

# A novel DPV as a holistic platform for real-time physiological status assessment of divers

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**ABSTRACT:** This paper presents the work performed to integrate a sensors network to a more complex and extensive system, represented by the architecture that constitutes the main output of the DiveSafe European project (G.A. EASME/EMFF/2017/1.2.1.12/SI/02/ SI2.789635). The latter also includes an underwater scooter, a Docking Station, a tablet and a whole communication system between the surface and the underwater environment in which the diver is located, as well as a remote server that also allows the execution of 3D reconstructions of the appropriately photographed environment. The sensors system presented here allows to monitor the main indicators of the diver's health during underwater activities. Through these sensors, it is therefore possible to real-time monitor physiological values such as breath rate, heartbeat and glucose levels, as well as to provide information on the decompression phases execution, in order to safely ascend once the underwater work is finished. The electronic components are located inside a special waterproof box that the diver wears at the height of the belt. The main sensors have been validated, motivating the choices made.

**Key Words:** *Diving, Decompression sickness, SCUBA, Wi-Fi, Bluetooth, RF, Diver, Heartrate, Breath, glycemia.*