OCEANOS JSC

DESIGN ENGINEERING

OCEANOS JSC was founded in 2003 as an independent private company specializing in subsea engineering and providing complete solutions in underwater technology.

We specialize in:

- design engineering;
- subsea manned/unmanned robotics (ROVs, AUVs, gliders, ADS);
- training facilities for divers and ROV/ADS crews;
- modular systems for support vessels;
- client on-site and remote support, including maintenance and repair of equipment.
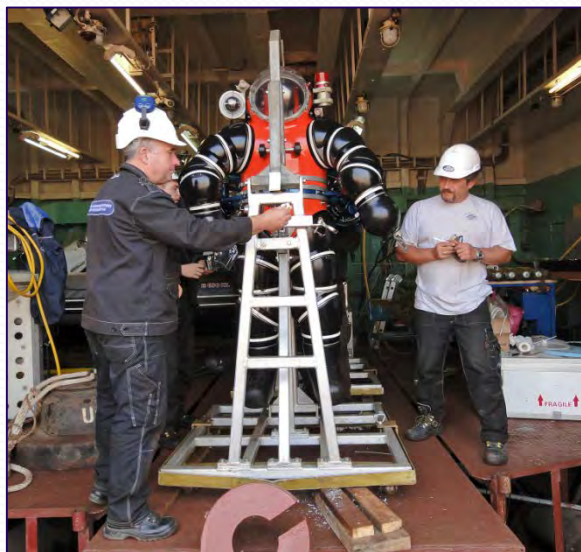
QUALITY

OCEANOS has dedicated itself to a comprehensive product assurance program. Only top quality technical solutions ensure the best financial results for our clients as well as total project safety.

OCEANOS is certified under:

- ISO 9001:2011 (since 2006);

- All-Union Standard GOST RV15.002–2012 (voluntary certification system "Oboroncertifica" since 2007);

- Russian Maritime Register of Shipping (since 2006);

- Russian River Register of Shipping (since 2007).

OCEANOS has been an International Marine Contractors Association (IMCA) member since 2010.

OCEANOS **only uses licensed CAD software**. It is properly and constantly updated to keep our clients on the edge of technology.

Oceanos has been working in tight cooperation with Dassault SolidWorks Development Department since 2009.

In 2014 Oceanos also acquired licenses from Siemens PLM Software in order to provide the whole working cycle of design, from a concept to the finished product, with full control at every stage.

Sergey Voloshin, Senior Engineer:
"Customization at every level of a project is the main competitive advantage of all OCEANOS engineering solutions. We control the whole cycle of project execution – starting from an idea to production through precise design. We also provide operational and technical support."

Our design facilities meet stringent quality requirements and are built to accomplish the most technologically difficult projects:

➢ 8 designer workstations running licensed SolidWorks CAD program modules;

➢ 10 Solid Edge CAD licenses and 12 Teamcenter licenses on a PLM-platform from Siemens PLM Software;

➢ 1 designer workstation running licensed COSMOS CAD program module;

➢ SolidWorks Enterprise Product Data Management (EPDM) for integrated design process;

➢ COSMOSWorks module for simulation analysis and calculations .
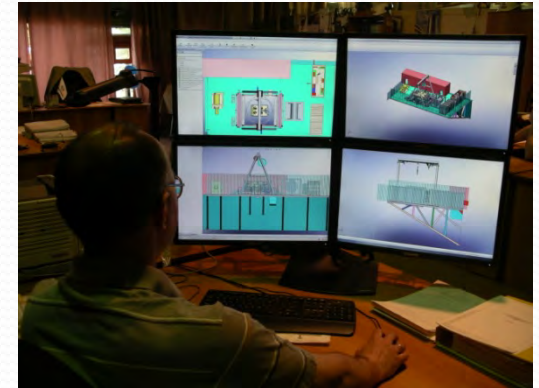
OCEANOS
ENGINEERING SERVICES

Fast and Flexible Design Creation
(3D Solid Modeling)

to begin your concept designs immediately, without tedious preplanning. We can work directly with your design geometry, and make changes instantly. Synchronous technology also gives us the ability to maintain control with organized feature trees where needed.
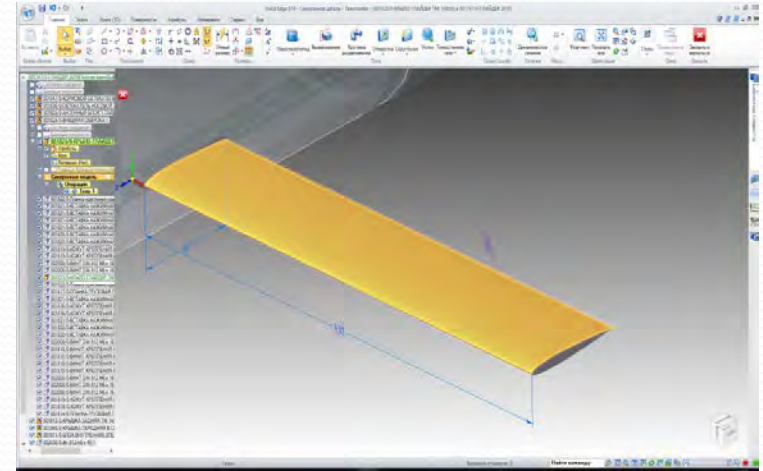
Quick Response to Late-stage Design Changes

to make quick and easy changes to any model, without worrying about feature failures, rebuild issues or time-consuming rework. When a late stage design change stands between you and a deadline, we can easily make requested changes, even to history-based 3D CAD models.
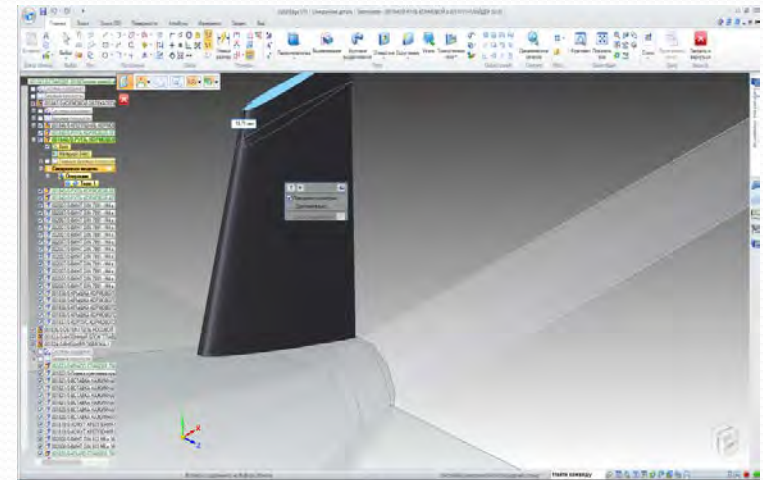
Simultaneous Editing of Multiple Parts in an Assembly

