

Rebreathers, Mixing it up - Part I
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Having introduced the fins readers to the world of closed circuit technology in basic form it makes sense to delve into the advantages and disadvantages Rebreathers bring to the extreme sides of diving, deep wrecks, caves, and scientific exploration. We will also take an overview of what things need to be considered when choosing a rebreather for mixed gas applications,

Having been introduced to rebreathers over a decade ago, I have worked hard in mastering the techniques required to dive deep using this state of the art technology. I am now dedicated to passing on my experiences to those with an interest in technical diving using CCR. Be mindful that if you choose to move over to a rebreather with the aim to execute mixed gas deep dives you too have to work hard to understand the art of rebreathers, mastery of these machines takes a lot of dedication and practice but for those willing to put in the time, the opportunities for exploration using the CCR are endless.

Lets look at some of the benefits the rebreather brings to the Technical Explorer.

Cost effective gas usage - An example would be a dive to 100msw using double tanks, costing around 200 USD in helium alone. The same gas fill required using a rebreather to carry out a similar dive profile would cost around 18 USD. Its not rocket science but if you make these types of dives regularly you can see how quick you would recuperate your initial investment.

More efficient decompression – In short due to the onboard mixing capabilities of a rebreather the diver is able to utilize the best mix for every depth of the dive, the effect, the diver is able to wash out Inert gas faster than using premixed decompression tanks that only have a short optimum off gassing period resulting in a shorter decompression using the rebreather.

Warmer moister breathing gas - During long exposures the body begins to chill, breathing from the rebreather the inspired gas is warmer than that of open circuit supply due to an exothermic reaction-taking place in the units scrubber (CO2 cleaning device) thus enhancing the body core temperature for longer periods. This aids in reducing the risk of DCS as becoming cold during a dive or dehydrated are known to pre-dispose the divers to DCS.

More bailout options - If you run out of gas using open circuit then that's just going to hurt, missing or not completing your required deco will most defiantly result in the bends. The rebreather allows several ways of extending the gas supply allowing you to continue with your required decompression. Semi closed circuit mode is one way of using you're off board bail out gas via the rebreather to extend its breathable duration, typically 3-5 times that of open circuit.

Streamlined equipment – Carrying large volume tanks teamed with several large decompression tanks creates weight and drag. Not a good thing if you have to swim for prolonged periods of time. The rebreather is significantly lighter than that of the open circuit configuration creating a much more streamlined and efficient diver.

With the obvious advantages there are always disadvantages these include:

Initial cost outlay for the unit and training

Higher equipment maintenance

Dedication to mastering skill and a continuing need to further your education

More possible failure points

If you are serious about your diving then the advantages far out-way the disadvantages.

As mentioned above one of the disadvantages is the need for extra training, something we should all be considering if we dive regular. The role of the instructor at this level is of up most importance so choosing your instruction carefully is a must.

Check out the background of your chosen instructor

Meet or at least speak with the Instructor before you enroll on a course

Maybe ask to speak with past students to get feedback on their training

Make sure you are totally comfortable with your Instructor and ensure you are not pushed past your personal comfort level

Do not run before you can walk, training is ongoing. The idea of mixed gas CCR training is to provide the diver with new tools and skills, its then upto the diver to practice with those new tools in a controlled environment.

Lots of pre-study prior to class is essential to ensure the best result during your time with the instructor.

There are quite a few manufactures producing rebreathers capable of using mixed gas all with advantages and disadvantages, examples would be the Ambient Pressure range, the Inspiration and Evolution, the Inner Space Systems Megalodon, the Ouroboros from Delta P manufactures of the VR3 diving computer, The Prism from Steam Machines, the KISS from Jetsam technologies in Canada the O2ptima from Diverite and soon more mainstream brands like OMS and Oceanic will be providing units to this developing market.

With so many units to choose from I would recommend visiting a well-supported Rebreather friendly dive centre to look at and try a few units before you commit. A well-rounded training facility or instructor should be knowledgeable in most available units and will be able to explain some of the plusses and minuses each unit brings.

On a final note I would like to point out that not everyone is suited to this type of diving but if you are interested then at least give it a try you may surprise yourself. Be careful on your information sources when making your decision especially if researching on the internet as there is a lot of useless information presented by cyber divers that if followed could result in unfavorable outcomes. I hope this article has inspired the adventures side in some of you and would happy to answer any further questions you may have, just send me an email to info@tech-ccr.com I will be happy to help.

Happy, safe bubble-free diving to all