



30MHz

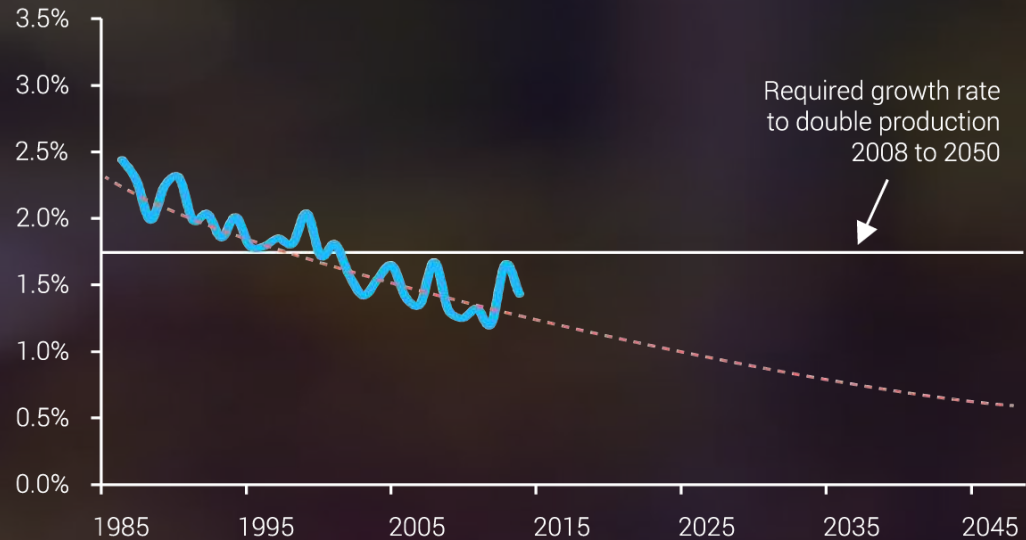
lessons learnt from smart sensing in horticulture



