AMPC
AUSTRALIAN MEAT PROCESSOR CORPORATION

IoT Solutions

IoT Automated Temperature Monitoring

Project Code	Prepared by	Date Submitted
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Project Description

This project was developed to understand the suitability of IoT solutions to enhance operations and reduce costs through near real-time automated ambient temperature monitoring of critical control points, providing the ability to visualise and monitor room temperatures via a web browser and mobile application, as well as, provide alerts and alarms in the event of a temperature breach.

The IP rated enclosure unit supplied to form part of this solution included an IP67 M8 socket to facilitate connection with an external stainless steel insertable meat probe, used to monitor muscle cool down over a defined time period for quality control purposes.

The IoT platform provides the ability to visualise live and historical data, provide automated HACCP and refrigeration index reports, and continuous storage of temperature data over the period of the subscription.
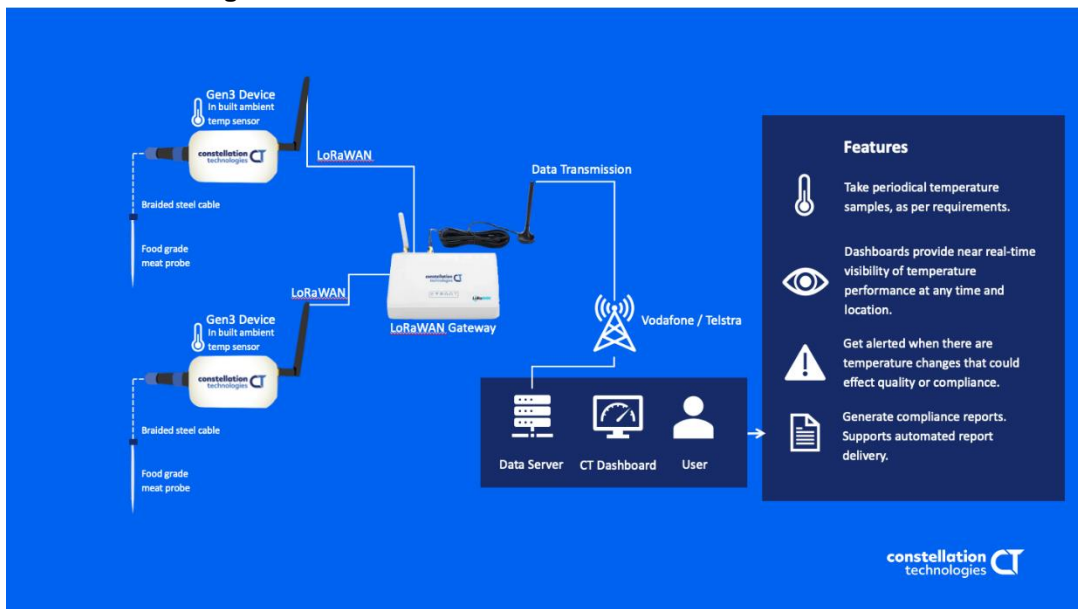
The solution also offers the ability to digitise paper processes, such as corrective actions taken in the event of a temperature breach. All actions recorded within the platform and application can be downloaded to form part of the overall compliance report.

Project Content

IoT Enclosure Design
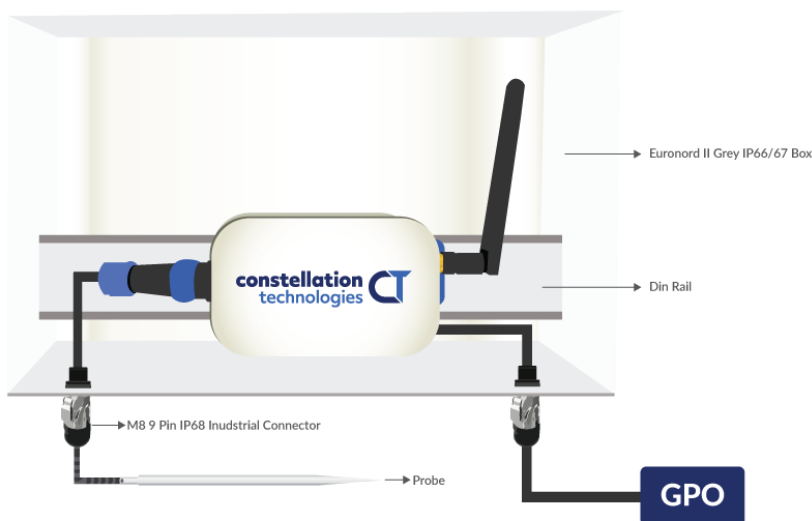
IoT Network Design

Project Outcome

- Since the solution has been installed it has removed the need for manual temperature monitoring of the operation, increasing efficiency and reducing labour costs.
- Provided continuous temperature recording and reporting via the cloud platform dashboards and mobile application, including the ability to review time-based trending.
- Utilising conditional based alerts and alarms; the client can have confidence that temperatures are being maintained within the operation without the consistent need for manual temperature checks.
- Easily monitor near real-time muscle cool down temperature to ensure quality of product, and record temperature data without the need to recover the information from a data logger to a PC or third-party device.
- Automated HACCP reports via email, including refrigeration index report to key staff members.

Benefit for Industry

The application of IoT temperature monitoring solutions within the plant has been a significant success.

The hardware device enclosures were simple to install and did not require external power, due the long-life reachable batteries provided within the Gen3 IoT devices *(Refer to Appendix A Photo of Installed IoT Device and Food Grade Meat Probe Within the Holding Chiller).*

The IoT temperature monitoring solution automatically sends sample data to the cloud platform every 15mins, which has removed the need to perform manual temperature checks. This near real-time continuous monitoring solution has seen a cost benefit in the reduction of labour hours typically required to undertake this task.

The CT cloud platform provides JBB both a simple and convenient way to monitor all application temperatures and trends via the web dashboards or mobile application (supports both iOS and Android), within the installed process rooms *(Refer to Appendix A Example Images from CT1 Cloud Platform).*

Parameter based alarms customised to meet the operational needs offer assurance that temperatures within both process areas are being maintained within their desired range, and if not, there is immediate notification by SMS and email so that corrective actions can be instantly taken to resolve any issues.

The external meat probe option which can be quick connected/disconnected as required to the enclosure and Gen3 IoT device provides a convenient and efficient way to visualise and report on muscle cool down temperatures to ensure safety and quality of the product *(Refer to Appendix A Photo of Insertable Food Grade Meat Probe).*

This inclusion has negated the need to use a data logger to manually collect temperature data for download to generate the report required for the refrigeration index.

This has not only improved quality and safety outcomes, but added operational efficiencies in the way that temperature data is collected, including improvement in the timing and dispatch of product.

Compliance reporting has been simplified through email automation for both HACCP and refrigeration index reports.

Finally, the return on investment (ROI) based on actuals has seen a positive return of 32% savings on operating costs for manual temperature monitoring within year 1, and 86% year two *(Refer to Appendix A ROI Calculations).*

These IoT applications will not only provide increases in efficiency and decreases in overall operating cost for JBB, but they can be applied to a wide number of MSBR and abattoirs across the Australian meat industry.