

Luna is utilizing its experience in low-power condition monitoring to develop a wearable, non-invasive hydration monitor.

This technology uses a flexible and breathable skin-mounted sensor to measure epidermal hydration, which can be correlated to systemic hydration. The impedance-decomposition process provides resiliency to signal artifacts such as ion buildup on the skin.



WAHTER PCB package

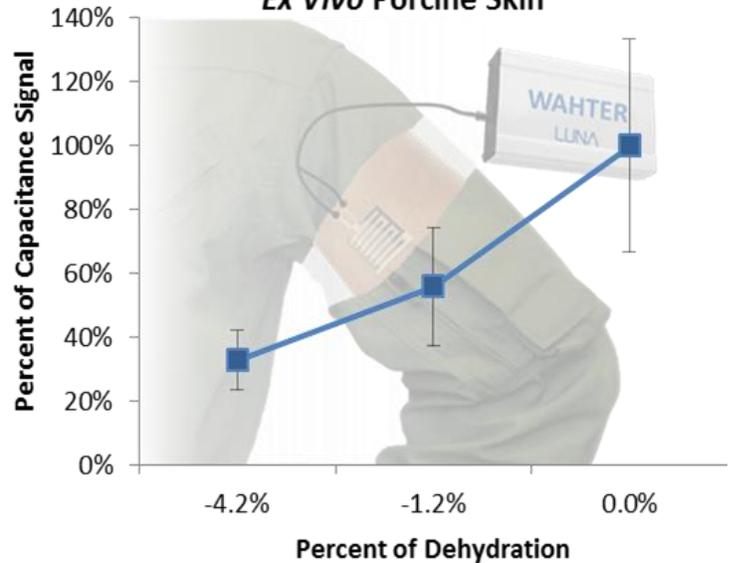
- Phase I system prototype successfully measured changes in ex vivo porcine skin hydration.
- Battery life of >8 hrs allows extended-duration use.
- Flexible, bio-friendly sensors have been produced for extended placement on inner forearm.
- Applications are extendable to troop health monitoring, athletic training, clinical evaluation, and more.
- Sensor can be equipped with various breathability strategies to allow evaporation of perspiration.

Increased fast-jet mission durations and inconvenient urine-relief mechanisms have led to an increased incidence of dehydration-induced mental incapacitation.

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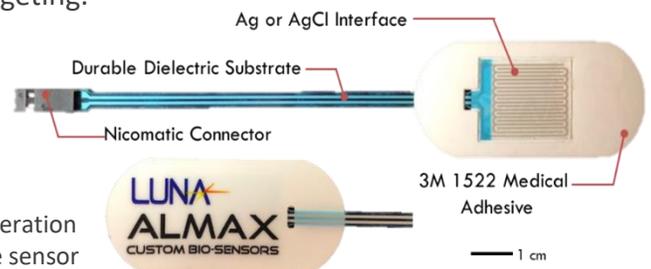


WAHTER System Detects Dehydration in Ex Vivo Porcine Skin



WAHTER system used to detect dehydration in excised porcine skin.

- Individual user biometrics (age, sex, height, weight) will be employed to perform auto-calibration.
- Robust, impedance-based hydration assessment permits operation in austere environments.
- Measurement-error-detection algorithm protects against effects such as high-G maneuvers or improper sensor placement.
- Phase II plans are in place for hardware testing, advanced algorithmic development, and human trials.
- Complete simulated wearability test will be performed in centrifuge with full flight gear.
- Computational model is in concurrent development for precise algorithmic signal targeting.



First-generation wearable sensor



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