

WHY WATER COOLING?

"Nitrox Bob" developed water cooled compressors specifically to address the heat issues he had seen on live aboard dive boats, resorts, dive shops and yachts over the past 11 years. These heat problems are amplified dramatically when Nitrox is introduced into the mix.

Water cooling a compressor is done for several reasons.

1. Any oil lubricated compressor that is used to compress Nitrox should be water cooled to reduce the risks of fire and explosion.
2. Any compressor located in a poorly ventilated area should be water-cooled to remove excessive heat buildup.
3. Water cooled compressors run at a much lower operating temperature which extends the life of the compressor
4. Water cooling improves the efficiency and extends the life of low and high pressure filtration systems.
5. Water cooled compressors can be installed in areas that may be unsuitable for an air cooled compressor.
6. Water cooled compressors can be packaged in smaller, self contained, custom cabinets utilizing less space and lower ventilation requirements.

The water cooled compressor utilizes the ship's chilled water system to cool the compressors indirectly through a flat plate heat exchanger and a closed loop cooling system. This isolates the compressor cooling system from the ships cooling system insuring that any compressor problems cannot affect the ship's cooling system. The flat plate heat exchanger is the "firewall" that isolates the central AC from the compressor(s). The flat plate system adds additional components and cost to the system, but you gain confidence that a high pressure air leak cannot affect the ships cooling system.

The isolated system concept provides the ship's Engineer or Dive Officer with the confidence that the dive compressor will run reliably and efficiently without impacting the other aspects of the ship's operation.

A recent installation of a water cooled compressor on a private yacht was done because a heat problem. The compressor was in the Bosun's locker and on a hot day the temperature would reach 55 Centigrade in the locker compartment. After only 108 hours, the valves on the HP compressor were destroyed. After the HP compressor was replaced with the water cooled HP Compressor the Bosun's locker remained at ambient temperature with both the HP and LP Nitrox Compressors operating. With the chilled water circulating through the heads and inter coolers, there was virtually no heat coming off the HP compressor. "At 4500 psig you can hold your hand on the HP compressor head and discharge tubing". The higher density of water makes it a far better medium for cooling any compressor instead of air cooling.

Water cooling is the most innovative and safest technology for compressor systems in the marketplace today. **Nitrox Solutions** has successfully developed and constructed this technology and has combined a strategic partnership with **Lauderdale Diver** and **Moondog Dive Outfitters** to market these systems to the yachting industry.