

KIN-NEON HOUSE: SELF-POWERED DISTRIBUTED SENSOR SYSTEM

Small energy harvesting + ultra-low power sensors monitor the home 24/7 with **no batteries** and **minimal maintenance**.

HOW IT WORKS

- 1 Each sensor harvests tiny amounts of energy from its surroundings using micro energy harvesting.
- 2 Energy powers the sensor and allows it to take measurements.
- 3 Data is sent via low-power wireless mesh to a local gateway.
- 4 Gateway sends data to weavr cloud dashboard for analysis and alerts.

ENERGY HARVESTING SOURCES

- Electrochemical (soil, moisture, concrete, earth blocks)
- Thermal (temperature differences)
- Vibration / movement
- Ambient RF / light

Micro energy harvesting provides microwatts to milliwatts – enough for ultra-low power sensors to operate continuously.

TYPICAL SENSOR POWER NEEDS

Ultra-low power sensors use microwatts to milliwatts.

- Moisture / Temp / Humidity ~10–100 μ W
- Structural / Movement ~50–200 μ W
- Gas / Air Quality ~100–500 μ W
- Occupancy / Door ~10–50 μ W
- Water Level ~50–200 μ W

Harvested energy > Consumption = Continuous operation

EARTH BLOCK WALLS

- Moisture Migration (moisture sensor)
- Crack Propagation (strain sensor)
- Compression Changes (pressure sensor)
- Internal Temperature (temperature sensor)
- Humidity (humidity sensor)

FOUNDATION & GROUND

- Moisture (moisture sensor)
- Settlement / Movement (tilt / displacement sensor)
- Termite Activity (activity sensor)
- Ground Temperature (temperature sensor)

ROOF

- Wind Loading (vibration sensor)
- Rain Detection (moisture sensor)
- Thermal Performance (temperature sensor)

LOCAL GATEWAY

- Collects data from all sensors via mesh network and sends to cloud.

UTILITIES

- Water Tank Level (level sensor)
- Pump Health (vibration / runtime)
- Water Quality (water sensor)
- Battery State (voltage / temp sensor)

SAFETY

- Smoke Detection
- Gas / CO Detection
- Occupancy Detection
- Door / Window Status

WEAVR CLOUD DASHBOARD



Real-time monitoring, historical trends and predictive alerts.

OVERVIEW

All Systems Normal

42

Homes Monitored

MOISTURE ALERT

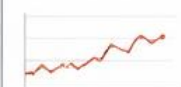
House 17



Wall moisture increasing over 6 months.

STRUCTURAL ALERT

House 42



Foundation movement exceeds baseline by 4 mm.

WATER TANK

House 08



62%

BENEFITS

- ✓ No batteries to replace
- ✓ Low maintenance
- ✓ Early problem detection
- ✓ Lower repair costs
- ✓ Improved safety
- ✓ Long-term data for planning
- ✓ Supports remote communities

BUILT FOR THE LONG TERM

Every sensor is linked to the exact materials data of the blocks and components used in that location. A digital twin of the home that improves with time.



NETWORK ARCHITECTURE



- Foundation & Ground
- Walls
- Roof & Utilities
- Safety
- Gateway

KIN-NEON
STRONG. SUSTAINABLE. SMART.