



# REVOLUTIONIZING CONCRETE OPERATIONS

Advanced Monitoring Tools for  
Large Scale Engineering Projects

[www.wavelogix.tech](http://www.wavelogix.tech)

Date: May 8, 2025

Presented by: Joe Turek & Jesse Jonas







# Introduction

Wavelogix®, Inc. was founded in 2021 in partnership with INDOT and Purdue University to improve road and bridge reliability while reducing traffic disruptions.

Our REBE® Concrete Strength Sensing System provides real-time, in-place measurements of concrete properties, offering a more precise and versatile solution than traditional sensors.

With patented technology, Wavelogix eliminates the need for pre-set maturity curves, delivering accurate results across various projects and helping teams optimize schedules and reduce costs.





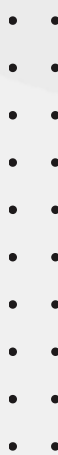


# Joe Turek

## President & COO

Joe Turek, received a bachelor's degree in Electrical Engineering (BSEE) in 1979 from the University of Notre Dame and an MBA from Northwestern's Kellogg School of Management in 1982.

He has been involved in manufacturing his entire career. He holds five patents involving high performance microwave telecommunications circuit board technologies and has been a registered Professional Engineer and a member of the IPC and IEEE.







# Jesse Jonas

## All Civil Engineering, Owner

**Jesse Jonas** is a registered professional engineer in Illinois & Missouri. He owns and operates All Civil Engineering, LLC, supporting the Concrete Council of St Louis (CCSL) & the Illinois Ready-Mix Concrete Association (IRMCA) by providing technical education, technical support, and general concrete market promotion.

In previous positions, Jesse has held the government roles of Construction Manager at the Missouri Department of Transportation and St Louis County Department of Transportation, as well as Private Sector roles, including Business Unit Leader for Civil Engineering firm Horner & Shifrin, and finally served the Missouri/Kansas American Concrete Pavement Association as Director of Engineering and Interim Executive Director.





# Why Is Knowing Concrete Strength Critical

Concrete must reach specific strength levels before proceeding with these essential construction steps:



## Structural Form Removal

Safely remove forms surrounding the structure.

## Scaffolding Removal

Clear scaffolding under floors in buildings or garages.

## Post-Tensioning

Enable tensioning in bridges and decks.

## Traffic Release

Allow traffic on new pavement.

## Segment Pouring

Pour the next section of tall columns or walls.

## Panel Lifting

Lift Tilt-Up panels into place.





# AASHTO T 22 | TRADITIONAL METHOD FOR TESTING CONCRETE TODAY

## DISADVANTAGES

- Limited insights after first 20 hrs
- Temperature-dependent with inconsistent results
- Periodic Testing Intervals (1, 3, 7, 14, 28 days) Rather than REAL-Time Monitoring
- High Potential for error ( up to 500%)
- Time delays and resource-heavy process



Compression Cylinder/ Break



Flexural Beam Break





# Benefits and Impact



## Calibration Free

Independent of mix design, temperature and moisture



## Real-Time Data

Monitors concrete strength up to 56 days and beyond



## Proven Reliability

Lower variability than cylinder, beam and core tests



## Cost & Time Savings

Enables faster project completions and earlier payments



## AASHTO T 412 - Compliant

Fully aligned with the new standard







# Costs with Cylinder Breaks

COST BREAKDOWN	
Labor: 4 hours minimum @\$100/hr	\$400
Transportation: Round trip to/from site	\$100
Cylinder Cost: 15 cylinders @ \$25 each	\$375
Lab Equipment Fee: Flat Rate	\$100
Final Reporting, Profit & Overhead	\$400

**Concrete Use:**  
15 Cylinders/100CY=  
150 lbs of Concrete

**Testing Schedule:**  
3 Cylinders tested at:  
1,3,7,14, and 28 days

Total Cost  
**\$1375/100CY**  
Concrete Poured

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# Cost Comparison

## REBEL® Sensor System vs. Cylinder Breaks



COST BREAKDOWN	
Labor: 1 hour @\$100/hr	\$100
Sensor (per ACI Standard)	\$400
Overhead & Profit	\$200
<b>Online Dashboard Automatic Reporting</b> <ul style="list-style-type: none"><li>• Real-time access</li><li>• Instant Strength Results: time vs. strength</li><li>• Strength shown in compression, flexural or modulus</li></ul>	

