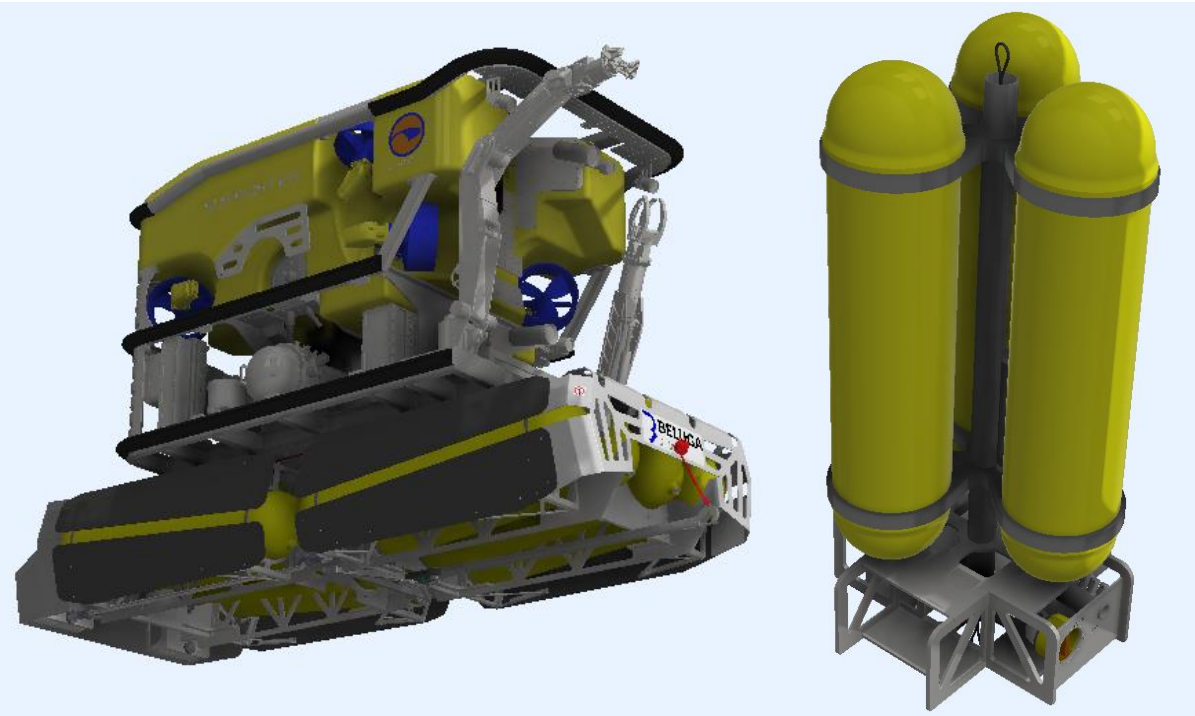
- Life expectancy of pumps - SOLVED
- Cope with underpressure vs. ambient pressure - SOLVED
- Customers understanding of the concept & market – ONGOING CHALLENGE





Specifications

- 1.2t, 2.5t, 4.2t units
- 450 MSW (current products)
- Clumtweight / DMA available



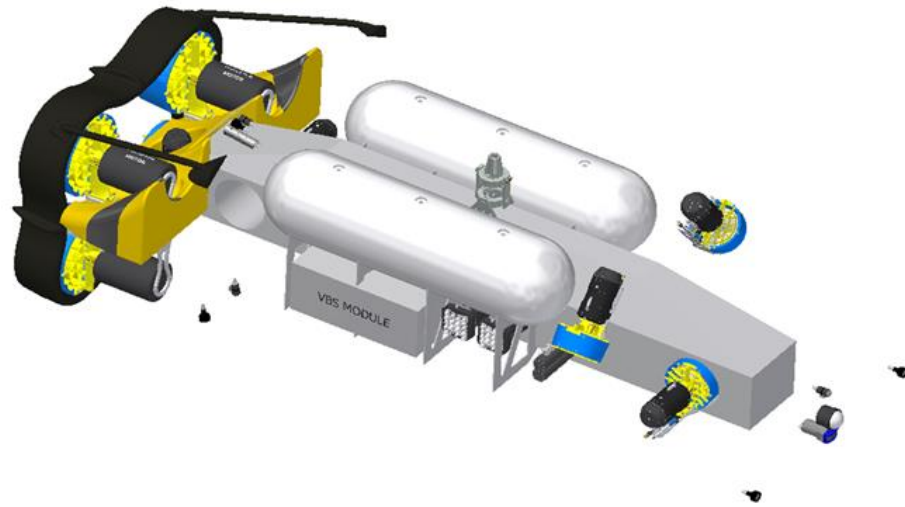
Under development

- Skid for ROV (or used as VBS)
- Handyman
- Electrical pumps
- VBS integrated in ROV/UID/AUV



Use; The larger VBS

- Move heavy equipment subsea
- Installation and removal of items subsea
- Increase efficiency during subsea operations
- Gentle landing
- Access to areas where crane can't reach



Use; The smaller VBS

- Keep ROV neutral and stabile
- Reduce or avoid thruster wash
- Lift medium weights
- Reduce wear & tear on manipulators
- Enable parallell operations & increase efficiency
- Vary payload as per demand during operations

VBS Markets

- Most remote operated subsea operations
- Relocate and transport items subsea, independant of crane
- Mineral mining
- Electrical production
- Adding weight (dredging..)
- Move explosives
- Store energy (others IP)



**That's it.
Any questions?**

www.belugasubsea.no

<https://www.linkedin.com/company/beluga-subsea-as/>