to edit multiple parts in an assembly without time-consuming history-based edits or the need to create links between parts.
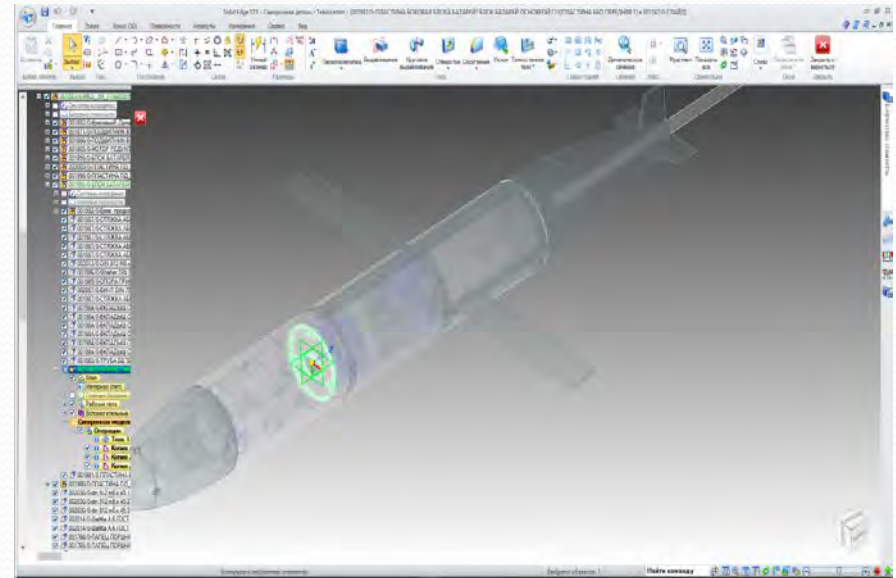
Editing of Imported 3D CAD Data

to import and edit a file from another 3D CAD system. We can easily collaborate with suppliers and partners, and treat multi-CAD data just like native files.

Improved Design Re-use from Other 3D CAD Models

to transfer design detail from one project to another and treat files in other CAD formats just like they were native Solid Edge files.
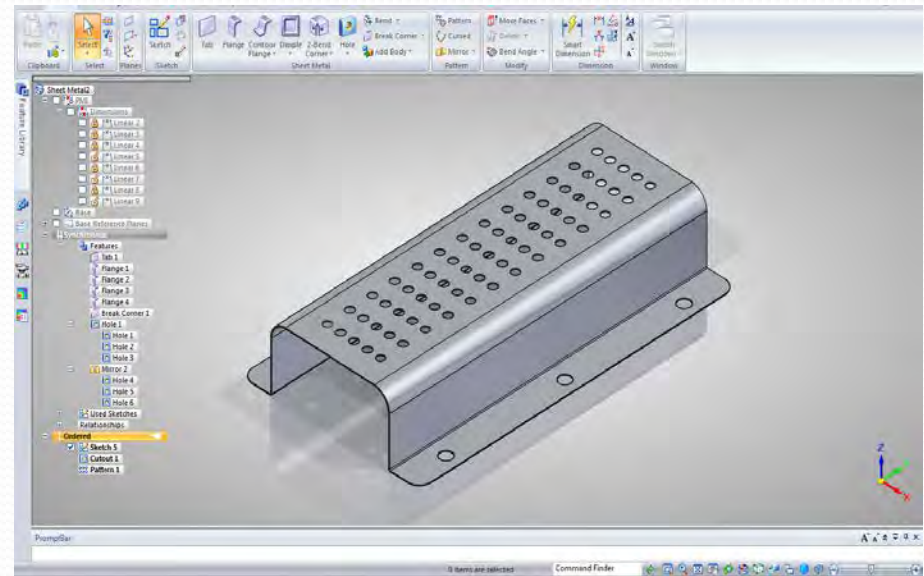
Superior Sheet Metal Design

to create a CAM-ready flat pattern DXF file directly from the sheet metal model, without the need to create a drawing first. It is our core capability with support for the entire design-through-fabrication process. We can develop models faster, make changes in real-time, edit supplier data, and take designs to production with flat patterns and automatic drawings. Solid Edge delivers the most productive sheet metal CAD package available.

Weldments

to create designs that have extrusions and easily generate cut lists and bills of materials to streamline design and manufacturing of welded structures, frames, and bases.

Large Assembly Design

to simplify design of large assemblies with easy-to-use tools to create, manage, and visualize large and complex designs that can contain more than 100,000 parts.
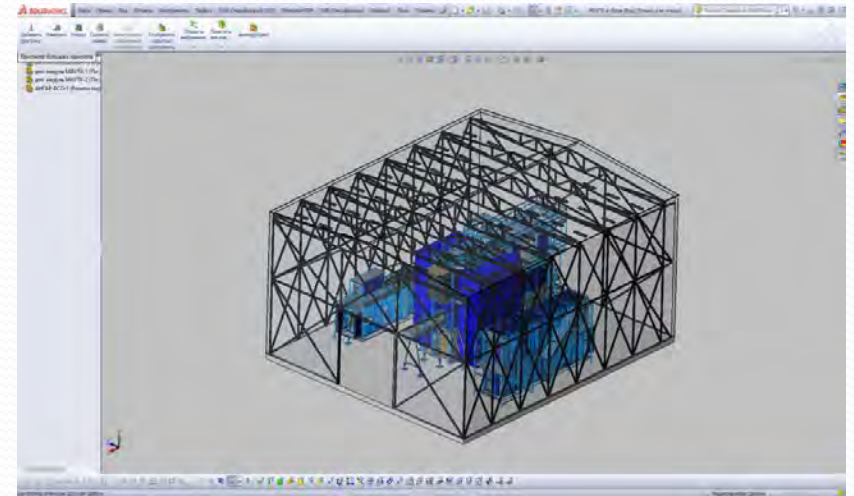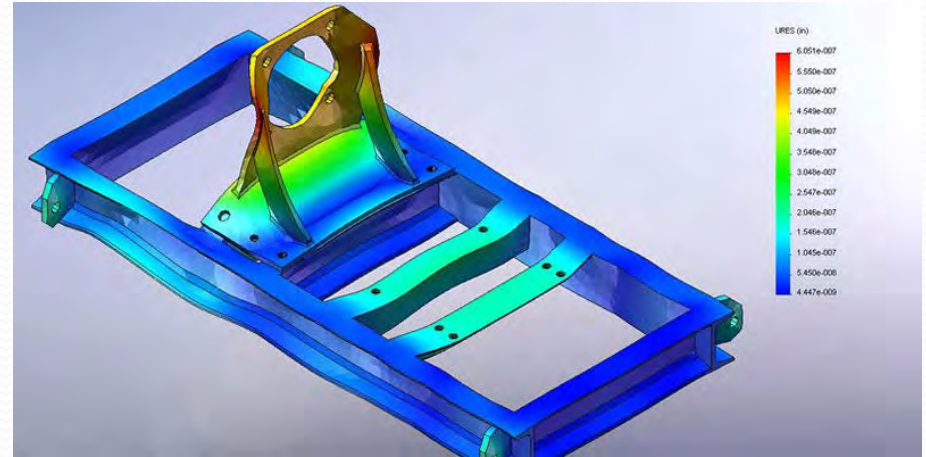

