SENSOTERRA SENSORS OVER THE INMARSAT ISATDATA PRO SATELLITE NETWORK WITH THE MINFARM MF-400 IOT SATELLITE BRIDGE

BACKGROUND

Applying the correct amount of water to crops is crucial for maximising returns through higher yields and quality. To achieve this, knowing how much water is in the soil is key. Soil moisture sensors are an established tool to measure the water content of soil and make better irrigation decisions in response to changing soil conditions. However, many rural areas suffer from a lack of reliable terrestrial connectivity which means collecting the data from sensors remotely is challenging. This solution allows farmers to deploy wireless soil moisture sensors to fields that have no connectivity or access to mains power. It utilises wireless soil moisture sensors from Sensoterra, enabled by a private LoRaWAN™ network and backhauled by Inmarsat IsatDataPro from Minfarm Tech.

inmarsat ELEVATE

WHO IS THIS SOLUTION FOR?

The solution is applicable for a range of different farm types and scenarios, but a typical situation would be a grower operating over a large land area who is irrigating crops. The solution could also be sold to agricultural retailers or equipment dealers selling to growers.

SYSTEM BENEFITS AND ROI

Typical benefits to a grower using this system to optimise irrigation decisions would include:

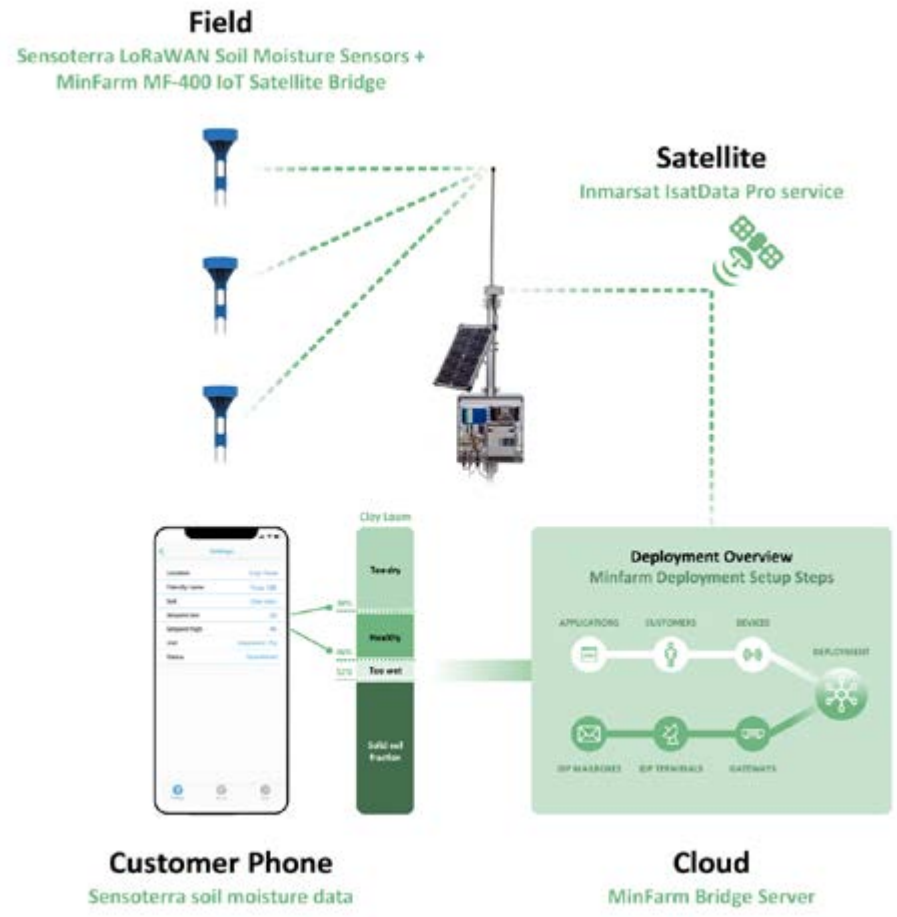
- **Reducing yield losses by underwatering:** correct water management makes a major contribution to optimal yield and crop quality. On a typical field of soybeans in the USA this system could help prevent losses of up to **$50,000** in a single season[1].
- **Reduced time and cost of monitoring fields**: using this system reduces the requirement for a person to visit a field to monitor conditions. In a typical scenario this could easily amount to savings of between **$2-400 per season[2]**.
- **Reduced irrigation costs:** As well as knowing if the soil is too dry, knowing when the soil is wet can also help growers reduce costs by not turning on the irrigation system. In addition to the cost and sustainability benefits of saving water, annual energy/fuel costs of such systems can be enormous. Reducing switched-on time of an irrigation pivot by only 20% could save fuel costs of **$4,600[3]**.

SOLUTION OVERVIEW

The solution is comprised of market leading wireless soil moisture sensors from Sensoterra (www.senstorra.com) and a LoRaWAN gateway, backhauled by Inmarsat IsatDataPro which has been developed by Minfarm Tech (https://www.minfarmtech.com/).

SENSOTERRA

MINFARM TECH



[2] Taking 2021 average gas prices ($2.539) and fuel efficiency (2020 base) of 25.4 mpg3, and a round trip of 20km to scout a field plus labour costs of $15/hour

[3] Typical energy costs of a centre using diesel can run into ~$23,000 per year (based on 15 acre inches applied during the year on our 125 acre field) https://soilscout.com/blog/how-can-farmers-reduce-center-pivot-irrigation-costs

SYSTEM BENEFITS

- Overcome the rural connectivity divide: enable sensors to be deployed to fields with unreliable or non-existent terrestrial connectivity.
- Low cost: fully optimised gateway for use with satellite and soil moisture sensors keeps system costs low.
- Easy to deploy: compact form factor for quick installation and ability to remotely diagnose faults makes gateway deployment simple. Simply activate your Sensoterra sensor and hammer into the ground to start gathering data.
- Fully self-powered: self-powered with solar panels ensures no dependency on mains power when selecting an installation site.
- Built to withstand the toughest natural environments: proven track record of deployment in extreme conditions.

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