

# NEW SMART LIFEBUOY

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**ABSTRACT**

A researcher at the University of Alicante has developed a smart beacon buoy **to improve the safety of bathers and yachters** on our coasts. In this way, apart from delimiting bathing areas, it allows for a safe grip and the request for help in the event of an emergency or need for assistance.

It is an invention with mechanical and electronic components, universal, expandable and energetically self-sufficient and, in order to take advantage of any previous investment already made, it can be installed on any current buoy for marking out beaches, bathing areas and coasts.

The researcher is looking for companies and organisations interested in becoming technological partners for the manufacture and subsequent commercialisation of the solution.

**INTRODUCTION**

According to Spanish regulations, **buoyage** is intended to adequately **delimit coastal bathing** and other areas in order **to help boaters to fix their position and avoid dangers**. Therefore, **they do not serve the purpose of helping people** who are not on the boats, such as a swimmer, bather or yachter involved in an accident or sudden indisposition near such a buoy.

Furthermore, due to the design and the large standard size of the buoys, a person standing next to the buoys will have serious difficulties in gaining buoyancy and using them as a support while calling for help. Even these same marker buoys can pose an added danger because of the high risk of striking such a person due to the inevitable movement caused by the sea.

Therefore, the need to provide a safe gripping device that can be adapted to any size and shape of buoy in a versatile way to provide a buoyancy aid, complemented by a distress call and geolocation device for any person in an emergency situation, is appreciated.

**TECHNICAL DESCRIPTION**

A **two-part** solution has been developed:

- 1) A **buoy attachment system** that adapts to any type, shape and size of current buoy. This system consists of an adjustable mesh that surrounds the entire buoy and has several grips to aid the buoyancy of the person experiencing an emergency.
- 2) An **electronic communication system** containing:
  - **Call and rescue device**, in a very simple way just by pressing the SOS button.
  - **Communication device** with different transmission options to work in any geographical location. It also includes the microphone and loudspeaker system necessary to start the conversation with the 112 Service and is equipped with a geographic positioning system to provide the exact location necessary to locate the person in need of help.

- **Power supply battery** that provides the entire system with the power supply necessary for its correct operation.
- **Autonomous power supply device** (if necessary) based on a solar panel that allows the power supply battery to always be optimally charged and ready for use.
- **High intensity LED location and emergency lights** with 360° visibility that will be activated when an emergency call is made.

In short, if the person who has grabbed onto the buoy to gain buoyancy needs further assistance, they would press the SOS button. At that moment, **three processes** would be activated in parallel:

- a) The situation and emergency light illuminates, starting to flash emitting the S-O-S signal.
- b) The alarm signal is sent to the emergency reception service 112 with the exact geolocation.
- c) A voice call is established with the 112 service via the built-in microphone and loudspeakers.

In this way, **three complementary objectives** are achieved:

- 1) Reducing the number of serious drowning accidents, which in recent years have been increasing alarmingly on Spanish beaches and coasts (at rates never seen before in history).
- 2) Achieving 100% use of all the current beaconing infrastructure (and, therefore, amortising any economic investment already made).
- 3) Positioning our beaches and coasts as a 'Safe Destination' (as a clear competitive advantage over other beaches and tourist areas that are not equipped with a system for this purpose and, therefore, continue to potentially alarmingly increase the number of serious drowning accidents on their coasts).

## ADVANTAGES AND INNOVATIVE ASPECTS

### MAIN ADVANTAGES OF THE TECHNOLOGY

- It has a **dual role**: on the one hand, to provide a **safe grip** in order to gain buoyancy and use it as a support and, on the other hand, **to help** in case of emergency or indisposition.
- It is a **universal, versatile and adaptable** invention because it does not require the purchase of any additional buoy to the existing ones, but it adapts to any type, shape and size of existing buoys.
- **Speed** in requesting help by means of several processes that are activated in parallel: light signals, calling to 112 with geolocation and verbal communication. In this way, emergency services can attend to people quickly and increase the chances of **saving lives**.

### INNOVATIVE ASPECTS

The invention has several innovative aspects that should be highlighted:

- **Versatility and adaptability** because it is not necessary to acquire any additional buoy to the existing ones (optimising previous investments).
- Use of emerging communication technologies (which provide the system with 24/7 service guarantees and optimal use of telecommunications resources).
- Thanks to the **modularity** of the system, it is possible to incorporate other additional **sensor devices** that can be used, for example, to monitor sea conditions and water quality in scientific maritime studies (wind, temperature, humidity, solar radiation, CO<sub>2</sub>, turbidity, chlorophyll, plankton, detection of jellyfish or fish, etc.).

## CURRENT STATE OF DEVELOPMENT

It is in the development phase.

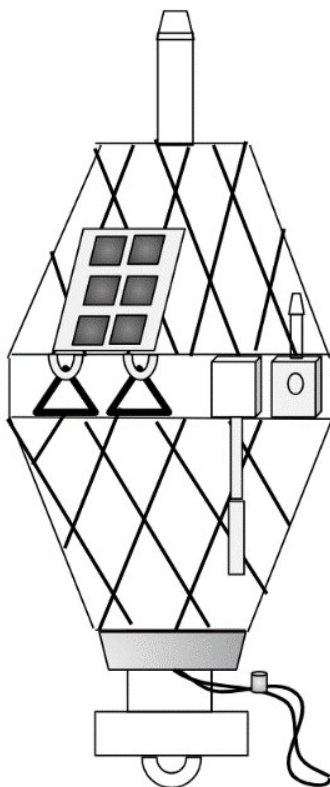


Figure 1. Design of the relief device

#### MARKET APPLICATIONS

It is primarily aimed at the maritime technology sector, more specifically **companies manufacturing maritime safety devices**.

#### COLLABORATION SOUGHT

Companies or entities interested in collaborating in the **development of the invention** and its subsequent commercialisation are sought.

#### INTELLECTUAL PROPERTY RIGHTS

This technology is protected by **patent application**:

- *Patent title: "Dispositivo de auxilio configurado para ser acoplado a una boya".*
- *Application number: P202430544*
- *Application date: 28/06/2024*

Pollution and Environmental Impact  
Computer Science, Language and Communication  
Medicine and Health  
Tourism

TECHNICAL IMAGES (1)