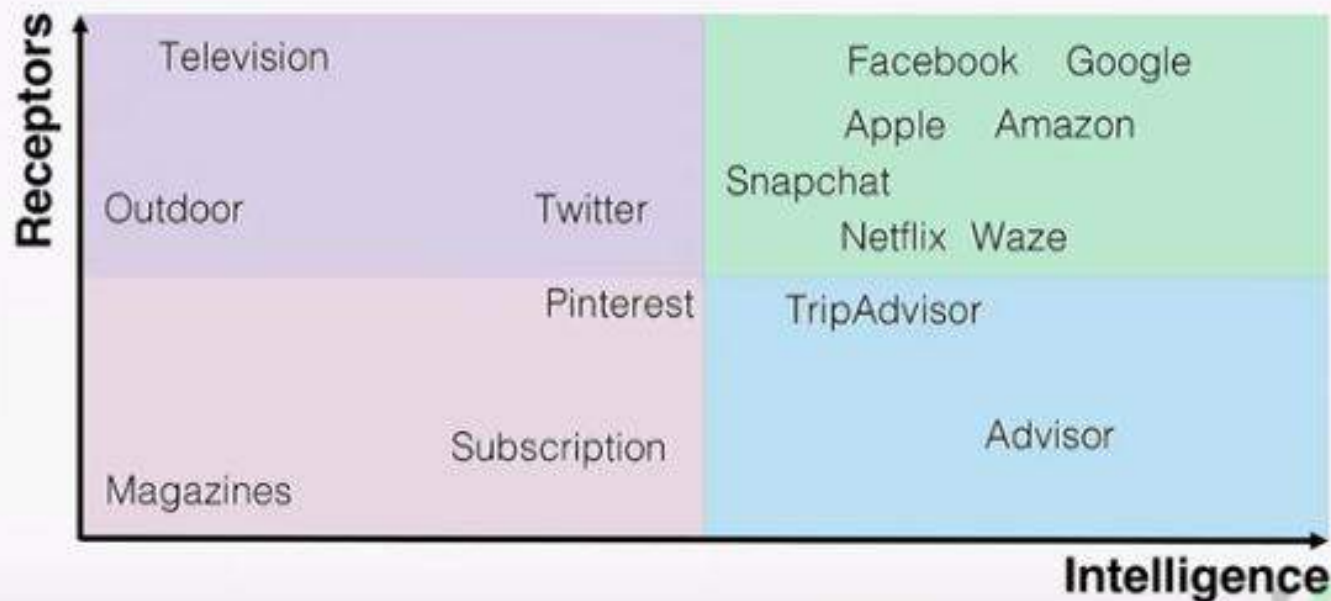
10bn population by 2050

We must do more with less

Declining productivity growth in agriculture



THE NEW ALGORITHM OF VALUE





We're 30MHz

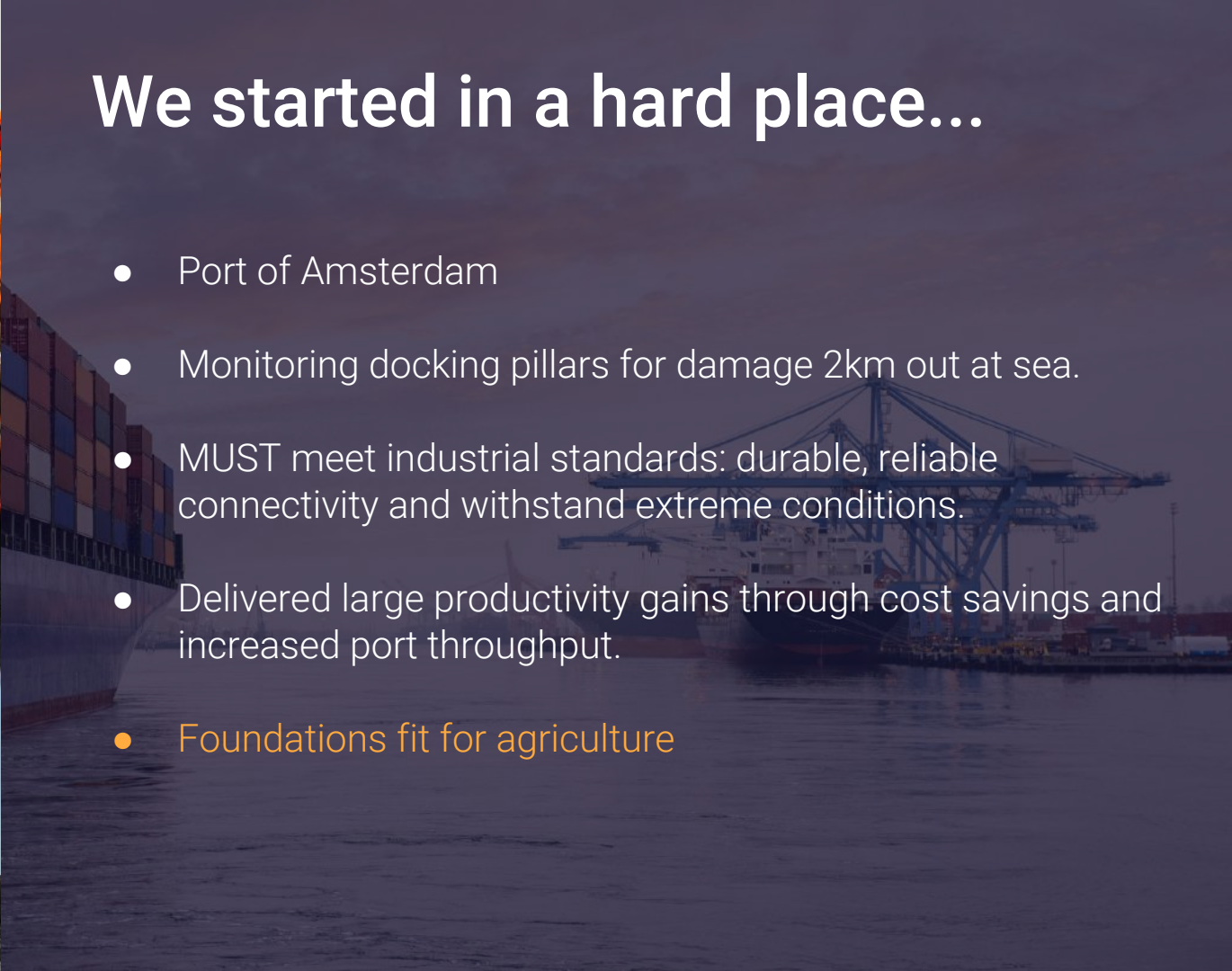
We help organizations of all sizes turn data from their physical environments into actionable insights at industrial scale.