Simulation Preparation

to prepare a model for finite element analysis (FEA) regardless whether your geometry was created in Solid Edge or another 3D CAD tool.
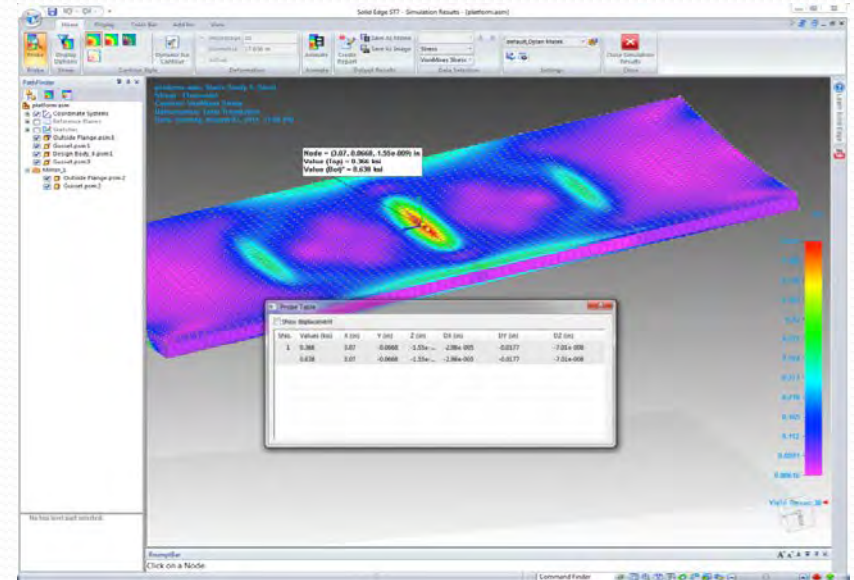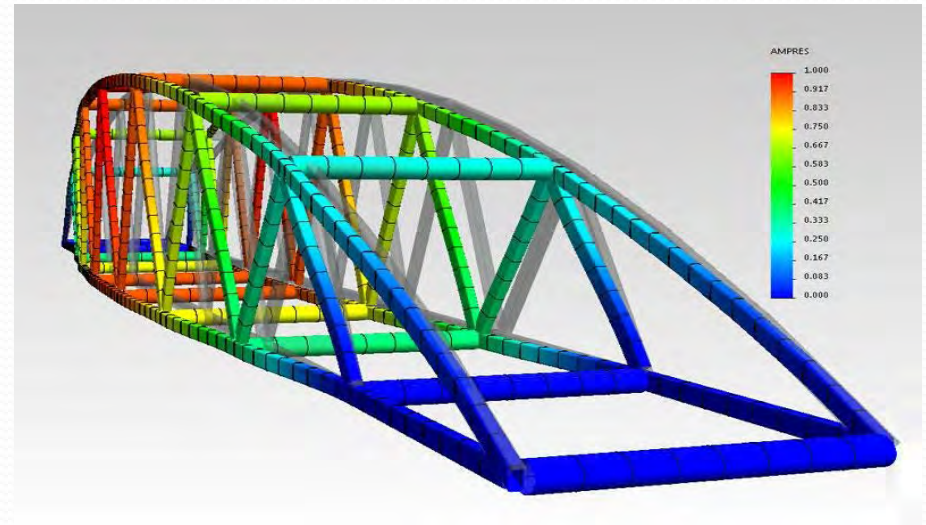
Linear Stress Analysis

to validate product performance and safety while we design by calculation of parts/ assemblies stresses and deformations due to internal and external loads.

Finite Element Analysis (FEA)

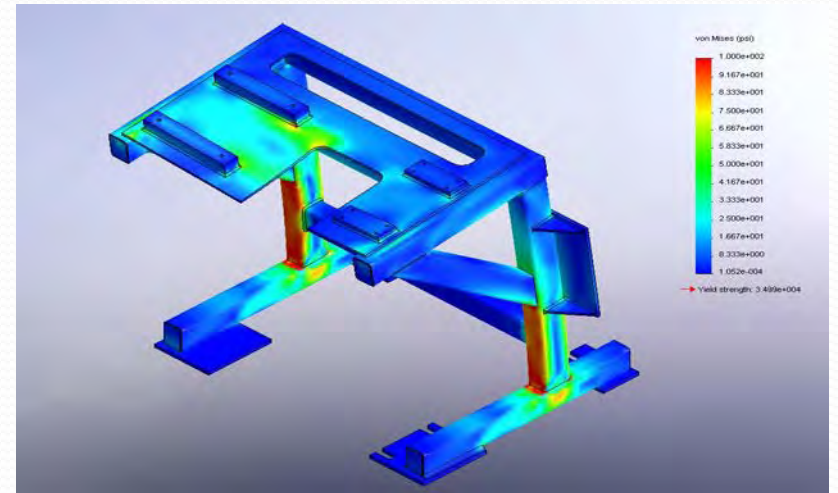to calculate stresses and displacements of parts and assemblies under internal and external loads.

Metal Fatigue

to analyze the impact of cyclic loads and the process of component failure on the structural life of your product.
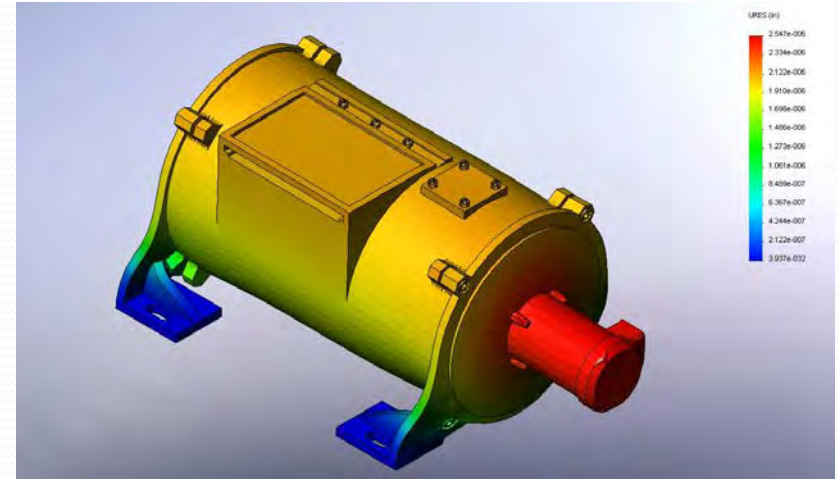
Nonlinear Analysis

