



# EXECUTIVE Q & A: REAL TIME CONCRETE STRENGTH AND INSIGHTS

With Dr. Luna Lu & Joe Turek

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

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Presented by: Dr. Luna Lu & Joe Turek





# Introduction

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

Our REBEL<sup>®</sup> 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.





# Dr. Luna Lu

**Founder & CTO Wavelogix inc.**

**Vice President of Industry Partnerships, Indiana ACPA Professor, Lyles School of Civil and Construction Engineering, Founding Director, Center for Intelligent Infrastructure at Purdue University.**

**Dr. Luna Lu — Fellow of the Royal Society of Arts and Sciences**

**Dr. Luna Lu** is an internationally recognized expert in concrete and cementitious materials. Her work integrates civil, electrical, and materials engineering to advance smarter, more sustainable infrastructure. She focuses on IoT sensors for real-time monitoring, low-carbon high-performance materials, and energy-harvesting technologies. Dr. Lu has published over 150 papers, authored books and chapters, and holds 15+ patents. Her groundbreaking contributions have earned top honors, including the NSF CAREER Award, ASCE Gamechanger, Alfred Noble Prize, and a 2024 Edison Award, as well as recognition as Purdue University's most impactful faculty three years running.



# Joe Turek

**CEO**

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.



# Benefits and Impact



## Calibration Free

Independent of mix design, temperature and moisture



## Real-Time Data

Monitors concrete strength up to 56 days and beyond



## Reduces Schedule Risks

Enables confident early-open decisions



## Improves Compliance

Aligns with Secs and agency expectations



## Drives ROI

Cost savings, reduced claims, and fewer rework delays



## Fits workflows

Simple deployment, intuitive dashboards and fast team adoption



In-Place Strength Data  
Delivers Decision -  
Grade Results

# Rebel Sensors Deliver

## Decision- Grade Results

Data is **Accurate**

Data is **Actionable**

Data is **Defensible**





# Pilot Project Success

## KPIs, Scope, Next Steps



### Define Clear KPI's

- Variance between sensor data and cylinders
- Time saved: formwork or traffic openings
- Compliance specifications



### Planning

- Assign data owners early (QC, engineers, DOT Inspector)
- Confirm test frequency
- Acceptance Criteria
- Mix Design
- Wavelogix's Models



### Define Success

- Measurable time savings
- Cost avoidance
- Confidence to scale

## Connect Technology to Business Outcomes:

- Time
- Money
- Compliance

# REBEL: Reduces Risk, Improves Compliance & Drives ROI

Pilot  
Program

ROI for your  
Business

### Frame Your Risk:

- Costly delays
- Rework

### Compliance and Audibility

- Digital records
- All Access Dashboard
- DOT or Owner Review

### ROI:

- Fewer Cylinders
- Faster Form striping or pavement openings
- Quicker third-party results
- Optimized cement usage

## Strategies for building specification support

Wavelogix offers a Roadmap

# REBEL Paving the Way to a Spec-approved practice

One-off Test

Pilot Program

Spec-approved Practice

Adapting to new technology is a process

- ✓ Engaged with Project Owner
- ✓ Documented Results
- ✓ Aligned with Standards

# REBEL Paving the Way

## 1. Define Pilot Scope

- **Select the right project** — choose a manageable, representative pour (bridge deck, pavement section, precast element).
- **Identify success metrics** — time to strength vs. cylinders, schedule acceleration, compliance with AASHTO/ASTM, cost avoidance.
- **Set boundaries** — pick 1–2 placements rather than the whole job to simplify oversight and analysis.



# REBEL Paving the Way

## 2. Build the core Pilot Team

- **Technical Champion** — a QC manager, materials engineer, or project engineer who will own the test data and reporting.
- **Field Implementers** — crew leads or inspectors who will install sensors and log pours.
- **Decision Makers** — PMs, DOT reviewers, or leadership who care about schedule, compliance, and ROI.



# REBEL Paving the Way

## 3. Train & Deploy

- **Hands-on setup** — use Wavelogix onboarding to learn sensor placement, logger activation, and dashboard navigation.
- **Establish a data cadence** — confirm who will monitor live data and download summaries.
- **Pair with existing methods** — run cylinders in parallel to compare in-place data and build trust.



