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“Optimizing Innovation in Knowledge, Education and Design”

EXTENDED ABSTRACT



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Assalamualaikum warahmatullahi wabarakatuh,



First and foremost, I would like to express my gratitude to the organizing committee of i-Spike 2023 for their tremendous efforts in bringing this online competition a reality. I must extend my congratulations to the committee for successfully delivering on their promise to make i-Spike 2023 a meaningful event for academics worldwide.

The theme for this event, 'Optimizing Innovation in Knowledge, Education, and Design,' is both timely and highly relevant in today's world, especially at the tertiary level. Innovation plays a central role in our daily lives, offering new solutions for products, processes, and services. By adopting a strategic approach to 'Optimizing Innovation in Knowledge, Education, and Design,' we have the potential to enhance support for learners and educators, while also expanding opportunities for learner engagement, interactivity, and access to education.

I am awed by the magnitude and multitude of participants in this competition. I am also confident that all the innovations presented have provided valuable insights into the significance of innovative and advanced teaching materials in promoting sustainable development for the betterment of teaching and learning. Hopefully, this will mark the beginning of a long series of i-Spike events in the future.

It is also my hope that you find i-Spike 2023 to be an excellent platform for learning, sharing, and collaboration. Once again, I want to thank all the committee members of i-Spike 2023 for their hard work in making this event a reality. I would also like to extend my congratulations to all the winners, and I hope that each of you will successfully achieve your intended goals through your participation in this competition.

Professor Dr. Roshima Haji Said
RECTOR
UiTM KEDAH BRANCH



WELCOME MESSAGE (i-SPIKE 2023 CHAIR)



We are looking forward to welcoming you to the 3rd International Exhibition & Symposium on Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023). Your presence here is a clear, crystal-clear testimony to the importance you place on the research and innovation arena. The theme of this year's Innovation is "*Optimizing Innovation in Knowledge, Education, & Design*". We believe that the presentations by the distinguished innovators will contribute immensely to a deeper understanding of the current issues in relation to the theme.

i-SPIKE 2023 offers a platform for nurturing the next generation of innovators and fostering cutting-edge innovations at the crossroads of collaboration, creativity, and enthusiasm. We enthusiastically welcome junior and young inventors from schools and universities, as well as local and foreign academicians and industry professionals, to showcase their innovative products and engage in knowledge sharing. All submissions have been rigorously evaluated by expert juries comprising professionals from both industry and academia.

On behalf of the conference organisers, I would like to extend our sincere thanks for your participation, and we hope you enjoy the event. A special note of appreciation goes out to all the committee members of i-SPIKE 2023; your dedication and hard work are greatly appreciated.

Dr. Junaida Ismail

Chair

3rd International Exhibition & Symposium Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023)

AQUASAVER BAND: SCUBA EMERGENCY BRACELET

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ABSTRACT

Scuba diving is considered to be one of the most challenging and high-risk activities or hobbies. This activity can only be performed after completing a course and receiving proper training. There have been numerous fatalities associated with scuba diving. This situation arises due to the absence of safety measures for engaging in this activity. Consequently, we took the initiative to introduce a tool that will enhance the safety of this extreme activity. The name of this tool is the AquaSaver Band. The AquaSaver Band is a bracelet designed for emergency situations during scuba diving activities. The emergency bracelet is designed to provide safety protocols and security features for divers, particularly those who are new to diving, in case of any unforeseen danger or emergency situations that may arise while they are in the middle of the sea. Among the AquaSaver Band features are the detection of an emergency for people wearing the and those around them, facilitates dive operators in monitoring divers who wear it, can assist divers and minimize the likelihood of accidents during diving. The AquaSaver Band is not just useful for emergencies, but also helps divers prepare before and during their dives which effectively handle any emergencies that may arise for themselves or other divers. Ultimately, wearing the AquaSaver Band can enhance the safety of the diver.

