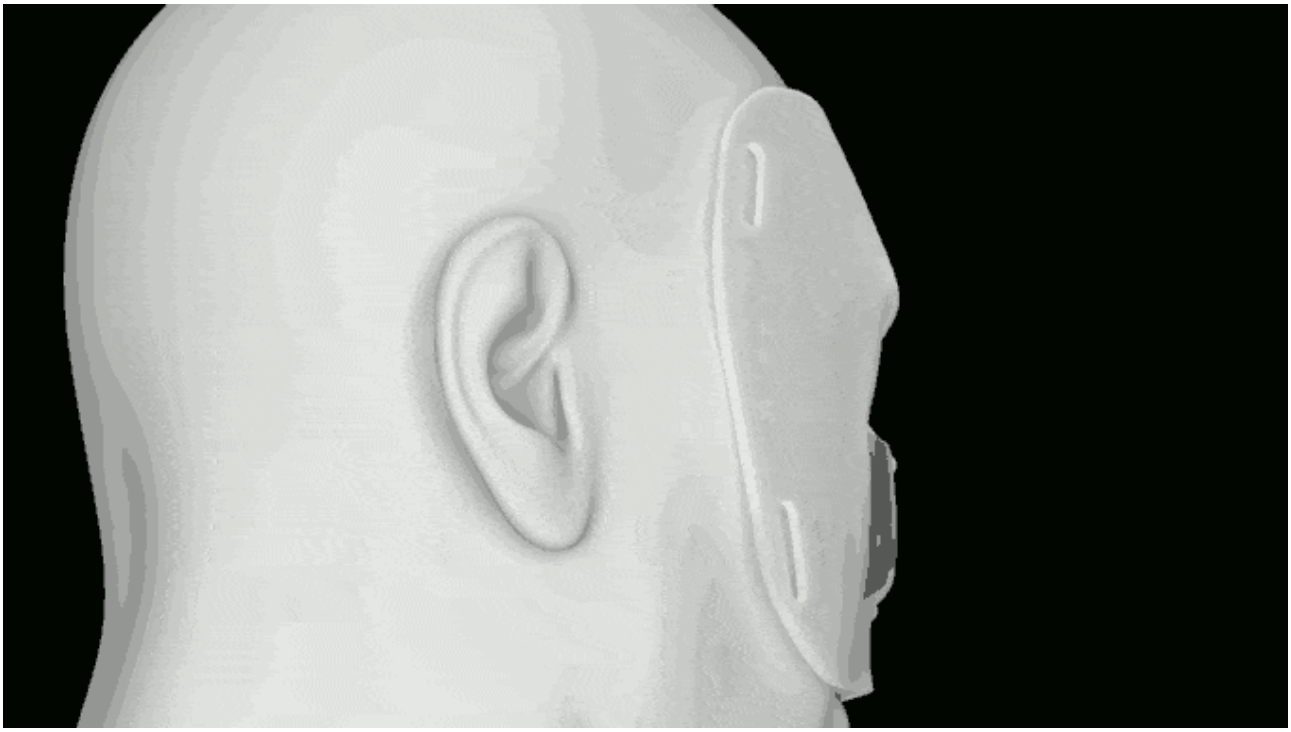
L'HISTOIRE

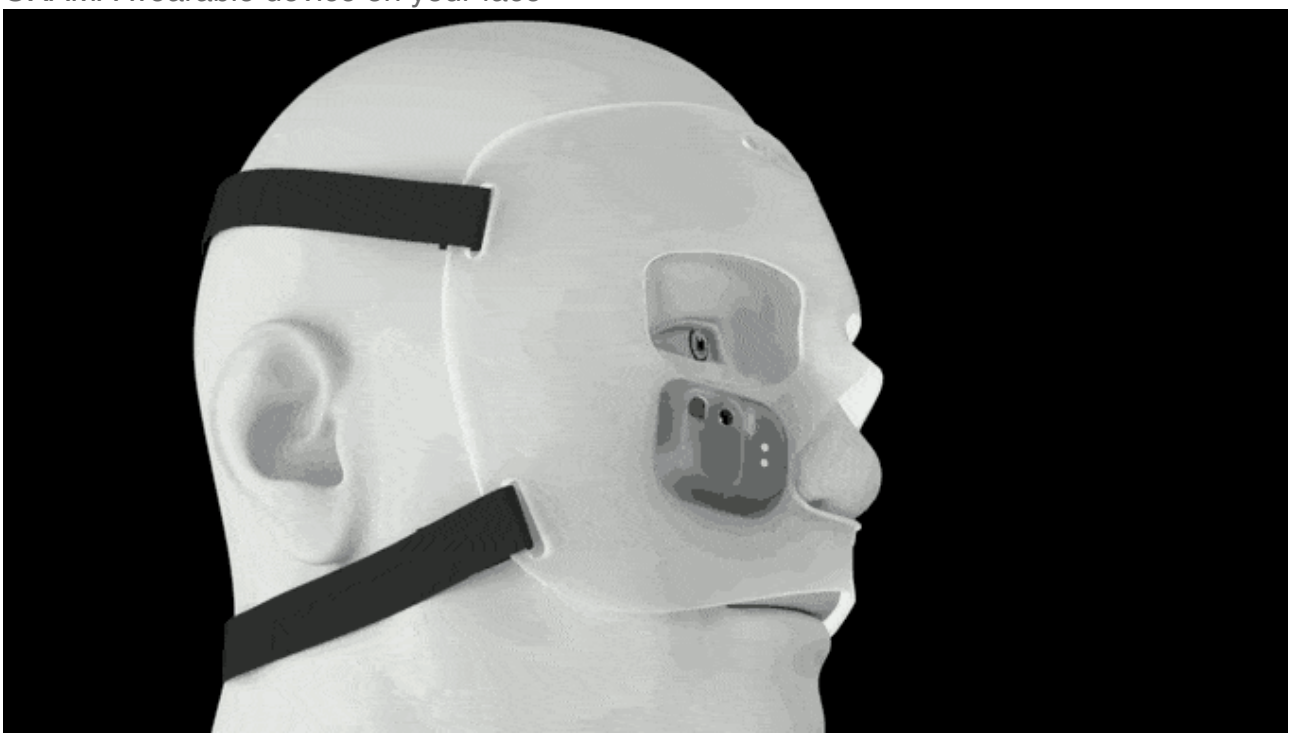
https://www.kickstarter.com/projects/oxama/the-first-speaking-oximeter-computer-designed-for-freediving?ref=discovery&term=oxama&utm_source=DeeperBlue.com+-+Newsletter&utm_campaign=82d15e2d46-Diveroid_email_advert_2019-11-29_COPY_01&utm_medium=email&utm_term=0_29f767d265-82d15e2d46-222994085&mc_cid=82d15e2d46&mc_eid=aca35129ed

L'histoire
This is OXAMA !

OXAMA wearable device



OXAMA wearable device on your face



OXAMA wearable device with your diving goggles or under your diving mask

OXAMA @ CES2021 and press release

Oxama has been officially presented in January 2021 at the Consumer Electronics Show of Las Vegas, the most influential tech event in the world. In the following pictures and links you will find what the press says about Oxama!

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What is OXAMA?

OXAMA is the first wearable speaking oximeter computer that goes beyond the limits of all classic wrist computers. It is equipped with biometric sensors and a voice assistant.

Oxama consists of

- a sensors module
- an audio module
- a soft silicone face mask

The sensors module contains a biometric sensor that reads the heart rate and the blood oxygen saturation, a pressure sensor and an accelerometer sensor that measures the depth and the freediver movements.

The sensors module prototype

The audio module accommodates a bones transducer which generates a human voice sound directly audible into your head without the use of any earphone.

The Audio Module prototype

The silicone face mask is a comfortable and easy to wear face mask provided with two pockets to maintain the sensors and the audio modules in contact with the face.

Why do you put OXAMA on your face?