# REBEL Paving the Way

## 4. Analyze & Present Results

- **Compile data visualizations** — strength gain curves, cylinder vs. REBEL comparison, time-to-opening.
- **Highlight risk avoided and ROI** — e.g., prevented premature opening, accelerated form stripping, reduced field testing.
- **Use shared dashboard access** — invite internal stakeholders to view real-time data and post-pour reports.



# REBEL Paving the Way

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# REBEL Paving the Way

## 5. Drive Consensus & Scale

- **Host a results review** — present pilot findings to leadership, QA, and owners/engineers.
- **Connect to specs & compliance** — show how REBEL data aligns with AASHTO T-412 and ASTM standards.
- **Plan expansion** — outline where to integrate sensors in future pours, add user accounts, and reduce cylinders over time.



# REBEL Paving the Way

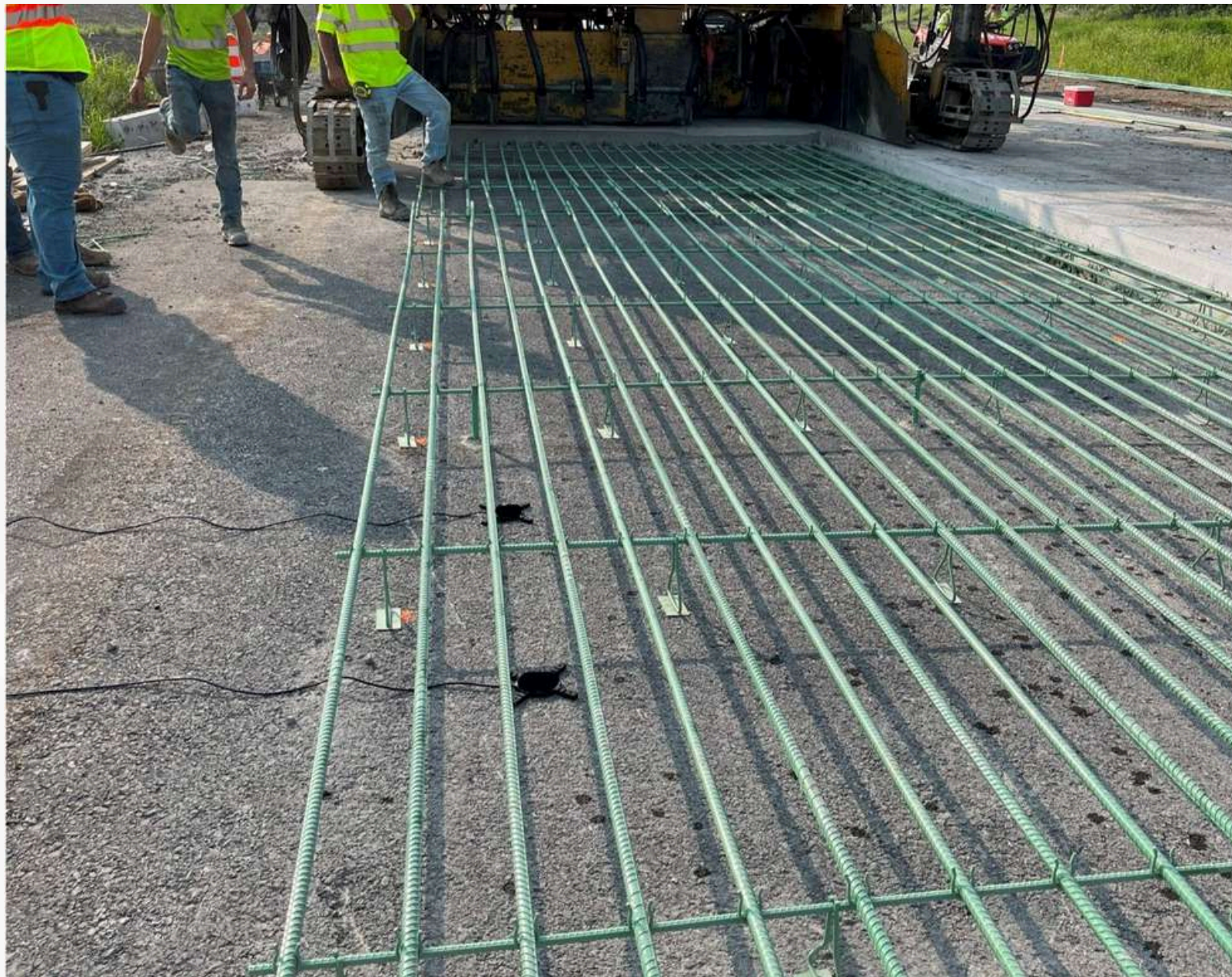
## 6. Support form Wavelogix

- Pilot planning assistance
- Onboarding Training for field crews and engineers
- Interactive Dashboard
- Case studies and ROI calculators to justify adoption
- Spec support language to help update internal standards



