

Aqua Lung / Apeks Project Descriptions –

Written by Michael Holloway March 2017

Project 1:

Project name: Passenger Short Term Air Supply System (PSTASS)

Organisation: Apeks Marine Equipment Ltd

This project in short term air supply systems at Apeks Marine Equipment Ltd involved emergency underwater breathing systems. We modified and supplied an emergency breathing system to the Survitec Group that they have had accredited by the Civil Aviation Authority to be part of their emergency buoyancy jacket for use in the offshore oil and gas industry.

Due to the important time frame of this project, it was critical that we supplied the products in a very short time frame or this could have prevented the flights of helicopters to the North Sea rigs.

As the Managing Director, I oversaw this project and made sure our underwater breathing devices, scuba diving regulators, and diving equipment were of the highest quality, as Apeks strive for high-quality products while maintaining excellence in safety. The Passenger Short Term Air Supply System (PSTASS) was developed to make sure our scuba diving equipment were very efficient during emergency buoyancy.

Project 2:

Project name: Decontamination Fluid Delivery System

Organisation: Apeks Marine Equipment Ltd

At Apeks, we worked at a team during this project in the decontamination of fluid delivery systems. It involved working with the Military/Civil Defence sector with our expert commercial and military diving equipment. It ensured the fluid delivery of our scuba equipment was subsequently decontaminated through the use of the mechanics of our expertly engineered products.

We designed and manufactured a fluid delivery system for a company in the Military/Civil Defence sector that combines with their product to allow the delivery of decontamination chemicals in a mobile device.

The complete system is worn by an operative and allows rapid deployment of these chemicals. The device uses high pressure gas to drive the materials to the contaminated area through their hand-held device. This project highlighted the efficiency of our team, with professional design, product development, and manufacturing of air flow systems for use in a different sector.

Project 3:

Project name: Gas Switch Blocks

Organisation: Apeks Marine Equipment Ltd

When the military wanted to switch the gas supply from surface supply to self-contained gas, Apeks Marine Equipment Ltd worked together with our expert commercial and military diving equipment and scuba diving regulators. This level of high-quality skill and knowledge in air supply mechanics allowed us to work on this project in gas switch blocks.

The gas switch blocks switches gas from surface supply to self-contained gas. The gas switch procedure should be executed on dives to ensure divers switch to the correct gases on decompression dives. This mean the gas switch bocks are a major safety feature on all scuba diving equipment.

The military used this piece of equipment while diving. They had problems with their current products from a different manufacturer and were looking for a good alternative. It was important for the military to maintain a high-level of safety for their professional missions in the field. Apeks designed, developed and manufactured

high-quality gas switch blocks to allow for safe switching between surface supply gas to self-contained gas. Subsequently, our product was tested by them and they placed a large order for our switch blocks.

Project 4

Project name: Black Sapphire

Organisation: Apeks Marine Equipment Ltd

The Black Sapphire regulator project involved our team of experts at Apeks to design a limited-edition anniversary regulator. It celebrates 40 years of technical excellence and precision-engineering. It is a remarkable piece of equipment that represents Apeks' expert design and manufacturing of underwater breathing apparatuses.

The Black Sapphire features a precision-machined, aircraft grade anodised metal front cover, which retains the crafted machining marks created during its production. To reach this level of quality, all members of the project worked together. As the Managing Director, I worked closely with the project manager, I followed the whole process from initial concept through to manufacturing integration. This included: 3D engineering design, prototyping, costing, DFM, new product integration, project management, sales, product training.

The Black Sapphire regulator has a tough and designer Physical Vapour Deposition (PVD) coating and features five ports as standard to allow for flexible hose routing. The regulator went on to win several awards including 3rd place product of the year in diver magazine.

Project 5:

Project name: XTX Regulator

Organisation: Apeks Marine Equipment Ltd

The XTX regulator was a project in which we worked on the development of our expert breathing apparatus. The design brief was to refresh our core role of regulators and carry out development work and testing to ensure that they conformed to a newly updated standard.

The XTX regulator from Apeks Marine Equipment Ltd is a cold water rated, fully balanced primary regulator with environmental seal, and it's a flagship of the Apeks regulator range. This project allowed us to work on expert product development to produce this regulator that allows high-performance air-flow.

Duties during this projects included engineering design, project management, DFM, new product introduction, costing and new product training.

Project 6:

Project name: BIBS-BU Submarine Escape Device

Organisation: Apeks Marine Equipment Ltd

In 2002, Apeks were tasked with the design, development and manufacturing of a fit for purpose prototype "Built in Breathing System Breathing Unit" for a submarine escape, replacing the then current breathing system. We were handed a very tight deadline for this project and had to work tirelessly for it to be finished on time.

We also were tasked with following very strict criteria that was given to us. The device had to perform to the EN250 standard and with a lower driving pressure than a regular scuba diving demand valve. Other constraints also included the outer profile and suit connections.

Our prototype breathing unit passed its initial tests and was approved to be put into production, it is now used throughout the world.

Project 7:

Project name: Military Underwater Breathing Regulator

Organisation: Apeks Marine Equipment Ltd

We designed, developed and launched to market created our best cold water performing and robust underwater breathing regulator we have ever produced. Satisfying the demands for stringent military and professional safety requirements for these life support products. This involved researching the best and most effective and feasible technologies and mechanisms to implement in to the product to improve the reliability and performance to make the product the first choice for military and professional underwater diving.

Project 8:

Project name: Divers Surface Supplied Breathing Helmet

Organisation: Apeks Marine Equipment Ltd

Designed Developed and produced a new demand valve breathing system to compliment a Divers breathing helmet to enable the product to meet all European minimum safety requirements along with the meeting the constraints of the existing mating parts. Seeing the product from concept, development through to manufacture and accreditation ready for launch to the market. This product is now one of a few divers' helmets that meet all minimum safety requirements on the market.