During freediving, blood moves from the peripheral areas of the body (hands, arms, feet, legs) towards the center of the body. This means that the only area where vital signs can be reliably measured remains the face.

So, we developed Oxama with a patent pending technology to be worn on the face for two main reasons:

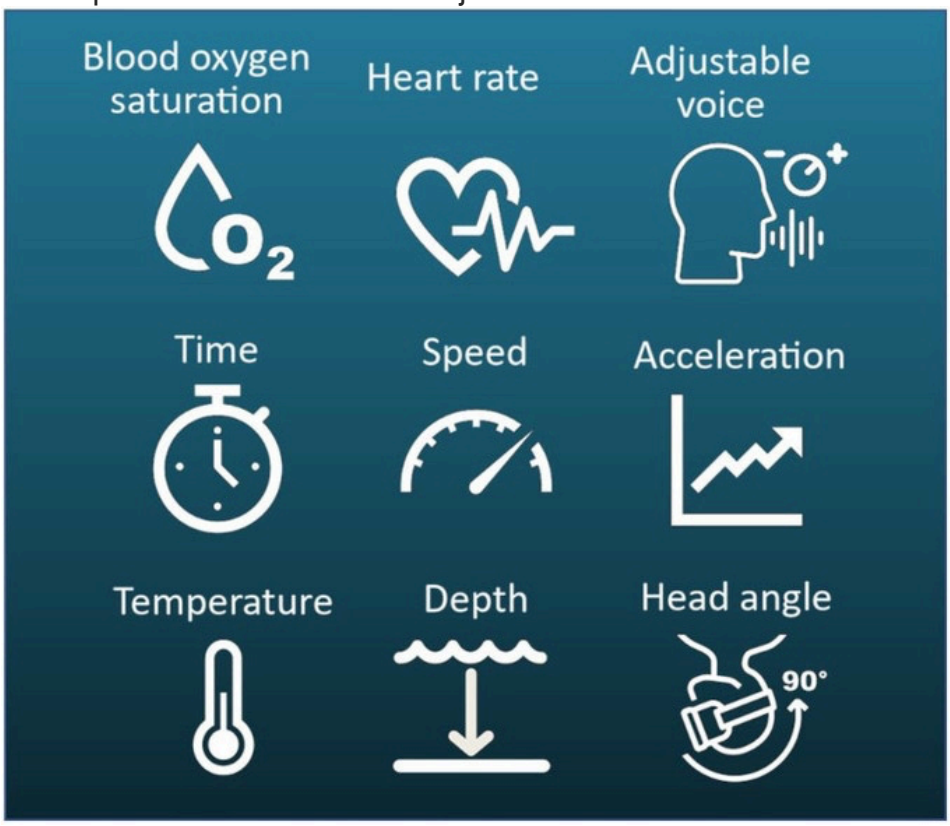
- Oxama is designed to measure the PPG signal directly on facial blood vessels that are much less affected by low perfusion or movement artifacts, allowing for very reliable blood oxygen saturation and heart rate measurements even during deep dives.
- The best location of a sound exciter to be heard is obviously closed to ears and in particular in contact with the skull: the sound propagates just through your bones and tissue and is directly perceived by your eardrums.

For this reasons OXAMA has been designed to fit into your diving mask or under your diving goggles in comfortable contact with your face.

OXAMA represents a real revolution in the freediving world and it will make your immersion a unique and amazing experience. We tested OXAMA on many subjects, female and male, with different ages. We found that, depending on the subject face shape, OXAMA is very comfortable with several underwater diving and freediving masks for each subject and in some subject with all the masks. All subjects reported no impact on visibility. Moreover, OXAMA can be used also without a diving mask, being compatible with many types of diving googles.

Which parameters does OXAMA track?

