THE BRIEF

With a great concern for the ever growing and expanding population and the impact this has on the farming community, Ampode are keen to develop functionalised materials within agriculture to support in the growth and quality of crops and plants.

THE APPROACH

The Ampode team were keen to learn more about how technologies and sensors could be used within remote areas and challenging climates to support even more farmers, understanding the conditions in which they work. Improving data collection could better inform decisions for improved quality of crops and greater yield.

The VEC assessed the current sensors for collecting data sets, measuring variable conditions such as temperature and humidity levels. These sensors would need to work effectively in remote areas with a lack of access to power and mobile networks. The sensors need to not only be powered but accurately collect data over long periods of time.

The digital engineers at the VEC developed a technical landscape report to explore and explain the technical difficulties, and the range of possible solutions that the project would face. The VEC team also developed a demonstration of the proposed technologies, using small electronics and attached sensors, including specific coding to improve data collection accuracy.

Other systems such as LoRaWAN, a Low Power Wide Area Networking (LPWAN) communication function, were selected as a wireless audio frequency, operating in a license-free radio frequency spectrum. This would support extending the network range, enabling the transmitted data to reach the wi-fi enabled farmer's office or HQ across a range of around 2km.

Another concern was the sensor battery life, which through continuous use, would need frequently changing. The VEC digital engineers discovered how to programme the sensors to send a singular message a minute and automatically switch themselves off. The sensors would then send another message based on a timer, so the battery is not continuously being used or drained.
The data can be showcased on an online dashboard, creating a visual representation of results for improved understanding and efficient decision-making for improved responses to issues or areas of concern.

THE BENEFITS

The proof-of-concept sensors have identified a tested method for how Ampode can collate accurate readings, communicating these from a remote area with a reduced need for maintenance or servicing for periods concerned periods of time.

Using the knowledge transferred during the project, the Ampode team are now exploring how to extend this sensor network for wind farms, placing the sensors and software within even more remote areas which can track and assess collected data.