# Easy TESTING SET UP

Drop on Roadbed



Strap to Rebar



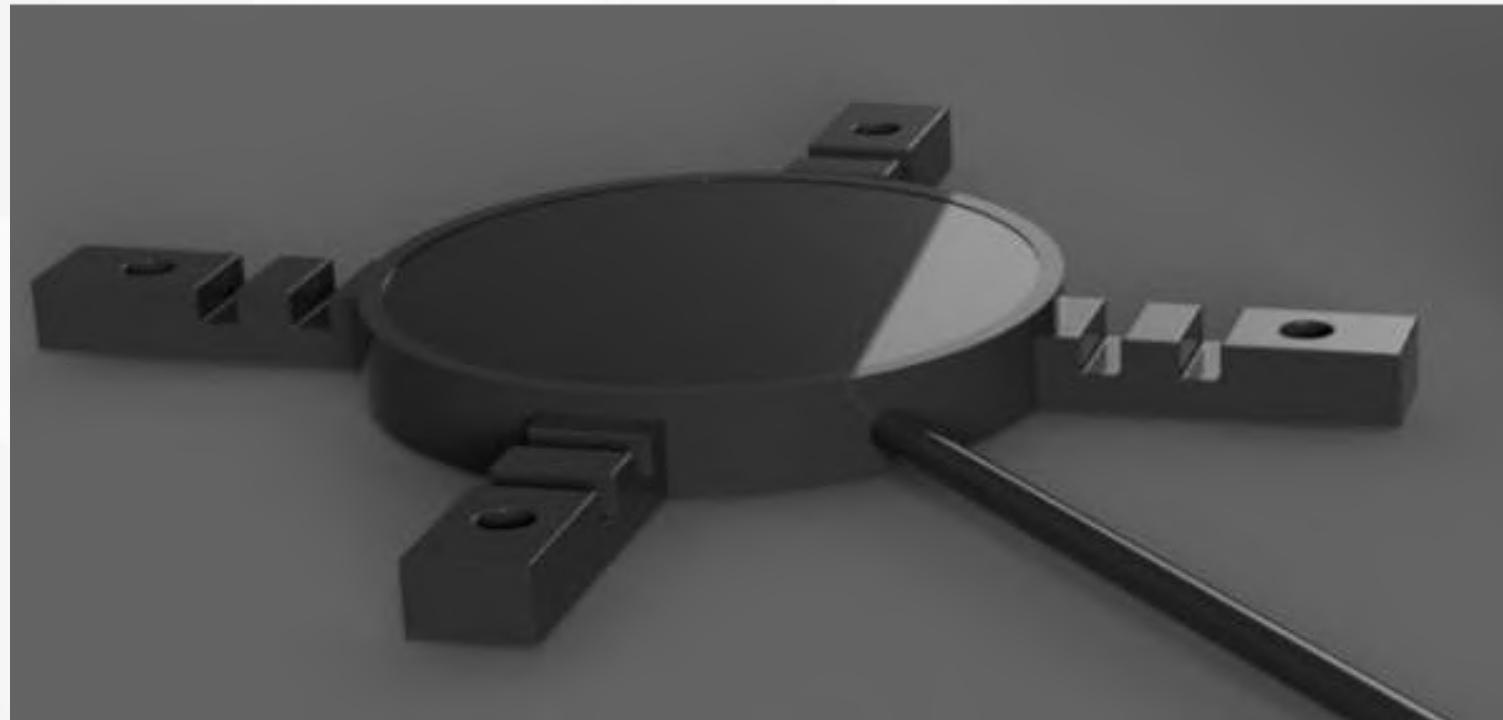
# The REBEL® System

**