to analyze geometry stresses and deformations under general loading and material conditions.
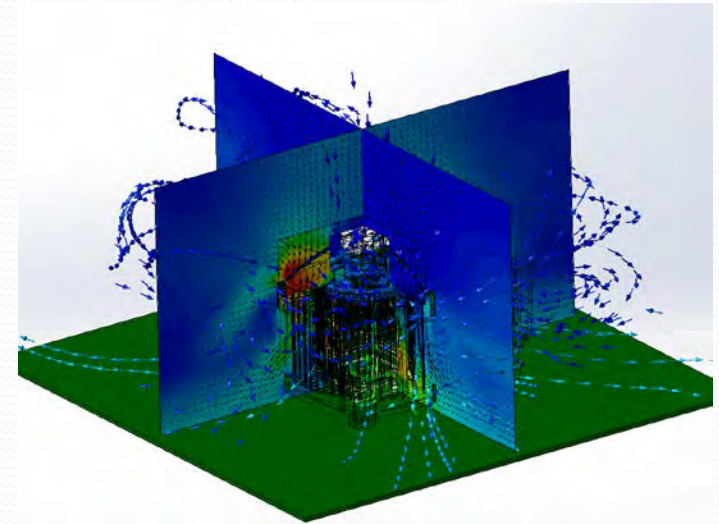
Computational Fluid Dynamics (CFD)

to calculate fluid flow and heat transfer forces and investigate the impact of a moving liquid or gas on product performance.
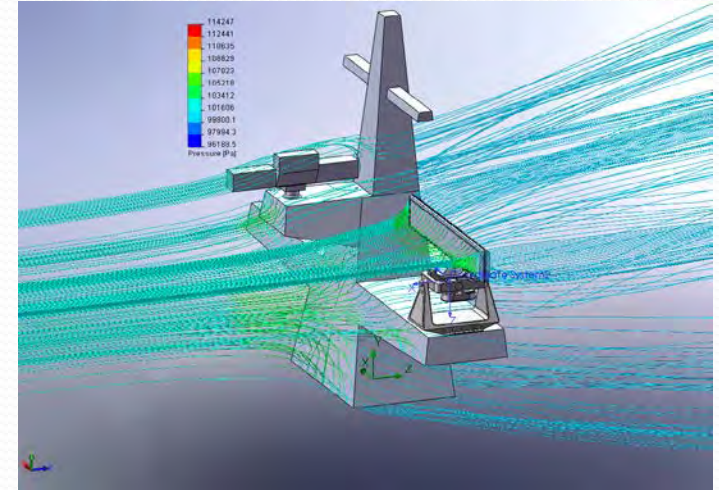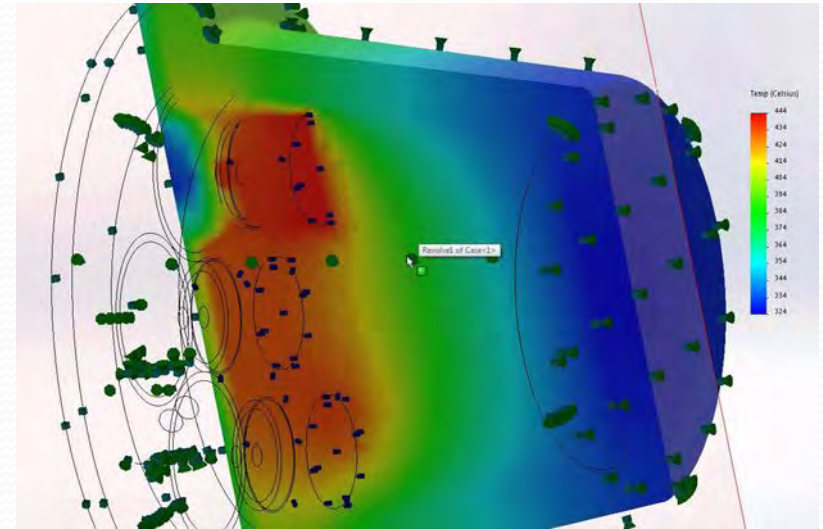

Dynamic Analysis

to determine the impact of time varying loads on structural response for the design.

Thermal Structural Analysis

to calculate temperature distribution within a solid structure using finite element analysis (FEA).

Frequency Analysis

to identify boundary conditions and ensure that natural modes of vibration are away from the environmental forcing frequencies.
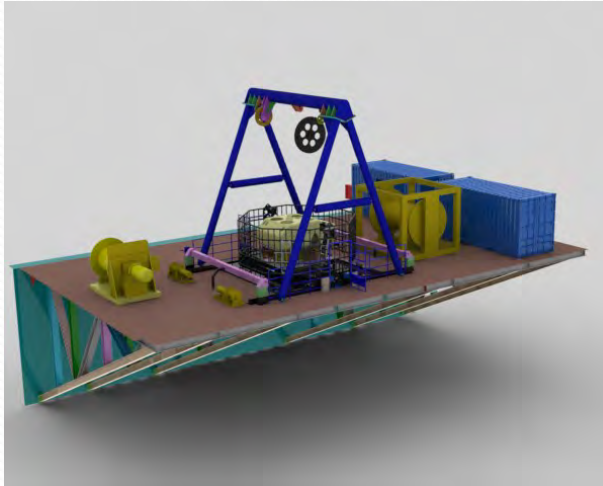
Plastic and Rubber Part Analysis

to optimize material selection for plastic and rubber components, or assemblies containing plastic or rubber parts.
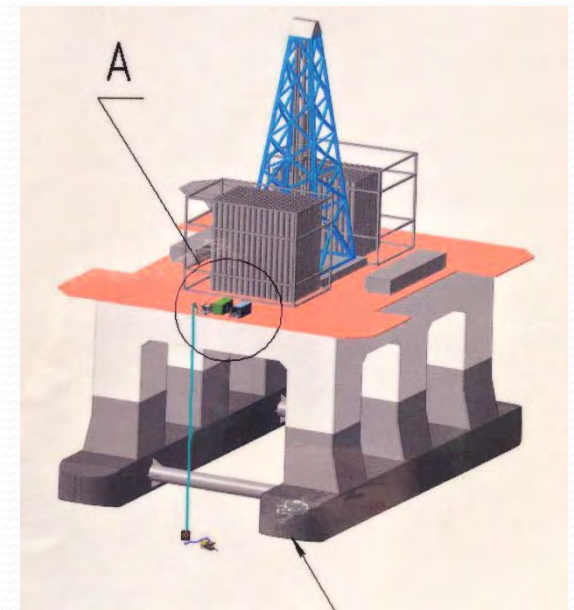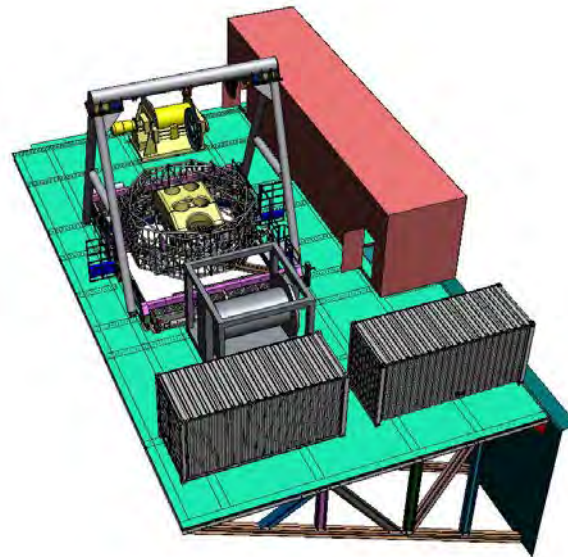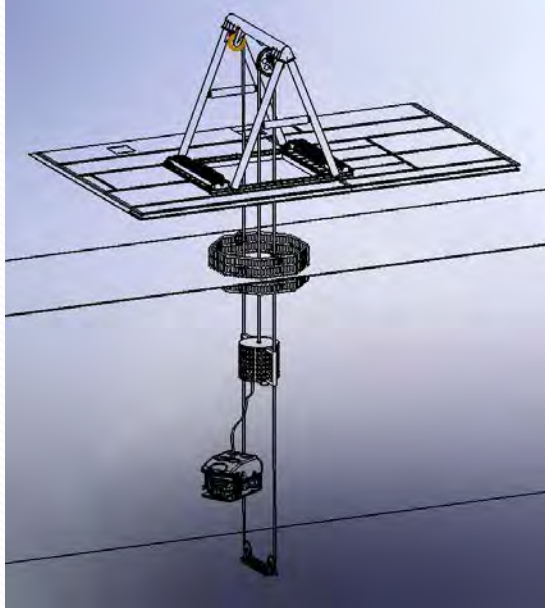
SOME OF OUR PROJECTS

