



Advanced Gas Blender Instructor Program

- ▶ Welcome and Course Overview
- ▶ The TDI Instructor
- ▶ Dive Leader Risk Management
- ▶ Methods of Instruction
- ▶ Business Side of Diving
- ▶ Teaching the TDI Advanced Gas Blender Diver Program

The TDI Advanced Gas Blender Instructor Program can be taught in conjunction with the TDI Non-Diving Specialty Instructor program or as a standalone specialty instructor upgrade course after the instructor candidate has completed a sport level open water scuba instructor course and a basic gas blending instructor course.

Objectives

The object of this program is to:

- Introduce the candidate to the TDI Instructor Guide and Student materials
- Demonstrate how to use the TDI Advanced Gas Blender materials to train a new user
- Teach the instructor “How to Conduct” the TDI Advanced Gas Blender User program

- Demonstrate how to register and certify a new TDI Advanced Gas Blender User

Prerequisites for TDI Advanced Gas Blender Instructor Program

See the current TDI Advanced Gas Blender Instructor standards for the prerequisites and requirements for this program.

Materials Required

Teaching any program with outdated materials is just asking for problems. The trainer must confirm that their materials are current and each instructor has the current materials with which to teach the program.

Instructor Trainer

- TDI Advanced Gas Blender Specialty Manual
- TDI Advanced Gas Blender Specialty Knowledge Quest
- TDI Advanced Gas Blender Specialty Instructor Guide
- TDI Instructor Trainer Manual

Instructor Candidate

- TDI Advanced Gas Blender Specialty Diver Manual
- TDI Advanced Gas Blender Specialty Diver Knowledge Quest
- TDI Advanced Gas Blender Specialty Instructor Guide

Note: Prior to beginning the program the instructor candidate should review all instructor and diver materials and complete all knowledge quests and final exams so they are completely familiar with the subject matter and the support materials to teach the TDI Advanced Gas Blender Diver program.



The topics to be covered are:

- Welcome and Course Orientation
- The TDI Instructor*
- Dive Leader Risk Management*
- Methods of Instruction*
- Business Side of Diving*
- Courses a TDI Advanced Gas Blender Instructor Can Teach

*Core Topics: These core topics will be found in Part One of this manual; IT Information

Welcome and Course Overview

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Paperwork

- Instructor Registration Form
- Personal Information
- Liability Release
- Medical Statement

Let's Get to Know Each Other

Professional Staff



Participants

- Your name?
- What type of technical diving experience do you have?
- Which technical diving activities interest you the most?
- Why are you interested in becoming a technical instructor?

About This Program

Course Objective

- Develop the appropriate knowledge and skills that are expected of every dive professional

Structure and Schedule

- Independent Study
- Classroom Presentations

Required Equipment

- Items you'll need for this course

Any Questions?

The TDI Instructor

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Refer to Instructor Trainer Manual Part 1 Instructor Training Process
Chapter 2-The SDI/TDI/ERDI Instructor



Dive Leader Risk Management

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Refer to Instructor Trainer Manual Part 1 Instructor Training Process
Chapter 3-Dive Leader Risk Management

Methods of Instruction

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Refer to Instructor Trainer Manual Part 1 Instructor Training Process
Chapter 4-Methods of Instruction

Business Side of Diving

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Refer to Instructor Trainer Manual Part 1 Instructor Training Process
Chapter 5-Business of Diving

Teaching the TDI Advanced Gas Blender Diver Program

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- Program overview
 - Classroom requirements



- Students are required to become familiar with: use of oxygen and helium analyzers, various cylinder sizes and working pressures, O2 cleaning and labeling of cylinders. The appropriate training aids should be available for students to use. An Instructor candidate must be able to demonstrate instructor level knowledge on all topics and skills in the current TDI Advanced Gas Blender standards.
- Practical requirements
 - Students should be given various cylinders and ask to fill them to different volumes and percentages. By doing this they will learn the importance of filling slowly and monitoring fill pressures closely. Each method of mixing – partial pressure, banked, membrane or continuous – will present its own challenges and the challenges should be pointed out to the students. If possible, students should also use different types of oxygen and helium analyzers.
- Materials
 - Review all diver materials to make sure the instructor candidate is familiar with all diver materials and how they are supported by the instructor materials.
 - Diver Materials
 - Printed
- Required paperwork
 - Discuss in detail how the instructor should complete the required paperwork
 - The instructor candidate must be familiar with all forms and be able to answer any question a diver may have regarding the completion of those forms
 - Diver Training Folder
 - Waiver
 - Medical Questionnaire



- Complete a thorough review of the appropriate TDI Instructor manual including:
 - How to conduct:
 - Academic sessions
 - Cover helpful hints on how to teach more involved subjects

List of tips on how to teach various aspects of this program include:

Responsibility of the gas blender – gas blenders have a serious responsibility as they are mixing a gas that a diver will breathe in order to stay alive underwater. This point must be made very clear: they must never get complacent in their duty to fill and analyze every fill they do and ensure it is within one percent +/-.

Gases of diving – this course covers breathing gases that are oxygen and helium based but blenders may also be asked to fill argon cylinders so it is important for blenders to understand what is breathable and what is not. It is also very important for candidates to understand that the quality of the air they are using is equally important.

Gas production equipment – there are many pieces of equipment involved in gas blending before the connection is made to the cylinder. Candidates should be shown all of the components and asked to draw a diagram starting with the compressor. The diagram should show all the needed components and where they fit into the production such as: analyzers, flow restrictors, filtrations, bank system and shut off valves.

Mixing techniques – there are several different ways to ‘blend’ a nitrox or helium mix: partial pressure and continuous to name a few. Each of these methods needs to be discussed and their pros and cons explained.

Oxygen helium analysis – this is perhaps the most critical skill in this course. Candidates should mix enough cylinders that their results come out within +/- one percent of the target oxygen percentage. Doing this will give



candidates plenty of practice using an oxygen and helium analyzer.

Cylinder handling and sign out – each region has different rules and regulations for cylinder handling (oxygen cylinders included) and the rules and regulations for the area where the gas blender will be working must be covered. The final step in the process and responsibility of the gas blender is the acceptance of the cylinder by the diver. This acceptance should be done by the diver filling out and signing a fill log.

List of academic topics for candidate to present:

History of gas blending

Using Dive Tables, formulas and blending software

Advantages and Disadvantages of Gas Blending

Use of oxygen helium analyzers

Scheduling Options for this program

Courses can be scheduled with a one to one ratio, as a group or scheduled in conjunction with other TDI courses. Each of these will require different time commitments and scheduling logistics. It is not often that there will be a group of advanced gas blending candidates but it should be explained that a blending course can be taught in conjunction with other TDI courses, such as: rebreather, advanced nitrox, trimix, or advanced trimix.

Overview

The TDI Advanced Gas Blender Instructor program requires practical elements such as blending of cylinders so it will require both a classroom and a fill station to be available.

Classroom

You will need several different cylinders of various sizes and working pressures so the instructor candidate can practice filling them and using the analyzers. Candidates are required to perform and pass an academic



presentation.

Knowledge Quest Review Questions if applicable

No instructor level Knowledge Quest is available for this program, although the candidate should complete the diver level Knowledge Quest so they are familiar with the information.

Final Exam

No instructor level final exam is available for this program, although the candidate should complete the diver level final exam so they are familiar with the information.