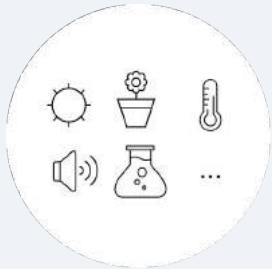
We started in a hard place...

- Port of Amsterdam
- Monitoring docking pillars for damage 2km out at sea.
- MUST meet industrial standards: durable, reliable connectivity and withstand extreme conditions.
- Delivered large productivity gains through cost savings and increased port throughput.
- Foundations fit for agriculture



Components of a complete solution

30MHz Smart Sensing toolkit **deployable in minutes** by anyone on any device.



Wireless sensors

Choose from any combination



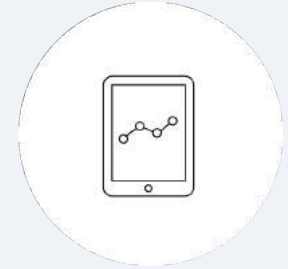
Repeater

Enables 100% connectivity in hard to reach places



Gateway

Ethernet/3G, collects & connects data to our cloud

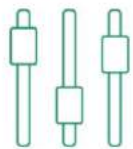


ZENSIE Dashboard

Cloud based dashboard enables analytics anywhere, anytime on any device.

Built for Agribusiness needs

Our agricultural customers are partners in innovation, ensuring we develop products that serve their sector's needs.



Customer Control

Control what conditions you measure, how you see your data and user permissions.



Fast deployment

Unbox your sensors and start measuring. Set up a wireless network in minutes, no technical ability is needed to install



User friendly

It's intuitive and easy to customise so anyone across organisation can use it without a steep learning curve. Usable on any device.



Own your data

It's data on your business environment, there's no reason why you shouldn't own it. Export data via CSV, API or share live dashboards or select sensory data with stakeholders.

Metrics that matter

All our metrics available today are driven by our customer needs and we continue listen and add.

Tracking metrics including

- soil moisture, EC & temperature
- plant level dewpoint (frost point)
- vapor pressure deficit
- CO₂
- oxygen
- plant and leaf temperature
- ambient temperature and humidity
- air flow
- weather (rain gauge, wind speed, light)
- object counting
- utilisation

