# HotSpot Exclusive: The Seal Drowning Detection System

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## Drowning Related Deaths

According to the Center for Disease Control and Prevention, “Drowning is responsible for more deaths among children 1 to 4 years old than any other cause except congenital anomalies, or birth defects. Among those, 1 to 14, fatal drowning remains the second-leading cause of unintentional injury-related deaths behind motor vehicle crashes.

## Extra Layer of Protection

To offer an extra layer of protection, Raleigh, North Carolina-based Seal Innovation has created the SEAL wearable swim monitor and drowning detection system that issues warning and alarms to lifeguards and parents for swimmers in distress.

The system contains three main components, which include the hub, swim bands, and a unique electronics signature; and the bands can be set to four levels: non-swimmer, beginner, advanced, and expert, providing an immersion alarm for beginners and non-swimmers, and a safeguarding component for elite swimmers and triathletes.

## Monitoring Submergence

For a distress alarm to be triggered, the swimmer wearing the band must be continuously submerged for a period of time that is longer than physiologically compatible with voluntary breath holding.

According to SEAL Innovation’s CEO, Graham E. Snyder, if the system detects a swimmer in distress, interim warnings followed by a high-intensity audio, visual and vibrating alarm are triggered on the swimmer’s, lifeguard’s, and parent’s bands, as well as the central hub.

## Design Optimization

To optimize the functionality of the SEAL monitoring device, the team had to consider many different elements; such as selecting materials that make it light and unnoticeable, as well as robust and durable.

The team also experimented with various plug-in charging systems, as well as inductive charging, to help comply with the water resistant requirements.

To read the full article, visit http://www.wirelessdesignmag.com/articles/2013/08/seal-drowning-detection-system [1] and http://digital.wirelessdesignmag.com/wirelessdesignanddevelopment/july_august_2013#pg1 [2]

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