Keywords: AquaSaver Band, safety and security, scuba diving, emergency bracelet

INTRODUCTON: THE AQUASAVER BAND

A modern invention that will improve divers' security and safety in aquatic situations is the AquaSaver Band. It provides divers and their loved ones with security because to its cutting-

edge features and durable construction. A GPS tracker included into the bracelet allows for real-time position tracking and makes it simple to find divers in an emergency. Because of its waterproof qualities, it can resist the stresses and conditions of the sea and continue to function. The dive log function allows divers to track and evaluate their dives by recording crucial data such as dive time, maximum depth achieved, and oxygen capacity. In order to provide rapid access to critical medical information, the bracelet also contains health information and emergency contact information. The AquaSaver Band delivers instant visual warnings and distress signals, notifying neighboring divers, dive operators, or emergency services, with the help of its LED visual alert system, panic button and emergency signal button. It provides divers with safety, convenience, and peace of mind throughout their underwater explorations, making it the ideal companion. With this emergency bracelet, the safety of divers will be guaranteed and many will dare to participate in scuba activities because their safety is guaranteed.

OBJECTIVES OF THE AQUASAVER BAND

The primary goal is to minimize the likelihood of accidents during scuba diving activities. Ensuring safety is crucial during scuba diving. This is because scuba diving activities can be highly risky and require a great deal of skill and experience. Engaging in this activity poses a significant risk of accidents, particularly for novice divers. The AquaSaver Band is designed to enhance diver safety. The second objective is to assist divers in preparing themselves prior to engaging in scuba activities. It is important to assess the condition of the body before diving, including checking for allergies, ensuring adequate oxygen levels, evaluating overall health, and other relevant factors. This will help to prevent accidents while diving. Finally, it makes the dive operator easier to keep track of the divers. The AquaSaver Band offers various advantages. It is easy to identify dive operators during a sea emergency when a diver is present. Furthermore, if the diver becomes lost. This simplifies the process for the dive operator to locate the diver.

FEATURES OF THE AQUASAVER BAND

There are many features that make this AquaSaver band capable of helping divers to ensure their safety. One of the most important features is the GPS tracker. The GPS tracker is a useful tool for divers and dive operators as it allows them to easily determine the diver's current location, particularly in emergency situations. Next, Dive logs. The dive log displays the duration of the dive, maximum depth achieved, and oxygen capacity. Third, LED visual alert. The purpose is to visually alert divers who are nearby in case of an emergency. It is also for emergency signal activation and important notifications. Next, Diver Health information. Displays vital health information such as body condition, medical history, and emergency contact details. Apart from Diver health Information, there are sensors for depth and pressure in the sea called depth and pressure sensors. This feature is designed to alert both divers and dive operators in the event that a diver exceeds the safety limit or encounters a potentially hazardous situation. In addition, the AquaSaver Band boasts a significant feature - the panic button. This button activates an emergency signal or sends an SOS message to divers, dive operators or emergency services. The design also aims to prevent accidental pressing. Furthermore, the AquaSaver Band boasts a long-lasting battery among its features. This battery is designed to last for 3-4 days and can be recharged. It has the ability to remain in the ocean for an extended period. Finally, the AquaSaver Band emergency bracelet is waterproof,

allowing it to endure the pressure and conditions of the sea for extended periods of time.

NOVELTY OF THE AQUASAVER BAND

When unexpected emergencies arise while diving to the bottom of the ocean, the AquaSaver Band comes to the rescue. Modern technology and sleek design come together in this creative bracelet to create a must-have piece of gear for every scuba enthusiast. As the AquaSaver Band comes with GPS tracker, it allows to precisely track the scuba divers dive locations and keep in track with the dive operators. This feature make sure they never get lost, whether they are exploring a vibrant coral reef or diving into enigmatic underwater caves. Secondly, a scuba diver can now say goodbye to manual record-keeping. The AquaSaver Band automatically logs their dives, capturing crucial information such as depth, duration, water temperature, and more. Next, enhancing their safety underwater, the AquaSaver Band incorporates a powerful LED visual alert system which also acts as a distress signal, providing a highly visible indicator to their dive buddies or dive operators in case of an emergency. Plus, monitoring their well-being while diving is imperative, and the AquaSaver Band facilitates this process. With this smart bracelet, they can monitor vital health metrics, such as heart rate, oxygen saturation, and even stress levels, to improve their diving performance and detect potential issues earlier on. The depth and pressure sensors make sure they stay informed about their diving environment, and ensure they stay within safe limits as they are exploring the wonders of the underwater world. The panic button that, when pressed, will immediately activates a distress signal and transmits their precise location to nearby rescue teams or dive operators. In addition, with the AquaSaver Band, they will be able to dive for longer periods of time. When diving underwater, they won't have to worry about running out of power because this bracelet has a long-lasting battery. Lastly, engineered to withstand the harshest underwater conditions, the AquaSaver Band is fully waterproof. Featuring a rugged construction, it offers they unmatched durability and longevity when diving deep. With the AquaSaver Band scuba emergency bracelet, the divers are able dive smarter and prioritize their safety.