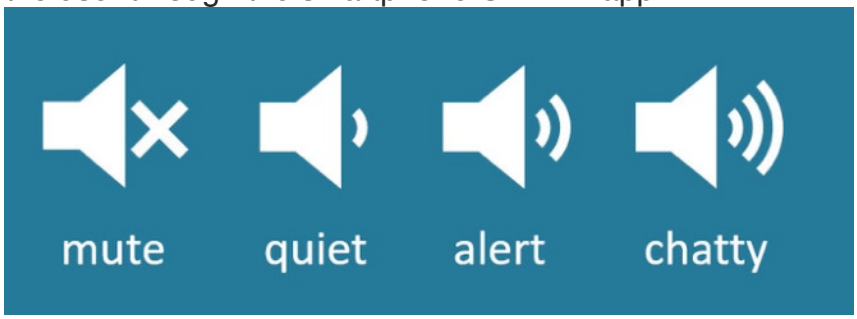
OXAMA tracks your performance recording both biometric and environmental parameters, and reproduces them with an adjustable voice assistant.



Biometric and Environmental parameters recorded by OXAMA device

- Blood oxygen saturation: it is a relative measure of the concentration of oxygen dissolved or carried in the blood as a proportion of the maximal concentration that can be dissolved in the blood (%).
- Heart rate: it is the speed of the heartbeat measured by the number of contractions (beats) of the heart per minute (bpm)
- Time: it is the measure of the duration of the dive time (s)
- Ascending / Descending Speed: measure of the speed during the diving ascent / descent (m/s)
- Acceleration: it is the measure of the acceleration during the dive(m2/s)
- Temperature: it is the measure of the water temperature (°C)
- Depth: it is the measure of the real-time or max depth during dive time (m)
- Head angle : it represents the measure of the head orientation with respect to the horizon for the posture control (degrees)

OXAMA speaks to you!
You don't need to read any display, stay focused on your immersion!
OXAMA informs in real-time on measured parameters. OXAMA uses with the most non-stressing and natural way possible to communicate to the diver: a quiet human voice clearly heard directly in your head thanks to a sophisticated bones transducer that converts the audio messages into sound mechanical waves through the skull. Language, level of detail, thresholds and frequency of all vocal messages can be simply defined by the user through the smartphone OXAMA app.



The four OXAMA voice modes

You can set OXAMA on different voice modes, as you prefer. You decide the parameters and the the moment in which you want to listen their values as the following voice modes:

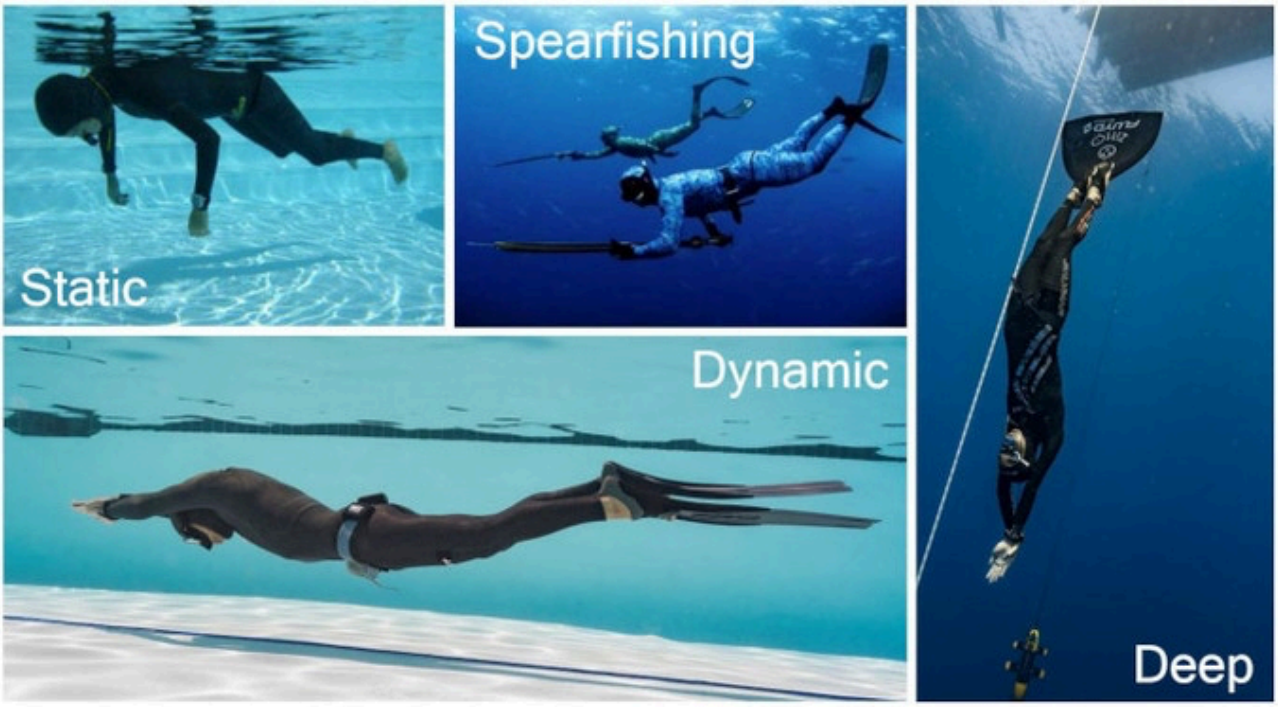
- MUTE: OXAMA records all the parameters during dive time but doesn't speak to you
- QUIET: OXAMA records all the parameters during dive time and speaks to you at the beginning and at the end of the immersion
- ALERT : OXAMA records all the parameters during dive time and speaks to you only for the thresholds programmed by you.
- CHATTY: OXAMA records all the parameters during dive time and speaks to you both for the thresholds and every 15 seconds for all the parameters programmed by you .

