

## **Tech Talk Fins Magazine 6.1 Rebreather Training**

### **By Mathew Partridge**

In last few years, we have seen a rapid increase in the number of recreational and technical divers making the transition to Rebreather diving. This advanced diving technology provides a wealth of benefits over traditional open circuit scuba; bubble free operation, moister, warmer breathing gas, longer no decompression limits and more effective decompression.

You would be right to think that rebreathers are state-of-the-art diving apparatus. Modern day units are revolutionizing the way we dive today with built in real time dive computers, integrated CO2 monitors and advanced electronics. However, rebreathers have been around a lot longer than you may think. Back in 1879, an English man named Henry Flueuss successfully dived a pure oxygen rebreather. Since then, other influential designs like the Electolung by Walter Stark in the 1970s and the Cis-Lunar in the 1980s have contributed significantly to the design of what we now refer to as CCR (Closed Circuit Rebreathers).

In this article, we'll be focusing on learning to dive with a closed circuit rebreather using air as a diluent to a maximum depth of 40m, employing the Inspiration / Evolution and the Inner Space Systems Megalodon. We'll give a day-by-day programme of module 1: Air Diluent course, which is a 5-day course conducted by Mathew Partridge and Cedric Verdier and hosted by Pro-Tech Dive College in Phuket, Thailand.

On the first day, the focus is on gaining a firm grasp on Advanced Nitox diving and laying the foundations for safe Rebreather practices. In this session, we cover all that's required for using pure oxygen and what's required for diving with a closed circuit rebreather. We delve into the dangers of blending using pure O2 and take an in-depth look at pros and cons pure oxygen brings to diving. If students already hold an advanced nitrox certification, then this session is usually a review. The other CCR topics discussed in greater detail include the mechanics of CCR, dive planning, physiology, emergency procedures, problem solving, the history and evolution of closed circuit technologies and a full unit specific workshop including pre and post dive maintenance. We finish the day with the units built and ready for day two, getting in the pool for an intense session of skills and drills.

The second day begins with a thorough introduction to the units following a detailed checklist for checking the integrity of the rebreather and its functions. Once completed, it's time for confined water training for about three to four hours, working through all the necessary skills required for safe diving on the unit including:

- Buoyancy and trim
- Minimum loop volume management
- High and low oxygen drills
- Hypercapnia management
- Electronic use and problem solving
- Manual control of the CCR
- Flooded unit drills

All these skills must be mastered. The drills are repeatedly practiced for a minimum of six hours in the open sea, so that you'll have a firm grasp on what's required to dive on a rebreather safely.

From the third day on, the focus is on boat diving. After unit preparation and dive planning, the first dive is usually a familiarity dive to get the diver comfortable in the rebreather. This is followed by basic drills required in case of an emergency. A break for lunch, change of tanks, fill dive sorb and check the units, then straight back into the water for more drills.

The final two days' programme is a repeat of day three, with two boat dives in a familiar setting to enable students to concentrate on working the unit, practice drills and skills required for successful certification.

By this time, most students are more confident and more aware of their own personal limits. Formal instruction is nearly complete. It's now up to the students to practice, practice and practice the skills they've acquired and to stay up to date with the constantly developing world of rebreathers.

We hope that this article gives you some idea of what's involved in rebreather diving, and perhaps you might be fascinated by this technology and give it a try.

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## **Sidebar**

### **Top ten tips to Rebreathers**

1. Try the unit before you buy, it could save you \$\$\$ in the long run.
  2. Choose you instructor carefully ask about their CCR experiences.
  3. Do not go for the cheapest course option, discounted courses usually mean discounted education.
  4. Get hold of the user manual and start studying as there's a lot to learn
  5. Plan for a few extra days diving after certification to enjoy you newfound passion.
  6. Set your goals realistically — give yourself time to practice before moving to another level of certification.
  7. Set yourself a budget as rebreather have a habit of costing you more than planned. Spares, extra equipment and training dives all add up.
  8. It helps if you have other CCR buddies to dive with.
  9. Look at maintenance and support for your chosen CCR dealer/ manufacturer.
  10. Dive as much as possible as practice makes near perfect.
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