PRODUCT COMMERCIALISATION

AquaSaver Band is an emergency bracelet made of high-quality materials that can withstand the harsh marine environment and potential impact. In addition, this bracelet also has a unique color, which means that this bracelet can change color according to the type of emergency, for example, if there is an emergency of shortness of breath or cramp while in the water, it is red. This is because the bracelet has a bright color and reflective elements to increase visibility in the water and in low light conditions. In addition, this bracelet makes it easier for scuba security guards to know if there is an emergency while in the water. This bracelet also has a GPS tracker to make it easier for rescuers to access the diver's location. Furthermore, this bracelet is also comfortable to wear for a long period of time and does not hinder movement or interfere with the diver's equipment. This bracelet is also fully waterproof. This is to prevent damage from exposure to water and to ensure that emergency messages remain visible. Furthermore, this bracelet fits a wide range of wrist sizes and can be easily adjusted in case of an emergency. This AquaSaver Band is very easy to put on and take off, even with gloves in case of an emergency because just by pressing the bracelet the safety guard can know the diver is in an emergency. This bracelet is also lightweight as to avoid adding unnecessary weight to the diver's gear. This AquaSaver Band is owned by all divers so that they can access it while in the water and this bracelet is very compatible with standard scuba diving equipment and does not

interfere with other safety equipment or devices.

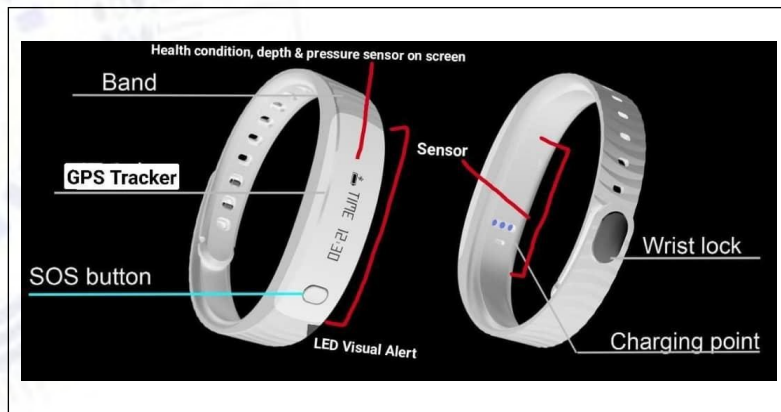







Figure 1. SKETCH FOR AQUASAVER BAND

The band can change in color according to the type of emergency. The diver health condition, depth of water and pressure will appear on the screen while diving. The LED visual alert will give signal and provide visible indicator to other divers or the dive operators in case of emergency. GPS help the dive operators to keep in track with the scuba divers. The SOS button will give emergency signal to other divers.

PROCESS OF USING THE PRODUCT

1.	1. How to Use Emergency Button
<p>1.</p> 	<p>a. In the event of an emergency during diving activities, whether it be for yourself or others, it is important to take appropriate action.</p>
<p>2.</p> 	<p>b. To send an emergency signal and quickly receive assistance from the emergency officer or diver operator, press the emergency button to indicate the location of the emergency.</p>
<p>3.</p> 	<p>c. AquaSaver band will send an emergency signal to nearby people.</p>

<p>1.</p>  <p>2.</p> 	<p>2. How The Depth and Pressure Works.</p> <ol style="list-style-type: none"> The depth and pressure sensors are designed to function when a diver reaches the maximum depth of the sea. AquaSaver is designed to alert divers when they are approaching dangerous depths and discourage them from diving deeper. A warning sign will be displayed in the band to alert divers
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CONCLUSION

In conclusion, AquaSaver Band is an important tool that a scuba diver should have in case of an emergency. It offers crucial details that can help rescue attempts, like the diver's identity, emergency contact information, medical background, and diving certification. To assure its effectiveness, this emergency bracelet is strong, waterproof, and simple to use. It is also necessary to update the information about the bracelet regularly and wear it at all times while diving. In conclusion, a scuba emergency bracelet is a vital safety precaution that can save lives in the event of an underwater disaster.

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