Which problems does OXAMA solve?
Together with many other freedivers, we found that classic wrist computer are hard to be read during freediving immersion, and moreover, they do not offer information about the diver's health conditions (for example blood oxygen saturation and heart rate). The solution introduced by OXAMA is a vocal assistant that provide to you both environmental and biometric data. So you can stay focused on the immersion and improve your performance.

The problems that Oxama solves: diving computer are often hard to read (left) and don't offer information about the diver's health (right)

Which freediving disciplines are managed?

OXAMA is able to manage pre-set programs for static, dynamic, deep immersion freediving and spearfishing with dedicated diving parameters and different behavior for each discipline. Each program can be personalized by setting which parameters are communicated, with which frequency or threshold value for each parameter.



Freediving disciplines managed by OXAMA device

So ... Who is OXAMA for?

OXAMA for the beginner. A virtual coach always with you! OXAMA accompanies you during freediving providing you with the confidence that only your coach can give you.

OXAMA for the spearfisher. Do not look away from your fish, keep the maximum focus on your target. You don’t need to look at the wrist computer, you can hear all the information

you need while remaining focused on the fish. And when you come out of the water, you have recovery time assessment based on your current physical conditions.

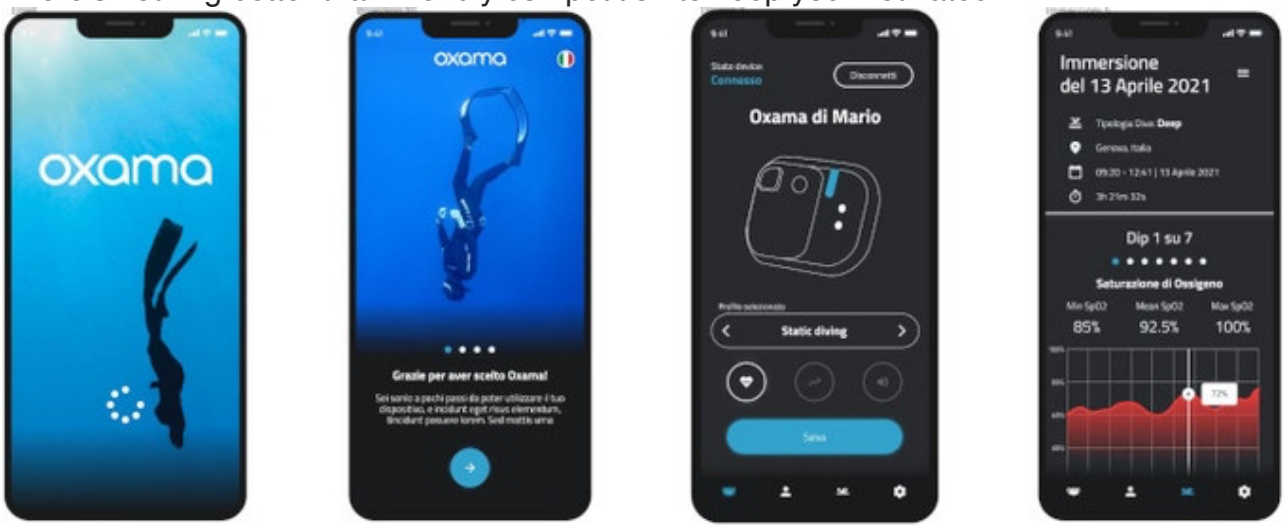
OXAMA for the pro freediver. With OXAMA you can improve your performances because you are awarded of your physical conditions. You can consult all the freediving parameters and analyze graphs, statistics and correlations. Through data control you can improve the performance!

LECTURE

OXAMA makes freediving more social!

OXAMA makes freediving more social! You can install OXAMA app on your IOS or Android phone and once out of the water download all data from the OXAMA device using a simple Bluetooth connection. The fun now begins! You will find your immersion data and you will be able to analyze in detail the chart of each parameters. You will be able to zoom or do correlations between parameters.

You will find all your personal records and if you want you will share any chart or result on your preferred social network. You will live again your immersion experience also out of the water and you will be able to plan a data based workout to improve your performance. There's nothing better than friendly competition to keep you motivated.