WROV Launch and Recovery System

WROV LARS to be installed on a Semisubmersible Drilling Rig:

➢ Control van – 4 000 kg
➢ Workshop van – 4 000 kg
➢ LARS and winch – 14 000 kg
➢ WROV – 3 500 kg
➢ TMS with cage – 1 500 kg
    Total estimated weight: 27 000 kg

➢ Total space needed – 73,5 sq.meters

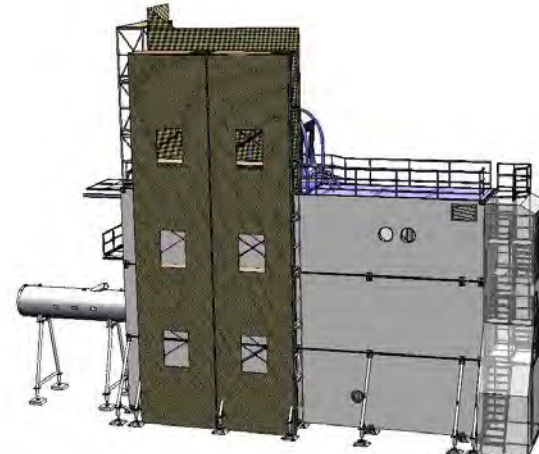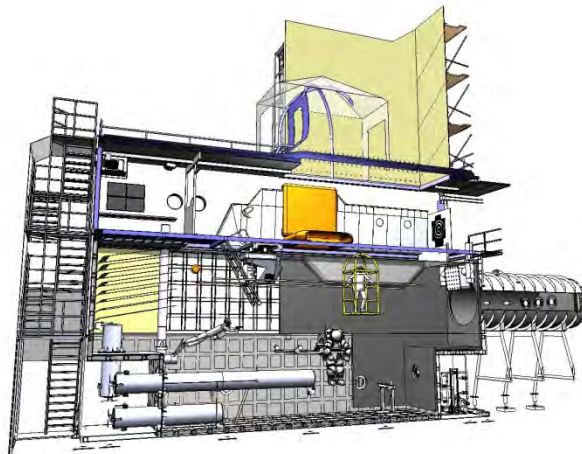# Training Facility for Divers and ROV pilots (mobile)- patented

Training Facility fits into 3 standard 20" HQ PW containers:

- dimensions of each module, meters: 6 (L) x 2.4 (W) x 2.9 (H)
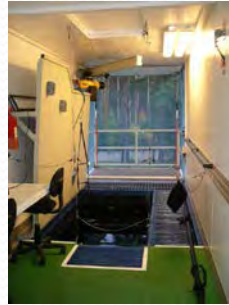- total weight – 35000 kg;

Consists of:

- pool module, meters: 5.6 (L) x 2.1 m (W) x 5.4 m (Depth);
- control system;
- underwater firing range;
- 6 support columns.

Working temperature range - from minus 20°C to plus 50°C

# Training Facility for Divers and ROV pilots (mobile)- patented

Equipped with:

- torpedo tube mock up
- surface vessel mock up
- underwater work bench for diver training
- surface firing range ;
- retractable ladder;
- underwater firing range (distance from 7 to 10 meters):
- air conditioner;
- beam with telpher (payload 250 kg).
- air conditioning and heating system;
- drain system with emergency option;
- CCTV;
- power system;
- water quality monitor system;
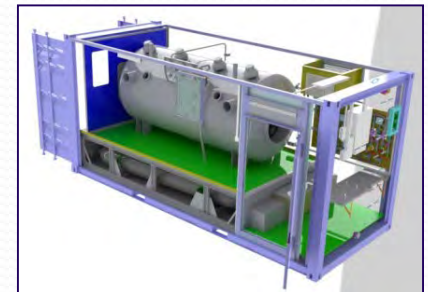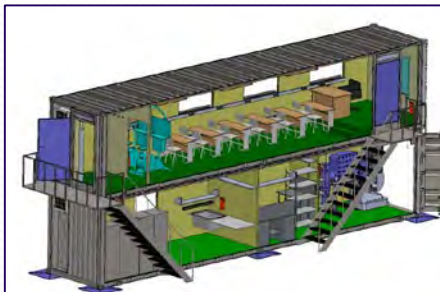
Training Facility for Divers and ROV pilots (mobile)- patented
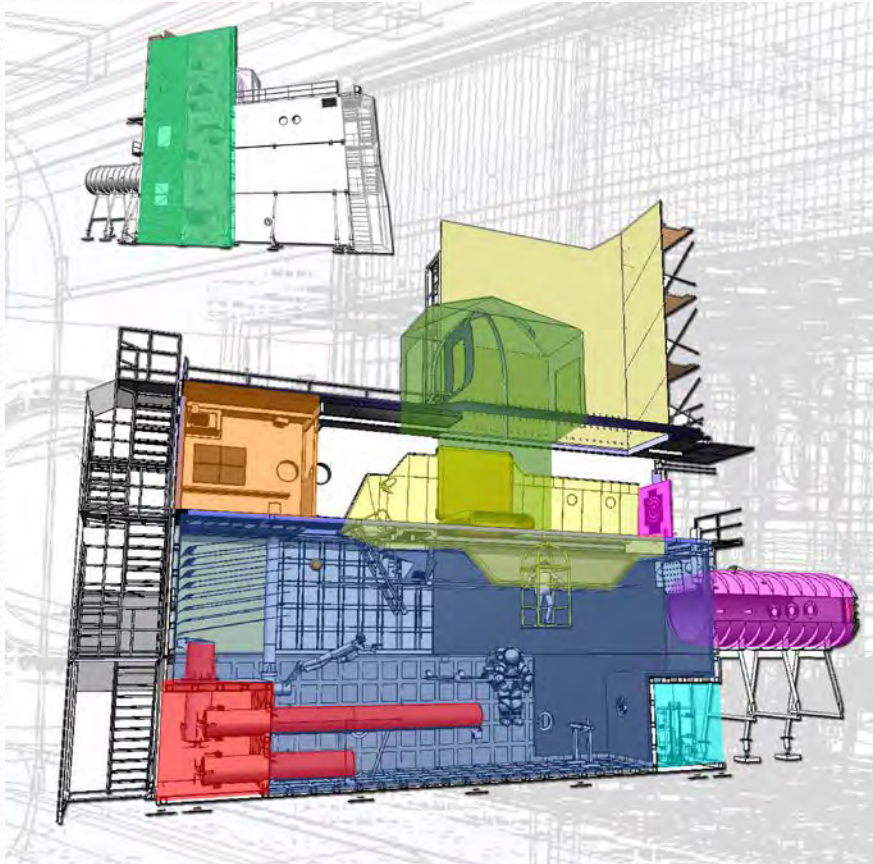
- Water tank
- Supervisor desk
- Torpedo tube simulator
- Surface vessel mock up
- Free drops landing simulator
- Climbing wall
- Water temperature and water quality monitor system
- Underwater and surface firing ranges