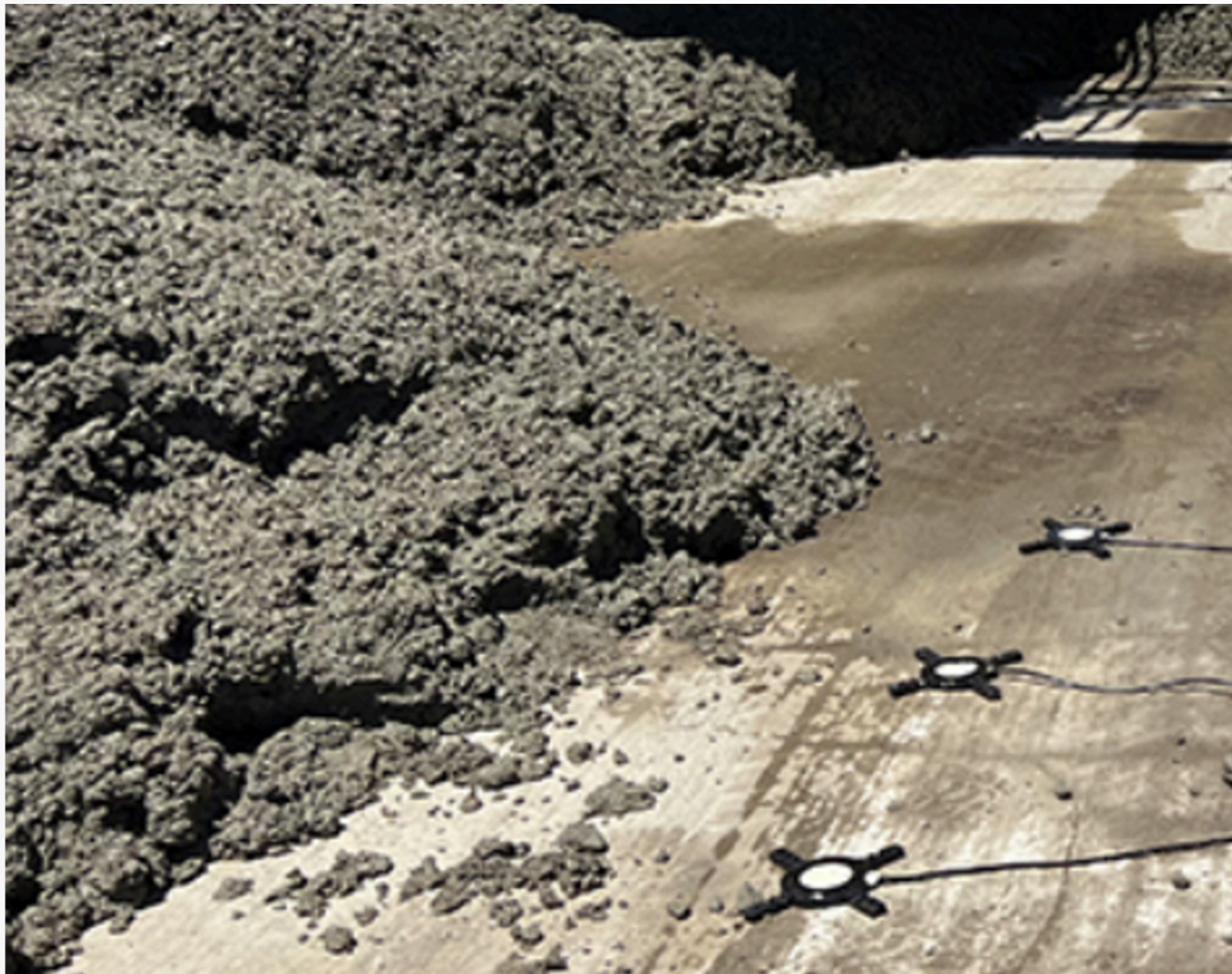
Total Cost  
**\$700/100CY**  
Concrete Poured