The Oxama app

Why was OXAMA born?

OXAMA was born under water, from the need of three freedivers (Vincenzo, Massimo, Claudio) eager to know their vital parameters during freediving and consequently to improve their performances on the basis of measured and analyzed data. The path has been long and we need the help and support from all the freedivers community !

Where does OXAMA name come from?
The OXAMA name comes from OX, short for oximetry, and AMA, the traditional Japanese women divers famous for collecting pearls.

Japanese ama pearl diver

Which are the components OXAMA is made of?
Biometric sensor. A non-invasive optical 4-wavelength photoplethysmography (PPG) sensor measures heart rate and blood oxygen saturation continuously during the immersions, the two most important parameters to track the health conditions and to improve the safety and the performances of the diver. The measurements are collected directly on the face of the diver to overcome the issue of arm and finger low blood perfusion in deep immersions.
Environmental sensors. A digital high precision pressure sensor measures depth and temperature, while a digital 3 axis accelerometer sensor measures acceleration and the head spatial orientation. Based on data collected by sensors, many useful parameters are calculated: depth, ascending and descending speed, head XYZ posture angle and acceleration.
Vocal assistant. A sophisticated bones transducer put on the face converts the audio messages into sound mechanical waves through the skull. The sound propagates just through your bones is directly perceived by your eardrums.

Rendering of OXAMA components explosion

Rendering of Oxama Sensors and Audio modules inserted into the pockets of the Face Mask

Design technical specifications

Parameter	Range / Resolution
Blood oxygen saturation (SpO2 %)	0-100 / 0.1
Heart Rate (bpm)	20-250 / 0.1
Temperature (C)	0-40 / 0.1
Depth (m)	0-100 / 0.1
Ascending / Descending speed (m/s)	0-10 / 0.1
Acceleration (m/s^2)	0-2g / 0.01
XYZ Head posture angle (degree)	0-360 / 1
Audio volume	0-100 / 10
Audio verbosity (%)	0-100
Designed for max depth (m)	100

OXAMA design technical specifications

OXAMA CHARGER

Oxama is equipped with lithium rechargeable battery, So you can recharge OXAMA device using the USB-C OXAMA charger. Just 1 hour for a full charge and you will be ready for a new immersion!