Multifunctional Catamaran Vessel (concept project) - patented

Multirole underwater operation support vessel with modular payload design (concept project)

Application:
- Provision of:
    - ROV, AUV, underwater glider missions.
    - Manned underwater vehicles and atmospheric diving suits missions
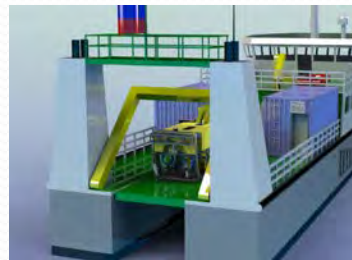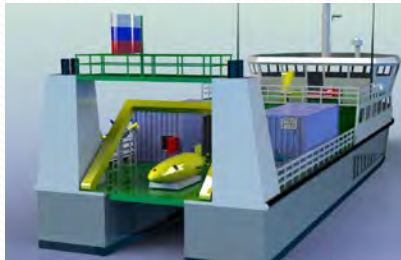- Full range of diving support operations
- All types of survey operations
- Rescue and salvage operations
- Oil spill prevention
- Scientific and hydrographic surveys
- Fire fighting
- Stand-by vessel
- Escort missions etc.

Advantages:
- Large work deck area
- High mobilization capabilities
- Low non-operation and stand-by time. Fast modification for different missions.
- Modular equipment could be dismounted from the ship and installed on a similar or different vessel in another area.

Multifunctional Catamaran Vessel (concept project) - patented
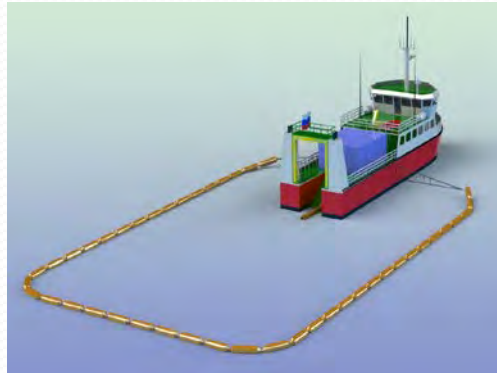
Basic specification:

Class:	Sea Special Vessel
Subclass:	KM ICE3 1 AUT1 EPP DYNPOS-2 Special Vessel Catamaran
Dimensions (vary due to displacement parameters)	length – from 35 meters width – from 8,5 meters draught – from 2,2 meters
Displacement:	from 350 tons
Endurance:	from 20 days
Speed:	from 10 knots

Autonomous Underwater Glider-type Vehicle
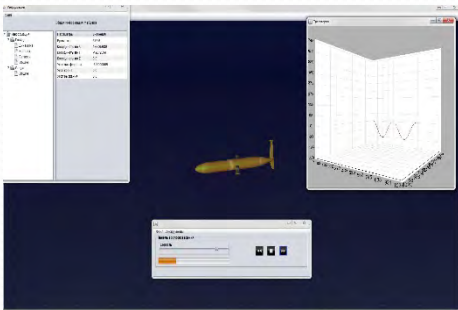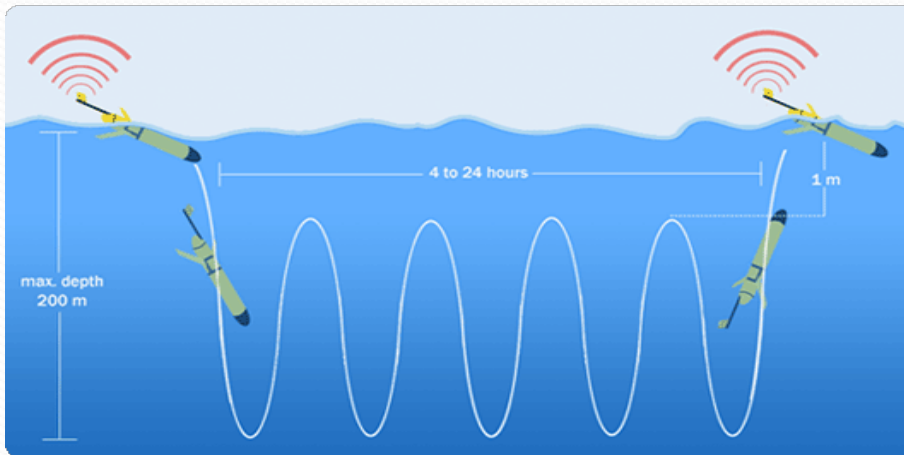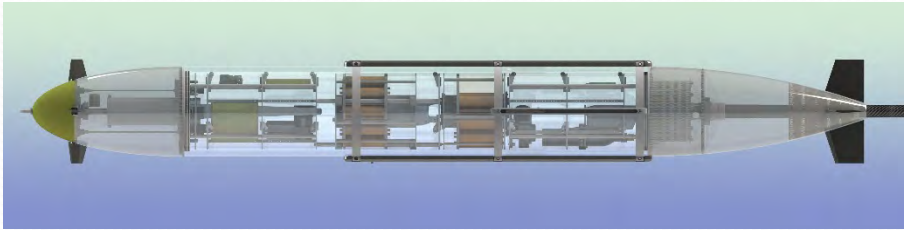
Joint project with State Marine Technical University of St. Petersburg (www.smtu.ru).

Underwater gliders – special class of autonomous unmanned vehicles with hydrodynamic principles of propulsion.

Glider uses small changes in its buoyancy in conjunction with wings to convert vertical motion to horizontal, and thereby propel itself forward with very low power consumption.

Glider follows up-and-down, sawtooth-like profile through the water, providing data on temporal and spatial scales unavailable to previous AUVs.

