

# Case Study

First Digital IoT



SOLUTION AREA: . . . . . App Modernisation  
SOLUTION PLAY: . . . . . Delivering IoT Apps with scalable architectures  
TECHNICAL: . . . . . InfluxDB, Azure, LoRaWAN

INDUSTRY: . . . **Food Production**  
REGION: . . . . South Africa  
REACH: . . . . . Global

## Overview

By submersing LoRaWAN based water level devices into storage tanks, Frey's Foods keeps their 2000 staff food production plant running by ensuring that on-site water tanks are automatically topped up.



Frey's Food Production

Over 2000 staff are dependent on a reliable source of water for both the production process and the stringent hygienic standards of Frey's. Frey's Foods have large on-site water storage facilities to keep their manufacturing plant running.

These storage facilities augment the unreliable source of municipal water by safely storing a backup supply. Keeping these storage tanks topped up is done using a First Digital solution that uses submersible LoRaWAN based devices that sends data to a InfluxDB hosted on Azure every 30 minutes.

Detailed reporting and pro-active events ensure that the top-up process is started automatically.

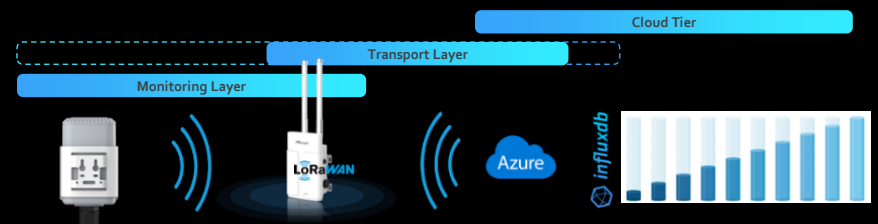
## Technical Approach

First Technology Group implemented a solution based on IP rated water-submersible LoRaWAN monitoring devices due to their accuracy and the ability to connect wirelessly using LoRaWAN to the cloud event processing system.



LoRaWAN based level monitoring device setup

First Digital identified the need to design a custom solution to monitor these tanks. To minimize the maintenance of the solution, a device with a battery life of 2 years was required. The architectural design of the solutions introduced a locally hosted LoRaWAN repeater service. The monitoring device is a microcontroller-based device, with an IP rated enclosure making it fully water and chemically submersible.



The device securely sends status and parameter readings to an Azure hosted time-series database using a LoRaWAN network. An Azure hosted InfluxDB stores the time-series data for various reports in configurable Grafana graphs. Using an event-driven design, critical events are raised ensure that the refilling process starts automatically or raise warning of possible manufacturing outages due to a shortage of usable water.

The solution left Frey's with a reliable and low-maintenance solution using an innovative design.

## Summary and Benefits

First Digital and Frey's Foods developed an water level monitoring solution. The benefits are:

- A low maintenance tank parameters monitor solution for water storage tanks
- A solution architecture with long distance wireless networking capability
- Configurable reports and event notifications, allowing the customer to configure rules and limits using a user friendly and secure web-based interface.

