FarmConnect®

FarmConnect Newsletter

> *With over a hundred new customers signing up with FarmConnect over the past 12 months...*

From the **CEO's Desk**

Welcome to FarmConnect's newsletter. Since 1995 Rubicon Water has been an innovator and leader in the commercialisation of water technologies for open channel gravity fed irrigation systems for irrigation districts such as Coleambally, Ord and Goulburn Murray. It was a natural extension for Rubicon to develop a platform for on-farm water management, which we call FarmConnect.

FarmConnect BayGate Actuator for border check irrigation of maize

In-channel check using FarmConnect BayGate Actuator with wireless control

Finally the convergence of on-farm demand with off-farm supply is becoming a reality as we release new and exciting solutions that integrate the systems that manage and automate water to the crops on-farm with the timely and reliable supply of water from the irrigation district, off-farm.

Our low energy solutions allow irrigated agriculture to achieve significant water use efficiencies while at the same time achieving production increases in food, fibre and beverage, helping to meet an increasing demand from the world's growing population.

As a business, recently we've had some great results in China, not only completing a significant automation project but also having an official report written by an important government body recommending our technology for wider use. We've had excellent results with deployment of new FarmConnect hardware in Australia and forged ahead with new metering solutions for the USA. We are also increasing our presence in NZ, Chile and Mexico.

With over a hundred new customers signing up with FarmConnect over the past 12 months, Rubicon has the solutions for irrigators who are investigating the modernisation of on-farm projects to deliver positive outcomes in water savings along with increased productivity.

I hope you enjoy the newsletter with some great stories and solutions about optimising gravity-fed irrigation.

Happy reading!

Bruce Rodgerson CEO
Rubicon Water

FarmConnect Solution

Rubicon's iBee Radio Node for remote access and communication with soil moisture information and irrigation system automation

Automation

This state of the art automation system from Rubicon Water, achieves the benefits of high flow rates and shorter run times, essential for achieving precision surface irrigation. This involves installing remotely operated BladeValves or BayGate actuators on high flow bay outlets, an on-farm ZigBee radio communication network and web-based cloud computer software which is used to manage all aspects of irrigation on the farm.

The software collects data from soil sensors to determine plant water demand, dispatches irrigation schedules to control the opening and closing of bay outlets and in-channel checks, and automatically sends email, SMS alarms and status updates to keep the irrigator's informed of irrigation performance. Integrated GPS within each iBee Radio Node makes it quick and easy to add more sensors and automated bay outlets over time, and enable each device to be displayed on a satellite map of the farm. It also provides real-time coordinate information for location-tagging of data for spatial analysis. Because the system utilises cloud software the irrigator can remotely access the system when in the field or when absent from the farm, using mobile devices connected to the internet – providing up- to- the- minute information on crop status, remote management of irrigation schedules and monitoring.

Demand-side management

By installing soil moisture sensors, which are managed within FarmConnect's crop management module using the same software system as the automation, Rubicon have introduced science and agronomy to the process of determining when to water and how much to apply. Smart sensors measure the soil profile every 10cm down to a depth of 1 metre. Precise measurement of soil moisture has enabled a number of water-saving strategies to be implemented. Measurement of soil moisture gives the irrigator the confidence to extend each irrigation interval without any reduction in crop productivity reducing the number of irrigations during the season with an estimated water savings of 20%. Measurement of consumptive use of available water and utilisation at all levels of the crop's root zone provides a soil profile with increased capacity to accept the infiltration of the next irrigation, avoiding post irrigation waterlogging stress and thus increasing productivity. Measurement accurately predictes the number of days till the next date of irrigation and provides the ability to defer irrigations to 'harvest' anticipated rainfall occurring between irrigation events.

FarmConnect Gateway – the heart of the system provides continuous communication via the Telstra NextG nextwork to the Host server for remote access of data.

FarmConnect Managed Services Package

The FarmConnect Managed Services Package provides a complete soil moisture monitoring solution for a seasonal payment and is available through dealers who deliver agronomic support bundled with soil moisture monitoring technology to provide reliable data for precise irrigation scheduling.

The cotton industry was the largest user of the FarmConnect Managed Services Package with hundreds of sites installed in South-East Queensland and New South Wales by the dealer network last season. Our FarmConnect Dealers are located in key areas to supply and install the hardware and provide software support along with their agronomy services needed to get the most out of the system.

With enquiries already coming in, the FarmConnect Managed Services Package is expected to grow for this coming season.

FarmConnect's BladeValve now available

A significant milestone was reached during May with the first customer installation of 44 BladeValves on Nick and Tony Ryan's farm near Lancaster in Northern Victoria. Rubicon can now offer a much broader range of FarmConnect solutions with the BladeValve for 'pipe and riser' pressurised pipe systems and the BayGate Actuation System for control of bay outlets for gravity channel systems.

Farmers have commonly experienced problems with the old type of valves leaking under pressure and in a market where many irrigation supply systems have been modernised, outlets now need to be larger to accommodate higher flows.

The BladeValve is a ground-up redesign of a product that has changed little in 20 years. It was a result of understanding the customers' needs and focusing on a solution that solved a problem. The feedback from the market since its release has been over whelming.

The BladeValve changes the game with its 400mm (16in) diameter opening, integrated actuation and ability to seal under high pressure (up to 15 meters head, or 21 psi) together with Rubicon's industrial built and fit for purpose design.