The OXAMA USB-C charger prototype

OXAMA KIT

Oxama comes with a complete kit composed by:

- Sensors module
- Audio module
- Silicone face mask with pockets for the sensors and audio modules
- Charging docking station
- USB-C cable
- High-quality shockproof storage casing

Sensors Module

Audio Module

Face Mask

Charger

USB-C cable

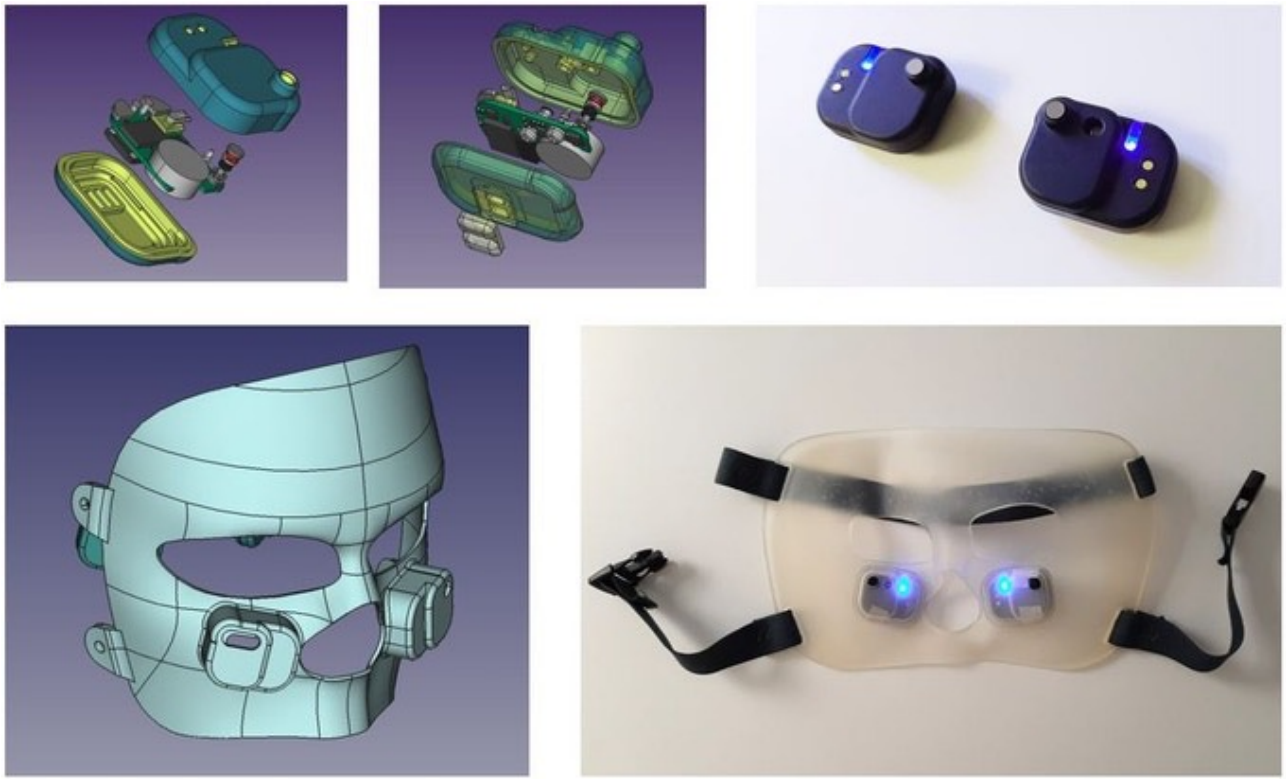
Bag

OXAMA Team

THE DESIGN PROCESS

From the idea to the product! We spent more than two years in the not trivial design of Oxama, from the idea to design, step by step, changing materials and shapes, printing dozens of prototypes up to obtain the right combination of functionality, comfort and device robustness to high pressure.