**50% Savings**  
Compared to Cylinder  
Testing



# Easy TESTING SET UP

Drop on Roadbed



Strap to Rebar





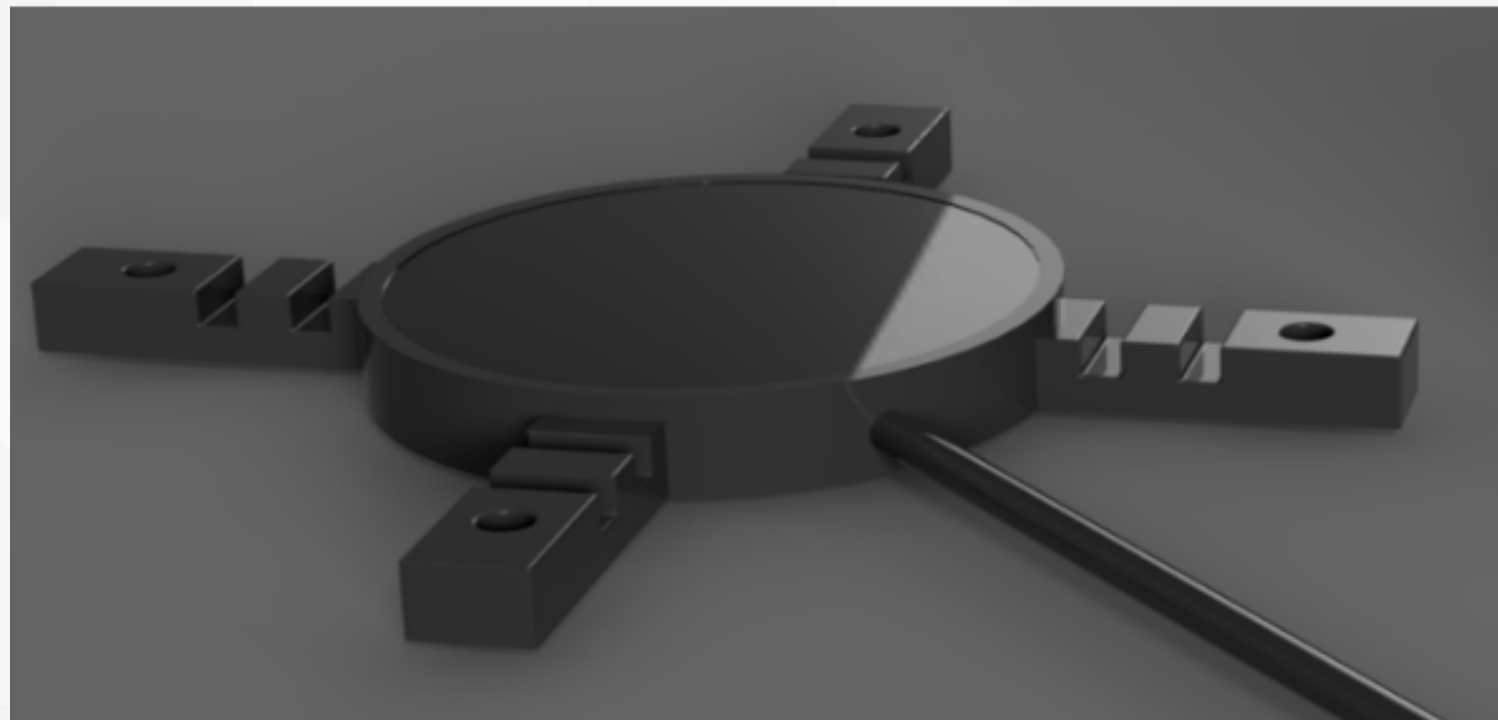
# The REBEL® System

**Miniaturized IoT Hardware for:**  
Data collection and Computational Transmission

**AI-guided algorithm for:**  
Concrete strength measurement Concrete strength prediction