The product has also been designed for an international market with sales opportunities in the US, Latin America and Spain.

BladeValves provide high flow and positive closure under pressure compared to traditional pipe and riser valves

Case Study

Precision Surface Irrigation

Russell and Cathy Pell have hosted a number of field days on their property demonstrating the benefits of FarmConnect

Russell Pell (right) showing the US Ambassador to Australia Jeffrey Bleich (centre) his FarmConnect solution along with Rubicon Water's CEO, Bruce Rodgerson (left)

Russell and Cathy Pell operate a dairy and mixed cropping 830 hectare property in Wyuna, Victoria irrigated by border check surface irrigation, supporting a modern dairy milking a herd of 650. In 2011 they implemented a FarmConnect precision surface irrigation system to irrigate their maize crop which included the automation of 45 bays. The benefits and financial success during the 2011-12 irrigation season included 20% water savings (1.7mg/ha), 22% increased productivity (5tn/ha), cost savings ($170/ha) and revenue increase ($1,000/ha) with the capital investment of $2,000/ha which achieves a return of investment (ROI) in two seasons.

The FarmConnect solution has assisted the Pells to:

- Reduce the number of irrigations from ten to five compared to previous seasons prior to implementation.
- Eliminate stress episodes associated with water logging or dry deficits and therefore increased the number of productive days of summer growth, allowing the crop to yield closer to its genetic potential.
- Successfully increase crop productivity using less water. The maize crop yielded 27 tonnes per hectare dry matter compared to a farm historic best of 22 t/ha (average of 17 t/ha) and a district average of 16 tonnes per hectare dry matter.
- Reduce the volume of water applied at 6.8 megalitres per hectare compared to previous usage of 8.5 megalitres.
- Increase revenue by $1000 per hectare (in maize crop based on a price of $200/tonne dry matter and 5tn/ha increase above farm historic best of 22 t/ha).
- Reduce water costs by $170 per hectare ($100/Ml) and reduce the cost of hay replacement.

Surface irrigation is the predominate method of irrigation in Australia and worldwide. The potential for wider adoption is significant with on-farm application efficiencies for surface irrigation in the range of 85 to 95% achievable[1]. Combining Precision Surface Irrigation (with high flow) with accurate cut-off times through automation reduces water use by over 20%[2]. In addition, yield increase of 20% is achievable through science, sensor technology and agronomy.

1 National Centre of Engineering in Agriculture: GRDC Report - Design and Management to Improve Irrigation System Performance, September 2010
2 Cooperative Research Centre for Irrigation Futures: Improving performance of bay irrigation through higher flows, 2010

California

A Rubicon automated bay outlet (left) and FarmConnect Gateway (right) in California

Southern California's Imperial Irrigation District uses water from the Colorado River to service 500,000 acres (202,340 ha) of America's most productive farmland which is irrigated with Colorado River water. While about half of the acreage is devoted to producing hay crops, the valley is continually celebrated for producing two-thirds of the lettuce, carrots, broccoli, spinach, onions and other vegetables consumed in the US during the winter months. Rubicon recently established a FarmConnect pilot project in this district, which will be used to demonstrate the latest technology and methods for automation of water from the channel into the field.

The project utilises large Rubicon's BayGate Actuation System (1780mm/5'10" wide) to achieve higher flow rates into bays to increase application efficiency. It also uses crop management sensors to determine plant water demand to improve crop productivity and bay senors (FloodTech) to determine dynamic cut-off to minamise tail water run-off.

High flow rates achieved from Rubicon automated bay outlet

Cotton

What does the future hold for the automation of furrow irrigation?

Recently Rubicon and the University of Southern Queensland (USQ) in conjunction with Professor Rod Smith received preliminary investment approval by the board of the Cotton Research Development Corporation to identify solutions solving the problems associated with automation of furrow irrigation. This project called ***Commercial prototype of smart automation systems for furrow irrigation (of cotton)*** will utilise Rubicon's FarmConnect solution and USQ's innovation in adaptive irrigation control.

It applies the best available automation, flow control infrastructure and in-field sensor technology integrated with adaptive irrigation control and simulation software to maximise water efficiency performance of surface irrigation systems. The significance of this project for cotton growers with furrow irrigation is that it will provide avenues to deliver similar application efficiency performance as pressurised systems at lower capital and operating costs.

Copyright © 2012 Rubicon Systems Australia Pty Ltd
ACN 069 232 284 All Rights Reserved.

No part of this document may be photocopied, reproduced, stored in a retrieval system, or transmitted, in any form or by any means whether, electronic, mechanical, or otherwise without the prior written permission of Rubicon Systems Australia Pty Ltd. No warranty of accuracy is given concerning the contents of the information contained in this publication.To the extent permitted by law no liability (including liability to any person by reason of negligence) will be accepted by Rubicon Systems Holdings Pty Ltd, its subsidiaries or employees for any direct or indirect loss or damage caused by omissions from or inaccuracies in this document.

Rubicon Systems Australia Pty Ltd reserves the right to change details in this publication without notice.

For more information regarding FarmConnect:

Melbourne Office
1 Cato Street, Hawthorn East Victoria 3123, Australia
Tel: +61 3 9832 3000 Fax: +61 3 9832 3030

Shepparton Office
1A Wheeler Street, Shepparton Victoria 3630, Australia
Tel: +61 3 5820 8800 Fax: +61 3 5820 8888

FarmConnect® | RUBICON™