Design phases of the first demonstrator



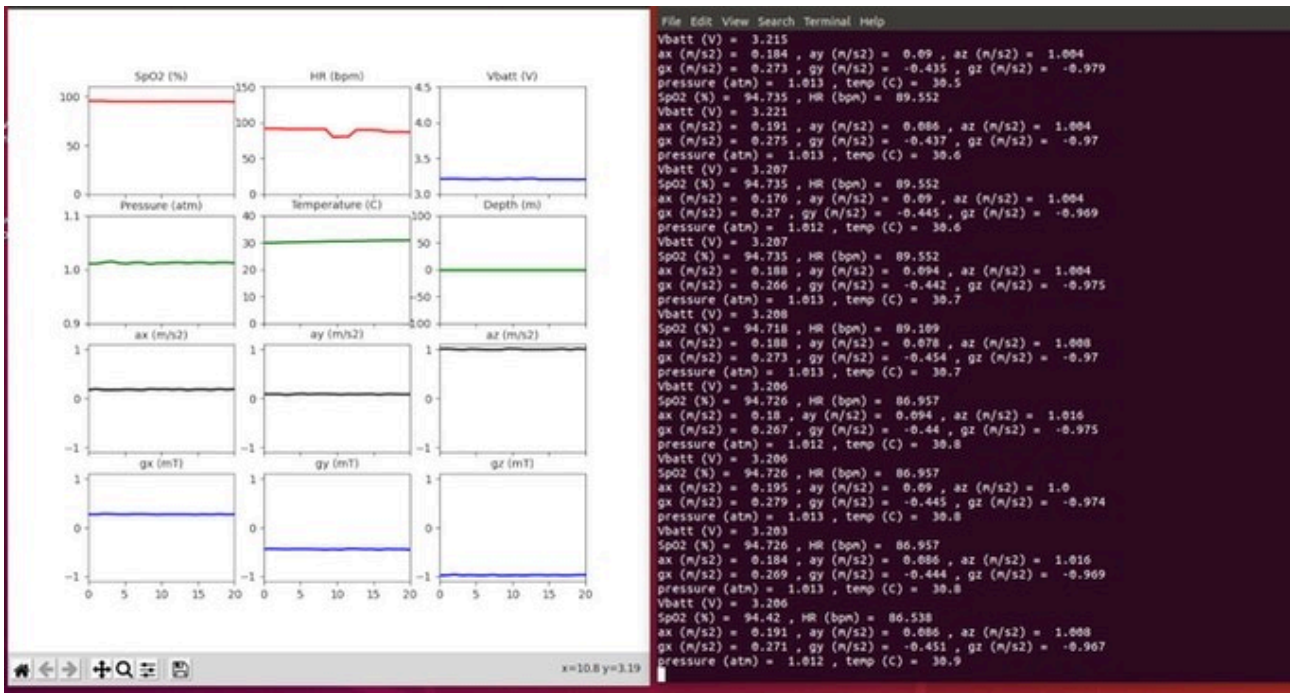
Design ang engineering phases of the final full functional prototype

In the following videos you will find a demonstration of a full functional prototype!
In the firsts two videos, once the device is tuned on and worn, you will see the plethysmography signal in real-time downloaded on a PC through a Blueetooth connection. Then, all the measured parameters are graphically represented together with the log text file.

In the following two videos, you will see and hear (turn up the volume!) the audio coming from the bone conduction transducer of the heart beat parameter each 30 seconds (in Italian for our first prototype but don't worry in your language on product!), and furthermore the wearing of some diving masks over the Oxama face mask.

LECTURE

LECTURE



Algorithm and Firmware development for all parameters measured by the Oxama device. We would like to share with you our first test in waterpool. In the following video you will see on the left-hand side all real-time parameters saved during the immersion and you will hear the voice exactly as the diver heard in that moment thanks to bone transducer.

Vous avez besoin d'un navigateur qui prend en charge HTML5 pour regarder cette vidéo.

1:25
1:25

1x OXAMA kit

~~999 €~~ 40% off

599 €