Ambient temperature
Microclimate

19,6°

Humidity
Microclimate

58,3%



30MHz

lessons learned and stories of
productivity

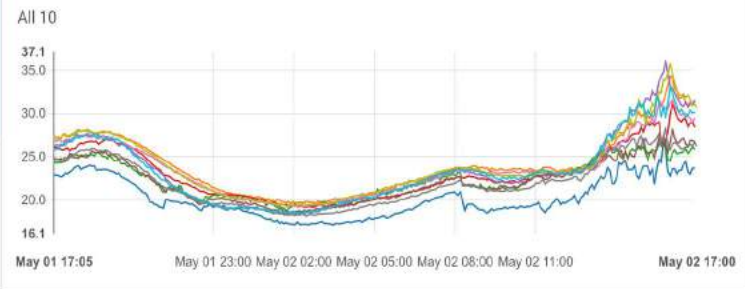


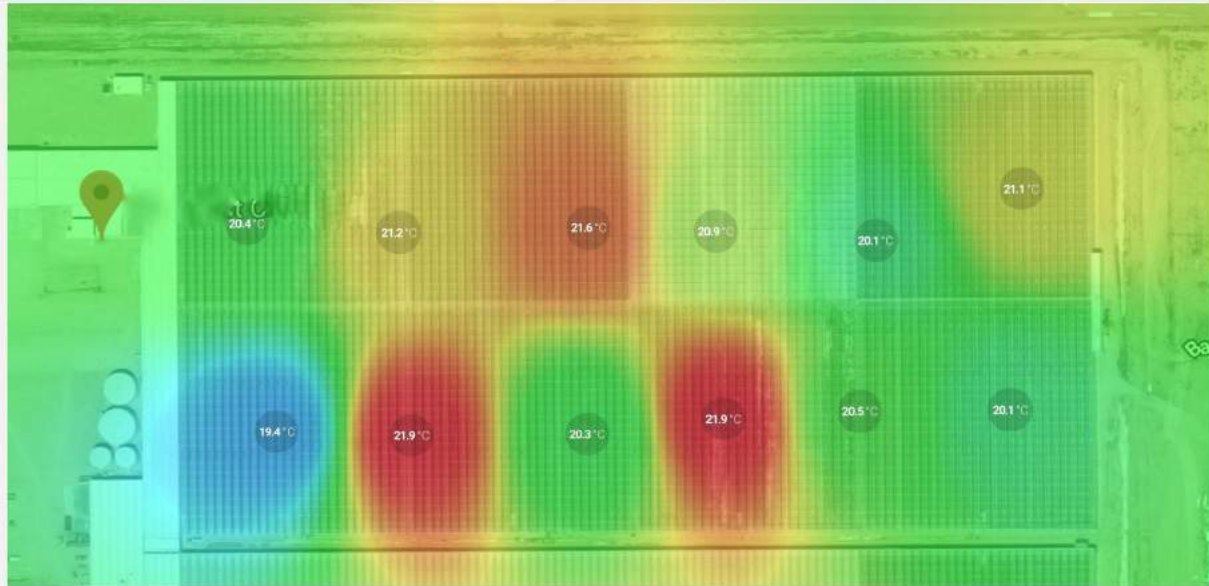
It's ok to start small - in fact you should

- Kwekerij Moors pepper farm
- 6% increase in yield, 10% energy saved = 3600% ROI
- Increasing yields with infrared temperature sensors gathering data from multiple location points.
- Started with preventing crop loss from “burned” peppers, went on to find discover new ways to improve yield from screening to airflow changes.

ROUTER ASTEN	ROUTERS SOMEREN	SOMEREN TEMP.	ASTEN TEMP.	SOMEREN ACCU	FRAZIER	GIALTE	+
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 26.9 °C 3000 onder 2	 31.5 °C sensor 0013A2004153B46F	 27.8 °C 3033 boven	 30.7 °C sensor 0013A2004153B49B
 29.5 °C sensor 0013A2004153B490	 25.7 °C 3000 onder	 30 °C 2033	 23.4 °C 3033 boven
 31.8 °C Sensor 0013A2004153B47A	 26.2 °C 3033 boven		







small & new data can facilitate innovation

- A leading UK based basil grower uses the Pointed Microclimate Sensors to monitor his crop real-time.
- In 24 hours grower discovered new insights. At crop-level it was regularly at risk to the dewpoint(wetness) and thus higher risk to disease. Actively **changed the environment by reducing marginally the temperature & humidity** to reduce these risks.
- Seeing VPD (plant activity) and increasing it has resulted in a better crop at harvest, “**thicker and flatter, and is also able to deliver harvest consistency**”. This is reducing supply chain concerns and also increases shelf life.