## REBEL Sensor

Inside: Piezo wave generator and temperature probe



## REBEL Data Logger

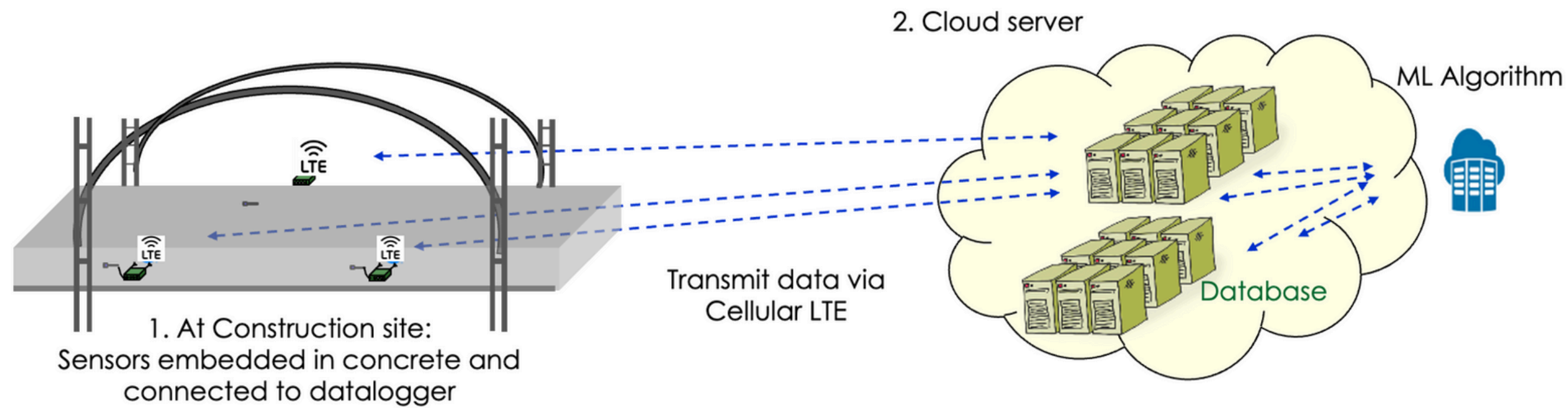


Inside:

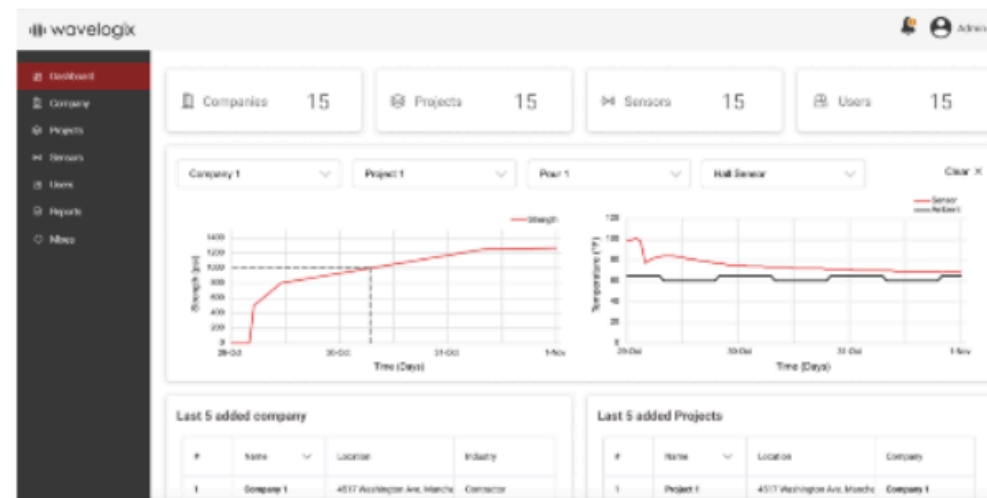
- Impedance meter
- GPS location chip
- Cellular radio
- Lilon Battery (28 day capacity)
- Wireless recharging with a cradle charger
- Sealed case that can work under water
- Durable housing to withstand environmental pressures