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



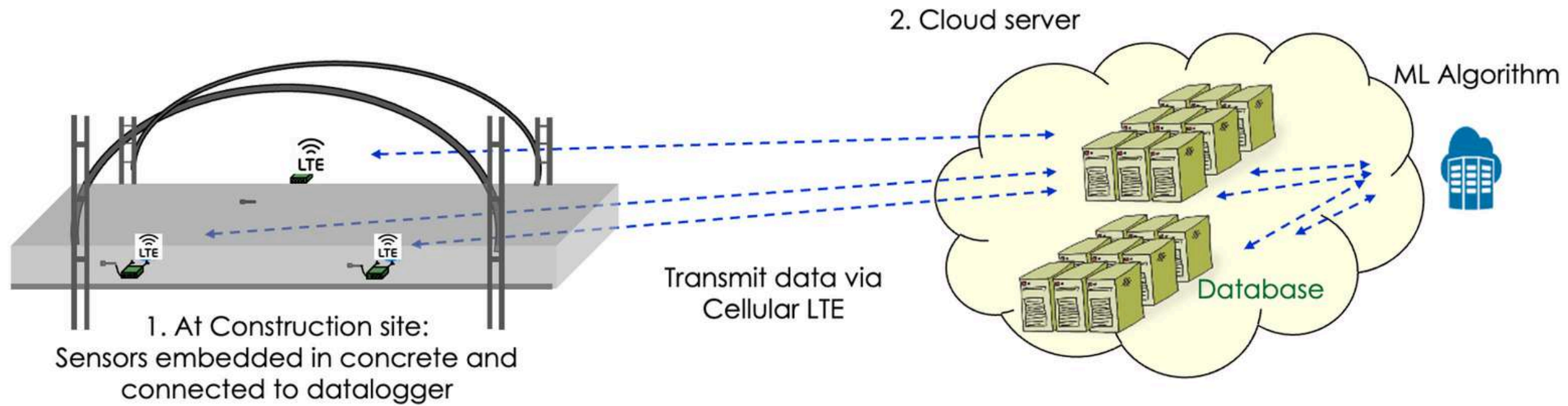
## REBEL Data Logger



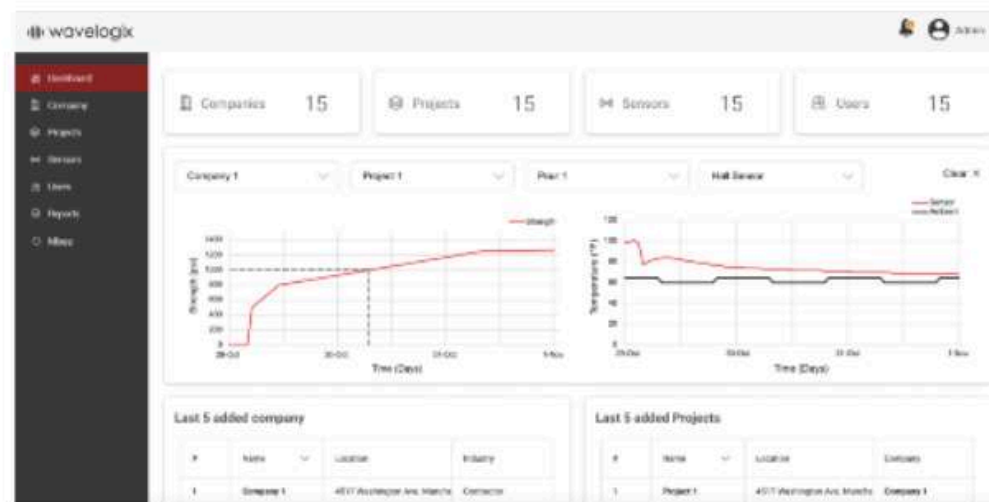
Inside:

- 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



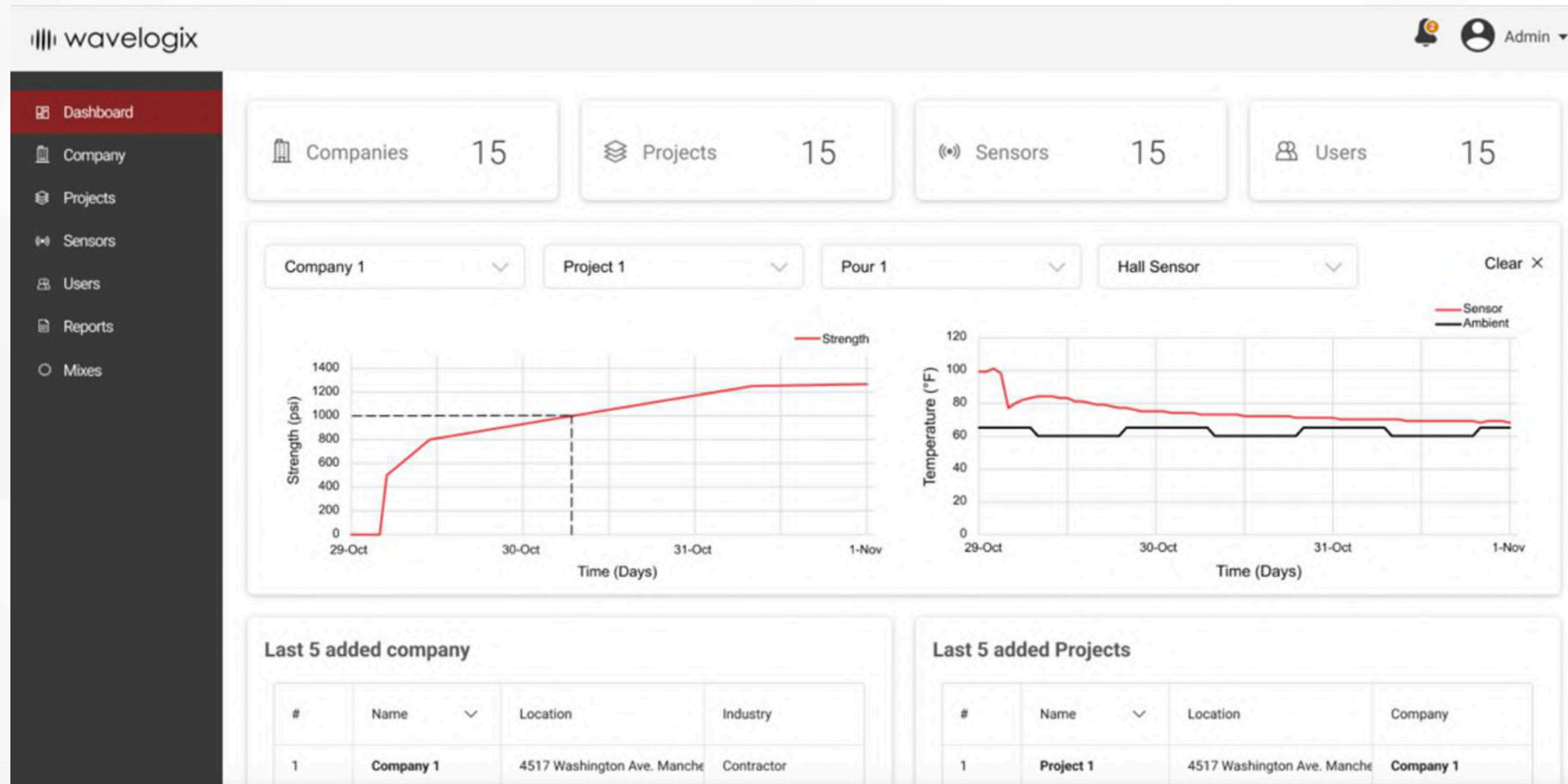
## 3. Front end



## 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**