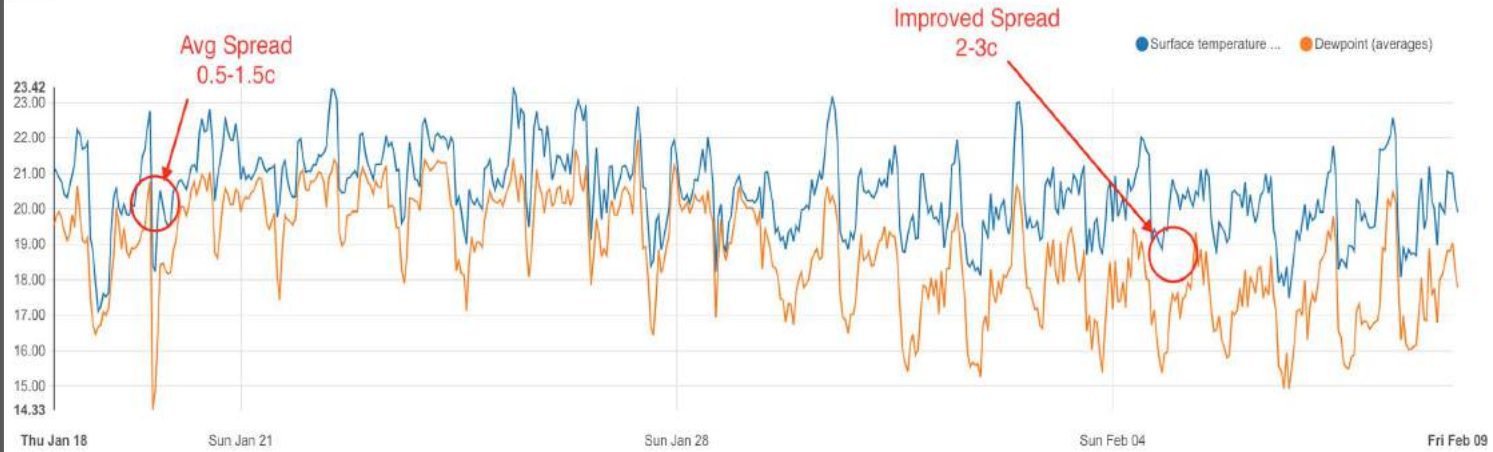
+ ADD SENSOR

2017-11-10 - 2017-1...

PER HOUR

AVG.

Basil





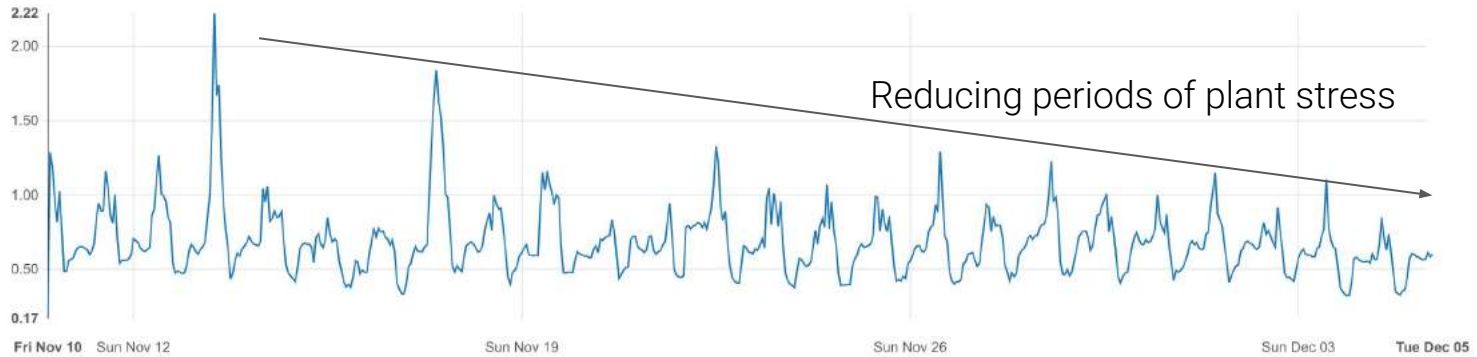
+ ADD SENSOR

2017-11-10 - 2017-1...