# How It Works



## 3. Front end

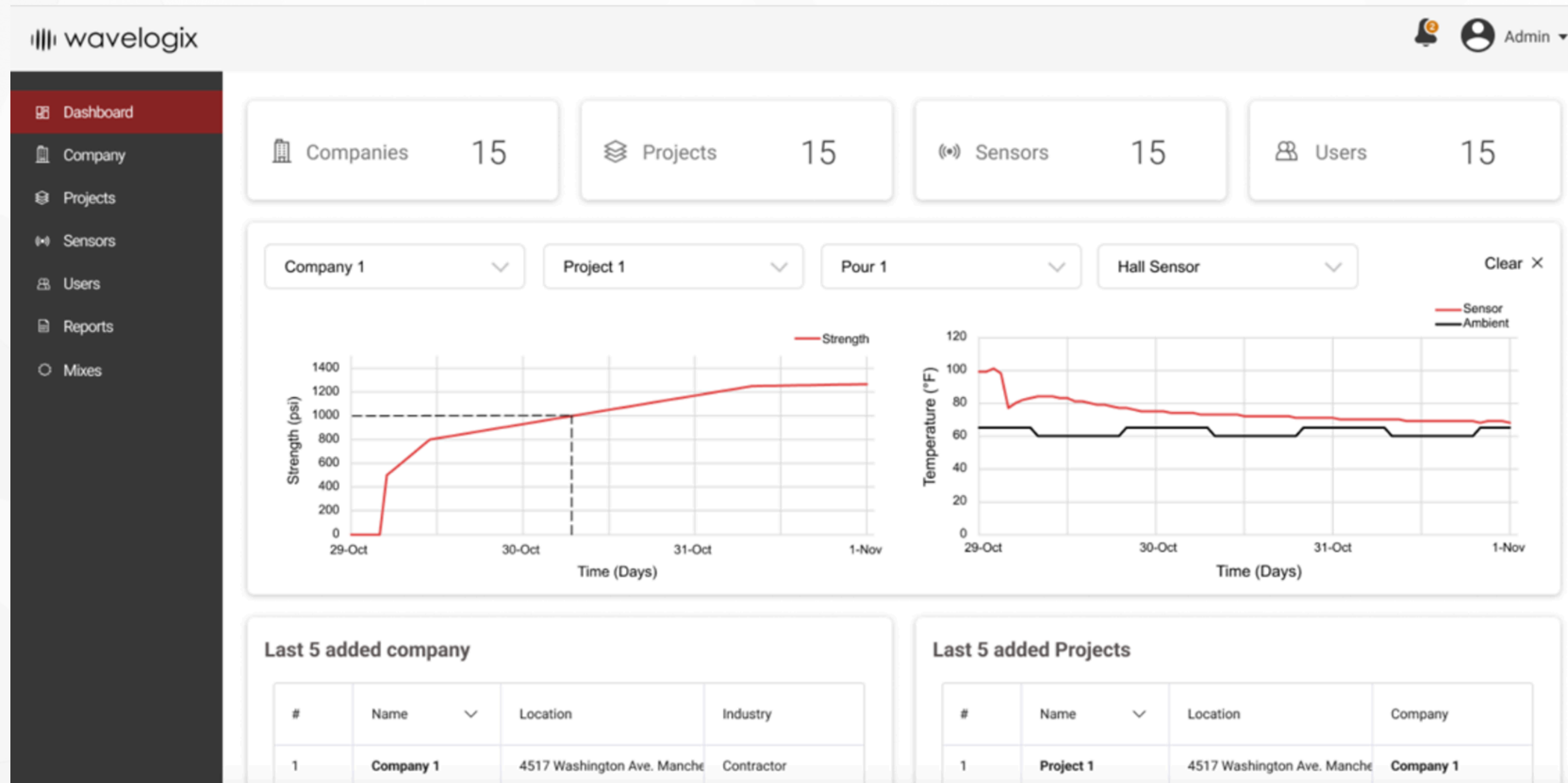


## 4. User Interface





# Dashboard and User Interface







### Book a meeting:

Explore how the REBEL System can transform your concrete monitoring process!

### Learn More:

[sales@wavelogix.tech](mailto:sales@wavelogix.tech)



SCAN ME

THANK YOU