







INVESTING IN YOUR FUTURE

ConMonity - IoT platform for real-time monitoring of concrete hardening

EBERINS@EDI.LV +371 26936323 EDI.LV

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After water, concrete

is the most widely used substance on the planet claims The Guardian¹. It's extremely robust, durable, versatile, and malleable - all at the same time.

Concrete is the foundation of modern development, putting roofs over the heads of billions, fortifying our defences against natural disasters, and providing a s tructure for healthcare, education, transport, energy, and industry. Yet there's a catch.



an.com/cities/2019/feb/25/concrete-the-most-destructive-materialon-earth

The Challenge

From the time wet concrete is being poured, and throughout the whole life cycle of the concrete product, many important processes, and parameters (such as humidity, temperature, pressure, and load) must be adequately considered to ensure a safe and long-lasting structure.

Material limitations, design and construction practices, and severe environmental exposure conditions can cause concrete to deteriorate, which may result in aesthetic, functional, and/or structural problems.

Therefore, to eliminate the possible damage and even collapse of the construction that is due to the poorly monitored concrete hardening process, we offer technology that allows with high accuracy to monitor various concrete hardening processes and notify about any deviations from the norms, especially the first year **after** the pouring.



The Solution

Concrete is subjected to aging, thus monitoring of fresh concrete is crucial. A non-destructive IoT system capable to monitor the concrete hardening process and increase the quality of decisions by providing reliable in-situ information in real-time.

This is important because predicting the behavior of the concrete structures is almost impossible due to a list of influencing factors such as diversity of loads, environmental influence, cyclic seasonal loads, and also the geographical region.

The researchers of the EDI scientific institute have developed an IoT system "ConMonity" which is capable to measure all the necessary parameters (temperature, humidity, and threedimensional stress) of the concrete hardening process in real-time. By using the "ConMonity" solution, any construction company can monitor several different sites at the same time from their headquarters.

Key ConMonity Components





Sensors



One gateway for up to 256 sensor systems



Local or Cloud server Data acquisition & wireless communication (LoRA) module



LTE communication with servers



Mobile or PC app

How does ConMonity Work?

02

03



Data from these sensors are gathered in a data acquisition and wireless communication module (or logger) and then sent to the gateway, which

Sensor data through servers are sent to your mobile or desktop app for real-time data processing, visualization, and further analysis.

communicates with the server.



Core Benefits



Long-range radio wireless network for data collection to monitor all construction objects



Email and text alerts during concrete hardening process



Data acquisition and measurements from in-situ concrete



Intuitive GUI to configure wireless data loggers and the whole monitoring process

Key Solution Features



Low-cost installation



Free Android app



Reliable and waterproof design (IP68)



Data export (CSV and other formats)



Long battery life, up to 2 years



Interactive plotting of data, and notifications, recommendations (smart algorithms)



User changeable interval to receive reliable Time-Synchronized readings from sensors

About EDI

EDI was founded in 1960 and is a highest rated institute in Latvia in the field of engineering and technologies, conducting fundamental and applied research in:

- Smart Health
- Smart Production
- Smart Mobility
- Smart Digital life
- Space 🛇

EDI main research areas are following: extremely precise event timing incl. space domain, remote sensing and space data processing, robotics and machine perception, signal processing and embedded intelligence, smart sensors and IoT.

EDI has ~100 researchers working on innovative technologies in electronics and computer science.



- Research and innovation
- Scientific excellence
- Cutting edge technologies
- State-of-the-art infrastructure
- New minds and experienced researchers
- Development, integration and testing of Smart Embedded Cooperative systems