Applications:

- o Ocean monitoring
- o Ecology studies support, including climate prognosis
- o Biological resources control
- o Offshore survey and production, seismic surveys
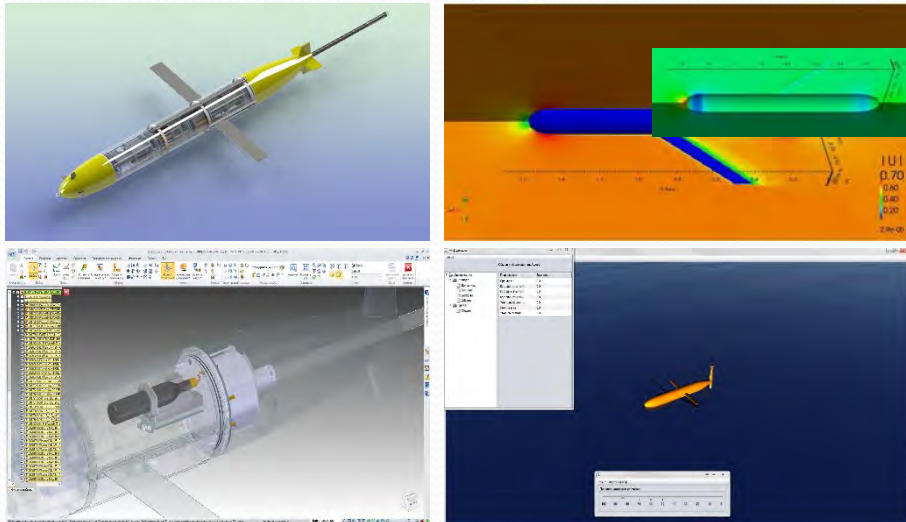- o Emergency monitoring etc.

Basic specification:

| Working depth:	1000 meters
Mission duration:	30 days
Weight on air:	137 kg
Dimensions (can be changed due to the payload)	length – 2900 mm caliber – 304 mm wingspan – 1615 mm
Payload:	14 kg

All glider electronics and software is made by Oceanos JSC.

Advantages:

- Long mission duration
- Increased range (large area coverage)
- Low noise
- Effective in swarms or groups of different origin and application
- Near-real time information acquisition and transfer
- Operational mission changes
- Low production and maintenance costs
- Safe for humans

Containerized Diving system (Typical Example)
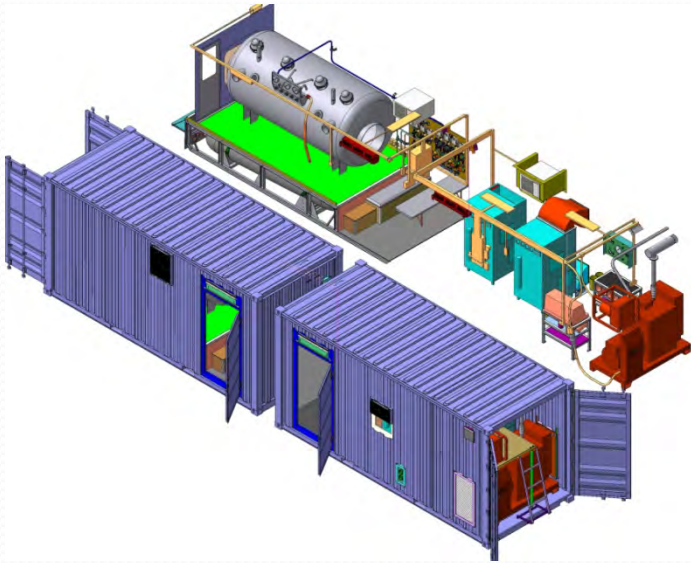
Diving System is built into 2 standard 20" HQ PW containers:

➤ Dive Control Container
   Dimensions, meters: 6.0 (L) x 2.5 (W) x 2.9 (H);
   Weight, kg: 11000

➤ Equipment Container
   Dimensions, meters: 6.0 (L) x 2.5 (W) x 2.9 (H);
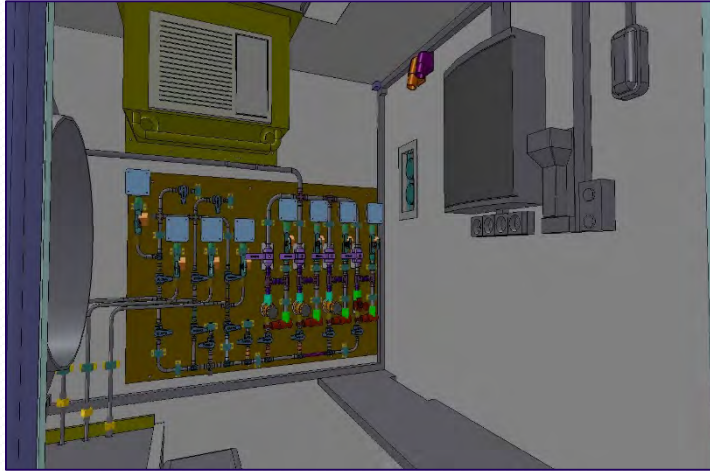   Weight, kg: 7000

Diving System includes:

➤ Chamber;
➤ Tank Storage;
➤ HP Compressors x 2 pcs;
➤ Air Panel;
➤ Gas Mixer Panel;
➤ Booster Pump HP;
➤ Diesel Generator;
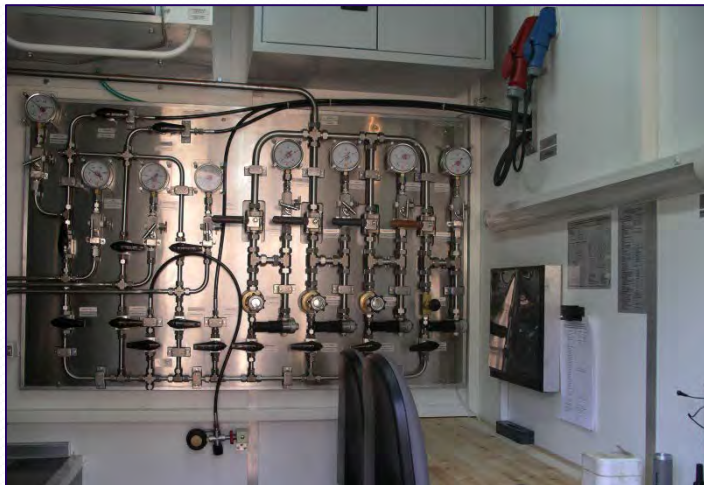➤ Air Conditioner;
➤ Vent and Heating System;
➤ CCTV

Containerized Diving system (Typical Example)
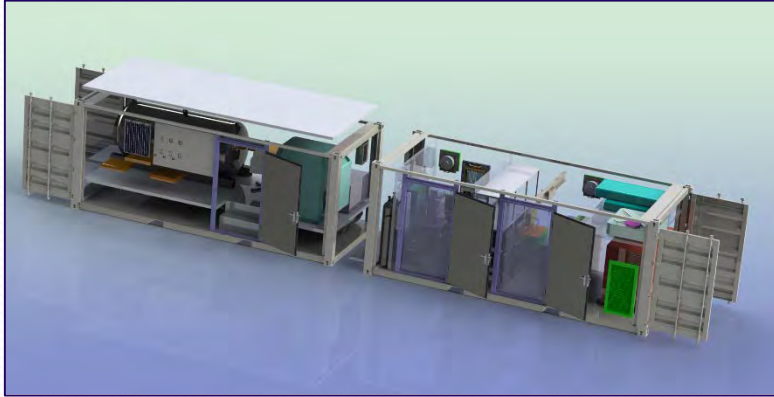

Gas Mixer Panel and Additional Air-Filter System

Air Panel

HP Air Compressor and HP O2 Booster

Containerized Diving system (Typical Example)

Diving System is built into 2 standard 20" containers:

➢ Dive Control Container
   length x width x height : 6m x 2.5m x 2.6m;
   weight 10 000 kg.

