

Next Farm smart control systems for fixed grid irrigation

Introduction

Next Farm is an integrated farm sensor technology and cloud based dashboard that allows farmers to operate, manage and understand farm resources from the computer desktop or a mobile device. Whether a farmer is in the field or in the office, they have the ability to turn on or off key farm infrastructure like electric fence, or understand nutrient or moisture levels of individual paddocks. To control individual irrigation sprinklers across any irrigation system maximizing the efficacy of water usage while minimizing runoff. The Next Farm smart control system utilizes a fixed grid irrigation system associated with a digital “mesh network” connecting all parts of the system through radio frequency and GPS

The Hardware

The Next Farm smart control units can be set to irrigate at specific times everyday until they are told otherwise (set and forget); set to auto-adjust for certain conditions or rain or moisture readings (Manual/auto-adjust); or controlled via GPS for easy visualisation and replacement (GPS Control).

In utilising the Next Farm irrigation control systems

with GPS, the GPS RF mesh network allows the farmer to control individual sprinklers or group sprinklers together in any arrangement from a desktop computer or mobile device.

The Next Farm smart control hardware allows farmers to maximise efficiency while minimising water resources by applying just the right amount of water every time. By controlling individual sprinklers or set groupings, the Next Farm hardware allows you to understand exactly when they should be irrigating, and in controlling when they should come on, and for how long, farmers are able to minimise run-off and wastage.

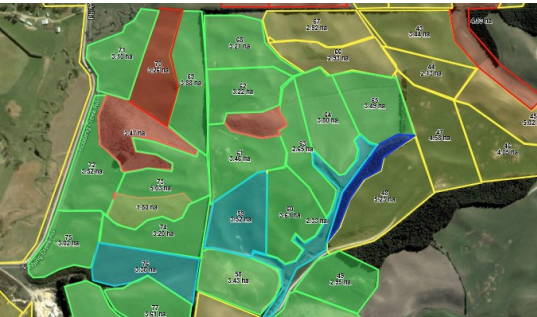
With GPS control, each sensor is GPS controlled allowing for "plug and play" meaning there is no programming required and units can be replaced by any user. When the unit is replaced or activated, the unit sends its location to the base unit which in turn, provides the new unit with updated data on the location of other irrigators, the moisture content of the area, and other rain and environmental data.

Upon startup, each unit runs a self check procedure to ensure that the irrigator valves are working properly and are in the closed position before operation. When in the mesh network, each unit sends out a "system check" 20 mins prior to start time to ensure that they will be able to open at the appropriate time. At the end of irrigation cycle, the control units "double pulse" as a backup measure to ensure valves shut.

The Next Farm smart control system hardware has been designed to be hardy for all NZ conditions, flexible to be used in a range of applications (irrigation, effluent), and **smart** allowing farmers to understand their resources while minimising wastage and runoff.

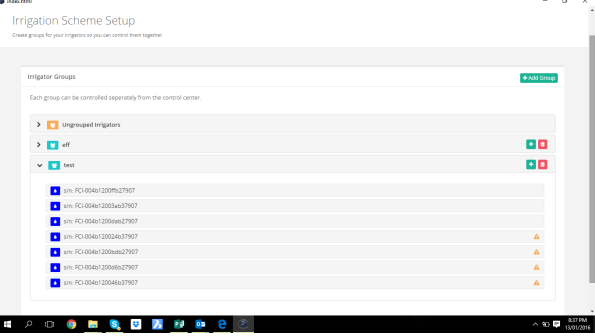


Image of NextFarm control sensor prototype working on moulds

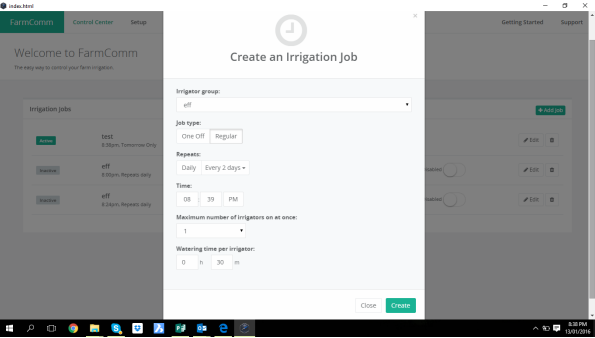


The Software

The Next Farm software is directly linked with each NextFarm smart control unit allowing the farmer to control every aspect of the irrigation process or "set and forget" allowing the units to do the work.

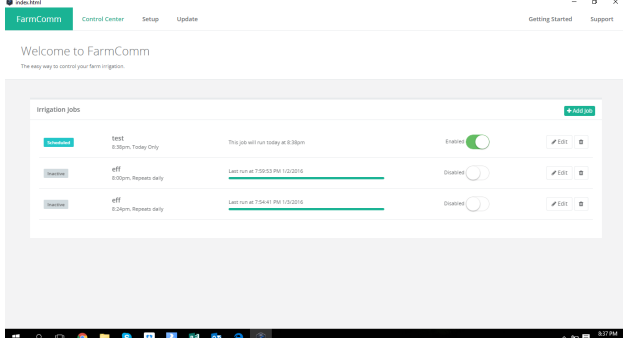


2. After the farmer has added a unit, they can be grouped together to works as one, or kept as individual units for more precise control. These can be enabled or disabled at any time.

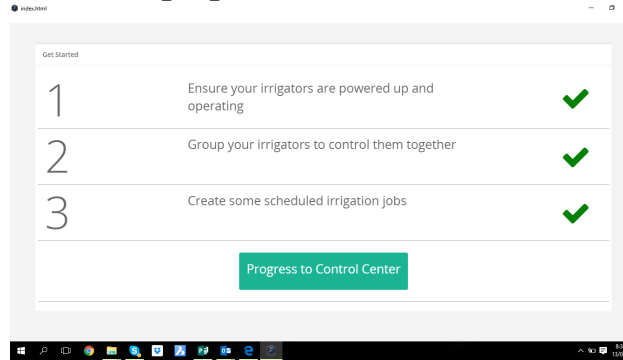


4. The software provides a check list to ensure the user has everything completed in order to get irrigation underway. To irrigate, press the **Green button**.

1. The software is easy to use. Adding control units is simple and can be colour coded and/or named to reflect different areas of the farm or individual pad-



3. After the farmer has their group or individual irrigators identified, the units can be set to turn on at certain times of the day, week or month. They can skip days, or even skip sprinklers.



Collaborative partners



We are working closely with SSS irrigation to provide them with a plug and play option to enhance their current system in order to meet changing demands in fixed grid irrigation.



Over the past 6 months we have co developed a flexible agritech irrigation system to the Next Farm specification. We are extremely excited about this product and look forward to working on future enhancements. Our development contribution has included hardware, firmware and software development allowing the Next Farm team to focus on building business networks and product testing. - Jesse Teat