PER HOUR

AVG: Sensor 0013A200415D0330

VPD (averages)





reliability in harsh conditions is non-negotiable

- Based in the heart of Kent, Cottage farms is a packhouse and cold store for over 50 growers.
- Importance of **consistent uptime** in extreme temperature and isolation.
- Wireless Temp & Humidity sensors have help to **significantly enhance quality control**, moving from a manual checking process to an electronic record. Significant labour productivity saving generated from the monitoring and report generating.
- 24/7 monitoring and alerts identified a malfunction overnight with temperature increasing above the desired level, the problem has since been rectified **averting a potentially large loss and saving energy**.

TEMP

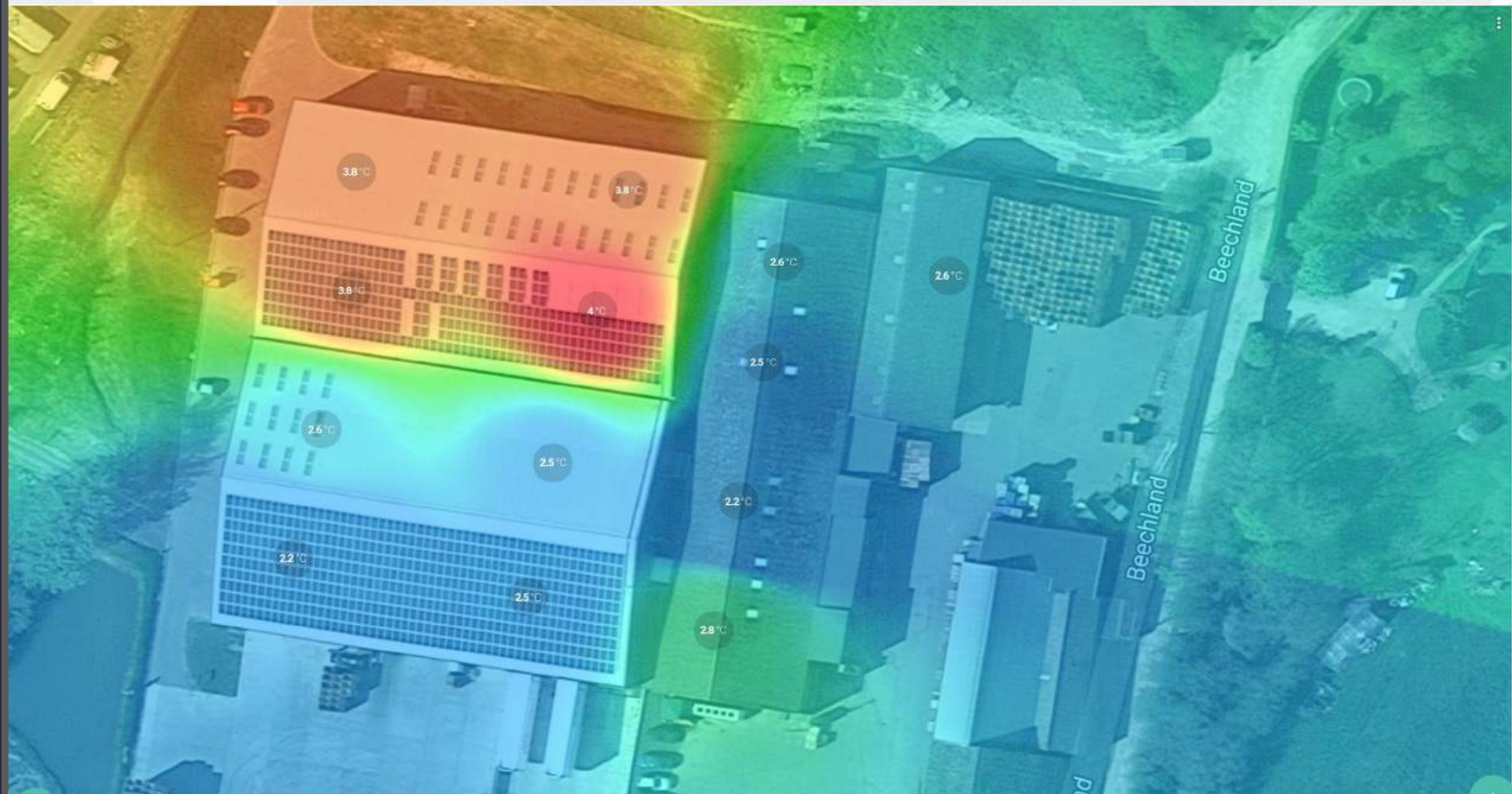
(NEW) HEAT MAP VISUAL

MAIN STORE

STORE 2

STORE 3

UPTIME HEATMAP





DIAGNOSTICS

HEATMAPS

PLACEMENT MAP

**3.8 °C 96.4 %**

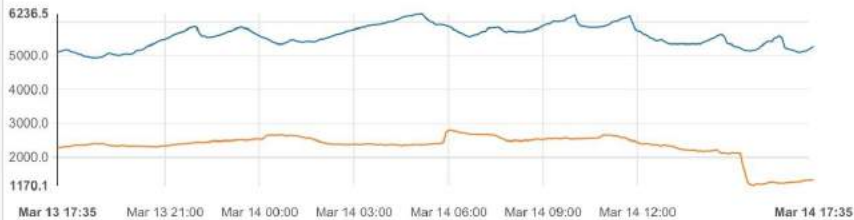
Store 1 - Current

CO₂**1359.2 ppm**Store - 1 CO₂ - Current**3.2 °C 85 %**

Store 2 - Current

CO₂**5259.5 ppm**Store 2 - CO₂ - Current

Temp compare Daily (2)

CO₂ compare Daily (2)**2.8 °C 95.9 %**

Store 1 - Min

mins today

CO₂**1162.2 ppm**Store - 1 CO₂ - Min

mins today

**3 °C 83.5 %**

Store 2 - Min

mins today

CO₂**5062.5 ppm**Store 2 - CO₂ - Min

mins today

**3.9 °C 100 %**

Store 1 - Max

maxs today

CO₂**2856.3 ppm**Store - 1 CO₂ - Max


maxs today

**3.5 °C 86.1 %**

Store 2 - Max

maxs today

CO₂**6283.8 ppm**Store 2 - CO₂ - Max



real-time metrics & alerts can save large losses and lives....

- A leader in the breeding, production and sale of vegetable seeds, Bejo Zaden keeps thousands of bee colonies in bee farms globally
- Temperature and humidity are crucial to successful bee land based shipping and preventing losses.
