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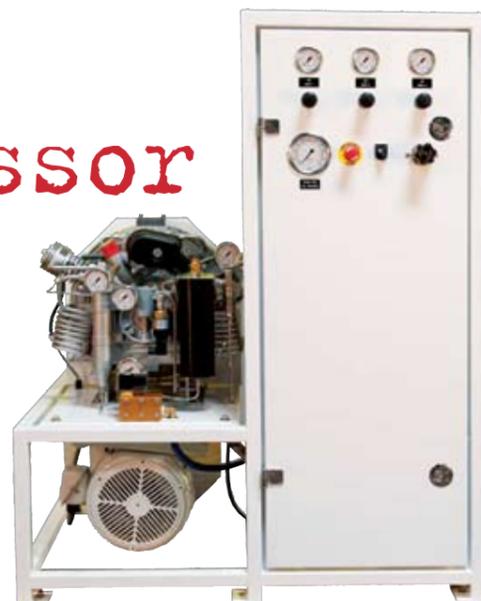
US CREW VISAS

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Diving Compressor Developments

Fort Lauderdale-based companies Nitrox Solutions, Lauderdale Diver and Moondog Diver Outfitters have formed a strategic partnership to bring water-cooled compressor technology to the yachting market with safe, reliable, cost-effective gas production systems. Juliet Benning quizzed Bob Olsen, the inventor of the water-cooled compressor, to learn more.



The NS750 Air Compressor onboard MY Cakewalk

How did you come up with the idea of a water-cooled compressor?

While working with compressors and nitrox systems, I witnessed the effects that high heat and nitrox can have on compressors. I found that compressing the nitrox with higher oxygen levels in standard air-cooled compressors often resulted in excessive carbon build-up, premature valve failure and the occasional – but serious – catastrophic compressor failure. This was particularly apparent in high ambient temperature locations and in confined spaces such as liveaboard dive vessels. I was concerned about performance, reliability and the safety issues on these compressors so explored various options to reduce the operating temperature of the compressors. After much research and design, I determined the most effective option was the use of water to cool the compressors.

How long have you been developing the idea and how has it progressed?

Manufacturers have successfully used water to cool compressors for many years, particularly in large, industrial compressor systems. However, water-cooled compressors were not available in the size or specifications required by the recreational diving industry. I worked with various concepts and designs and introduced my first water-cooled compressor to the diving industry at the 2003 Diving Equipment and Marketing Association show in Miami Beach.

How big is the water-cooled compressor?

It is slightly larger than the standard air-cooled machine due to the addition of a water pump, water lines and water distribution system.

What level of maintenance is needed?

The maintenance requirements of the water-cooled compressors are very similar to the air-cooled compressor with the exception that the water cooling extends the useful life of many of the parts including the valves and high-pressure filtration. These parts will still require maintenance but at longer intervals.

Have you supplied the system to any yachts?

We have installed many water-cooled compressors on yachts of various sizes around the world. Our systems are particularly suited to yachts in that we can supply off-the-shelf models as well as custom designed systems to meet the individual needs of our customers.

How long does training for a new system take?

We install all our own equipment, either personally or through our experienced representatives. We also include thorough on-site training for the designated crewmembers who will be responsible for the operation and maintenance of the equipment. The training is similar to that for air-cooled equipment with the added

explanation of the water-cooling systems and associated components. The amount of time is primarily dependent on the accessibility, knowledge and experience of the crew.

Is it easy for yachts to get spare parts for the dive compressor wherever they are in the world?

The compressor blocks used in our water-cooled compressor are supplied by Bauer Compressor. Spare or replacement parts for all the core components are supported and available from Bauer dealers around the world. The custom water-cooled parts are available from Nitrox Solutions and our growing network of compressor dealers. We work with our customers to establish a recommended supply of spare parts to have onboard at all times and ship to any port in the world should the crew need additional parts.

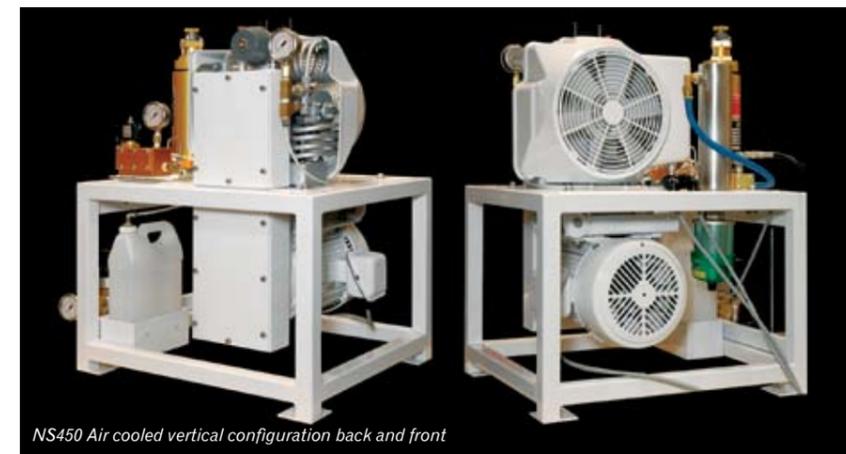
What sort of accidents that can be eliminated by water-cooling?

By cooling the compressor we keep the oil and high-pressure nitrox temperature well below the autoignition temperature of the compressor oil. This dramatically reduces the risk of a catastrophic compressor failure, which could result in serious injury to the operator.

What sort of feedback have you had from yachts where water-cooled

compressors have been installed?

We had the following testimony from Captain Raymond Heer of MY *Andiamo*: "It did not take long before I became a 'believer' in Bob's membrane systems. I spent seven years with the fleet and was involved in the installation and maintenance of many of his systems. One thing that really impressed me over the years was how the systems improved. Nitrox Technologies' machines just kept getting better and better. Three years ago I was working on a private motoryacht and as the dive programme became more intense we decided to install a Nitrox system. I was not surprised to find that Bob had now become the industry leader. I was also not surprised to see that his machines had become very sleek and well designed. A year ago I changed my high pressure compressor. I decided to replace it with a water-cooled model. Again, the engineering on this machine is superb. I do not know of any other that can compete. I am still on the same yacht and we have filled many thousands of tanks using this system. It works and keeps on working. But this is what I have come to



NS450 Air cooled vertical configuration back and front

expect from Bob. I have been using his products for 12 years. I probably will for the next 12 years."

How are you planning to develop the technology and expand the business?

I continue to work with the feedback and experience we gain from our equipment in the field to perfect the existing designs and create new ones to meet changing demands. We are exploring other opportunities to make the production and distribution of diving gases more efficient, safe and cost effective while continuing

the high level of service and support to our customers. We are always diligent in the protection of our designs and work to ensure our equipment will stand among the best. Water cooling is the most innovative and safest technology for compressor systems in the marketplace today. ■

Lauderdale Diver and Moondog Dive Outfitters are the primary dealers for Nitrox Solution's air, nitrox and water-cooled compressor systems for the yachting industry. lauderdalediver.com | Moondog Dive Outfitters +1 954 627 9823 | nitroxtech.com