➢ Equipment Container
   length x width x height : 6m x 2.5m x 2.6m;
   weight 7000 kg.

Diving System includes:

➢ Chamber;
➢ Tank Storage;
➢ HP Compressor;
➢ Air Panel;
➢ Gas Mixer Panel;
➢ Automatic Nitrox Panel;
➢ O2 Booster Pump HP;
➢ Air Conditioner;
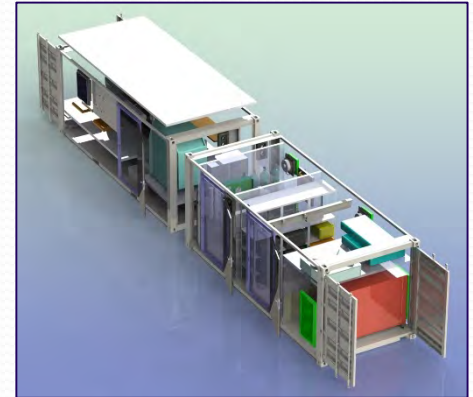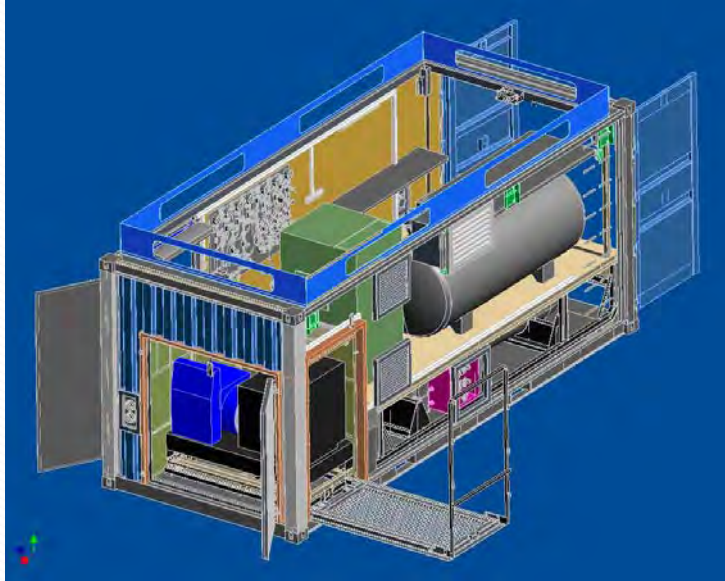➢ Vent and Heating System;
➢ CCTV

Truck Mounted Containerized Diving system

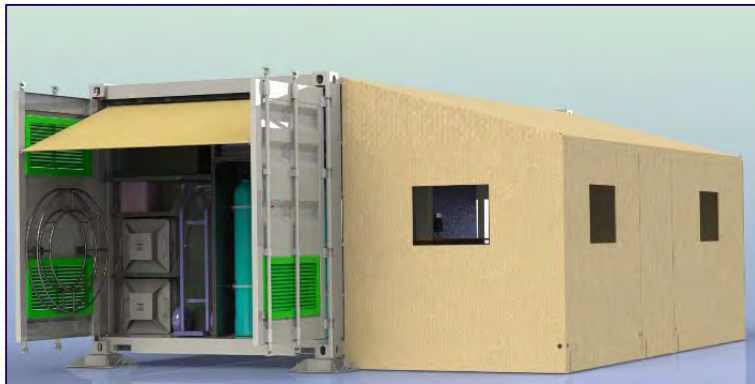

Diving System is built into 1 standard 20" container:

➢ Dive Control Container
length x width x height : 6m x 2.4 m x 2.4m (2.9m in operations mode);
weight 8000 kg.

Diving System includes:

➢ Chamber;
➢ Tank Storage;
➢ HP Compressor;
➢ Air Panel;
➢ Gas Mixer Panel;

➢ Diesel Generator;
➢ Air Conditioner;
➢ Vent and Heating System;
➢ CCTV

Mobile O2 & Mixed Gas Charging Stations for closed/ semi-closed rebreathers
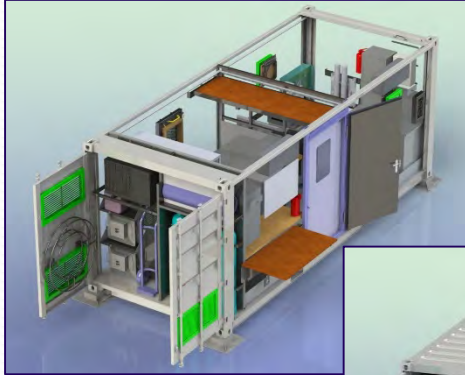
Diving System is built into 1 standard 20" container:

➢ Equipment Container
length x width x height : 6m x 2.5m x 2.6m;
weight 7000 kg.

Diving System includes:

➢ Tank Storage;
➢ HP Air Compressor;
➢ Air Panel;
➢ Gas Mixer Panel;
➢ Nitrox Mixer Panel;
➢ O2 Booster Pump HP;
➢ Air Conditioner;
➢ Vent and Heating System;

Mobile O2 & Mixed Gas Charging Stations for closed/ semi-closed rebreathers

Tank Storage

Equipment Storage

Gas Mixer Panel

Maintenance Compartment

Gas Mixer Compartment

Gas Mixer Panel Operator desk

Containerized Diving systems of various designs

Advantages:

➢ The diving systems are built into modified ISO freight containers. If you require specific needs in certification, please do to hesitate to contact us.

➢ To ensure durability and a long life expectancy we use special marine-grade paint as well as bitumastic coating for the all-steel deck of the container.

➢ To customize our designs to your needs, we can supply with your colors and logos.

➢ Steps on the door locking arms are to provide access to the roof where modified corner castings are provided for use with four-legged slings.

➢ All containers come with full certification including all MPI reports, load testing report and build certification.

➢ And, of course, we can provide a complete system including subsea tools, hydraulics, umbilicals, helmets and other diving equipment all integrated into a working, certified and audited system.

If you have any questions, suggestions or enquiries, please feel free to contact us:

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We are ready and happy to help.