

REDEFINING UNDERWATER PERCEPTION: TEN YEARS AND JUST GETTING STARTED



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In 2013, a visionary named Torgeir Trøite established a revolutionary company in Trondheim, Norway, called Water Linked. Driven by a desire to disrupt the underwater industry, Water Linked set forth on a journey of innovation and invention, seeking to transform the sector with its product designs and the application of affordable technology. As the company responded to the market's demands, the dedicated team at Water Linked utilized their exclusive technology to develop solutions to substantially influence the burgeoning underwater market.

The company's first significant leap came with the unveiling of the Underwater GPS (UGPS) at the Oceanology International North America event in San Diego in 2017. This compact, Short BaseLine (SBL) acoustic positioning system was unique in its ability to precisely pinpoint the absolute

location of an underwater vehicle without the need for additional sensor inputs.

Packed into an affordable unit, the UGPS brought true disruptive innovation to the market, leading to a strategic alliance with Blue Robotics. This partnership, alongside collaborations with esteemed entities like Deep Trekker, greatly assisted Water Linked in the development and success of their pioneering underwater navigation offerings.

DVL INNOVATION

Fueled by the overwhelming success of the UGPS, Water Linked pursued an ambitious goal to cater to the industry's need for a versatile velocity log. In 2020, Water Linked introduced the A50 Doppler Velocity Log (DVL), a product designed to be suitable for vehicles with a limited payload capacity, without compromising on performance.

Engineered for meticulous navigation, the DVL is a pivotal piece of sonar technology. Its primary function lies in measuring the speed and direction of vehicles operating underwater, however it's also suitable for use by vehicles navigating on the water surface.

In environments where GPS signals are either unreliable or entirely absent, which is certainly the case underwater, the DVL emerges as a crucial navigational tool.



» Water Linked CageSense™, wireless smart sensor. (Image credit: Water Linked)

The principle on which a DVL operates is rooted in the analysis of time differences between the emission of acoustic signals and their ensuing echoes. In this way, the DVL can determine the Doppler shift—a frequency alteration stemming from the relative motion between the signal-emitting transducer and the reflecting surface. This Doppler data facilitates pinpoint navigation and broadens the horizon for the automatic control of the vehicle, lending to precise maneuverability and improved efficiency.

Amplifying its usefulness, the DVL's exact measurement capabilities make it indispensable across a broad spectrum of applications. These include underwater research, marine exploration, and the operation of autonomous underwater vehicles (AUVs) and subsea robotics. Through its provision of exact speed and direction data, the DVL optimizes vehicle control and promotes a higher rate of mission success. In essence, the DVL constitutes an integral component in the exploration and understanding of our underwater world.



» Water Linked DVL A50, the world's smallest DVL. (Image credit: Water Linked)



» Water Linked DVLs are designed to integrate with most ROVs, such as Blue ROV 2. (Image credit: Blue Robotics)

SUPPORTING MICRO AUVs

The launch of the DVL A50 exceeded industry expectations. It was a significantly smaller option than other DVLs in the market without compromising its capabilities. This development expanded the scope for smaller underwater vehicles, allowing them to take on roles previously exclusive to larger machines. Furthermore, the DVL A50 was crucial in developing micro autonomous underwater vehicles (AUVs) as its integration with the Inertial Navigation Systems dramatically improved their long-term position accuracy.

With unprecedented short-range capability, the Water Linked DVL is able to continue to operate at a range of only 5 cm, marking another milestone in the Water Linked innovative journey. This exceptional short-range capability enables the DVL to function even when a vehicle is in direct contact with the seabed, or when conducting intricate tasks like hull cleaning at close range. This level of versatility significantly broadened the realms of underwater exploration and applications.



Even though most micro vehicle manufacturers were satisfied with a DVL that had a depth rating of 300 m (600 m version also available) and a 50 m acoustic range, Water Linked continued to push boundaries by introducing the larger DVL A125. With an acoustic range of 125 m and the ability to operate at water depths of up to 3,000 m, the DVL A125 further diversified the scope of underwater operations.

WIRELESS MONITORING

In the summer of 2020, Water Linked achievements attracted the attention of major investors like Equinor and Investinor. This influx of external funding provided Water Linked with the financial stability required to bolster sales, fulfill customer demands, and propel research and development initiatives, including the development of aquaculture-specific products.

As a result, earlier this year, Water Linked proudly introduced CageSense™, a wireless environmental monitoring solution explicitly crafted for the fish farming industry. This state-of-the-art product enables fish farmers to increase productivity, enhance sustainability, and mitigate health and safety risks, thereby heralding a new era of smart sensor-based environmental monitoring systems.

Continual advancements are being made in the creation of products tailored for aquaculture. Interestingly, there is an increasing convergence between these innovations in

aquaculture related products and the products required to satisfy the needs of the navigation market.

Following two years of significant growth and exceeding expectations, Equinor and Investinor have considerably increased their investment, demonstrating their unwavering support for the ambitious product development strategy underway at Water Linked.

FUTURE UNDERWATER PERCEPTION

As Water Linked works towards the launch of a key new product later this year, one set to redefine underwater perception, it stays true to its mission of "redefining underwater perception." The company continues to challenge established beliefs and shape attitudes about what is truly achievable in underwater operations.

Although Water Linked has only been operating for a decade, it has achieved extraordinary feats. Driven by their steadfast commitment to innovation and disruptive technology, the company has left an indelible mark on the underwater industry. With an undying determination to push the boundaries of the possible, Water Linked existing success story promises to unfold even more captivating chapters in the future.

For more information, visit:
www.waterlinked.com.

» The DVL-A50 is optimized for single-man portable AUVs. (Image credit: Seaber)