- Using temperature humidity sensors to monitor conditions inside trucks, and temperature probe sensors installed inside beehives, the company ensures optimal conditions for the safe transport of bees around Europe.
- Drivers receive real-time alerts on changes to the cargo environment, knowing when to ventilate or cool the hives.

PT100 MOBILE

BEE TRANSPORT

BEEHIVES WARMENHUIZEN

HIVES IN TRUCK

+





data is stronger in one place

- Iribov is an independent service laboratory focused on tissue culture services and analysis of plants with flow cytometry and molecular techniques.
- With locations in the Netherlands, Ghana and Macedonia, the lab employs a team of more than 350, **a global view was required**
- Uses real-time sensor data from various sensors including temperature and humidity to ensure controlled laboratory conditions are met globally.



polder and wiser

- Biotech leader Syngenta
- Use a combination of ethylene sensors, light sensors, airflow and humidity sensors to help farmers control key variables driving orchid production
- Previously sensor data like ethylene was siloed within specific systems and teams. 30MHz made those sensors wireless and ingested into one central dashboard.
- **Sharing and collaboration of data** has facilitated productivity which is unmeasurable

sharing data unlocks more value and potential....

When you decide to share your data others can derive value from it too. ZENSIE Dashboard can allow your stakeholders to see select data for increased transparency and coordination across the chain.



go from defensive to offensive

Initial uses have largely been attempting to solve known or assumed problems.

Real added value will be when many metrics are combined to target optimal environment or when new large data sets are analysed to give very accurate projections.

Addition of AI or robotics will add further value, first must come the data.



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