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Jain Irrigation Systems Ltd.
Small Ideas. Big Revolutions.®

The Corporation
There is more to Jain Irrigation than irrigation

Global Presence:

Jain Irrigation Systems Ltd., (JISL) derives its name from the pioneering work it has done in the Micro Irrigation Industry in India. After ushering in the second Green Revolution in India, JISL diversified in manufacturing products of conservation of Water, Environment and Energy with a Pan-India & Global presence with 33 manufacturing bases spread over 5 continents. JAIN products are made available over 126 Countries with a strong network of more than 11,000 Distributors and Dealers worldwide achieving a total turnover of Rs. 8,200 crores.

Micro Irrigation:

The Corporation has pioneered and raised a new Micro Irrigation industry in India and thereby helped harbinger a Second Green Revolution. The Micro-Irrigation Division manufactures a full range of precision-irrigation products and provides services from soil/topographical survey, engineering design, supply, installation and commissioning with agronomic support for millions of farmers worldwide. JISL is the only company in the world which has the largest basket of product and system solutions that can suit any climatic/topographical/crop conditions. The division's pool of over 1000 agronomists, irrigation engineers and technicians are well equipped to support the farmer customers across the globe. JISL nurtures a sprawling 2300 acre Hi-Tech Agriculture-Demo farm and a training institute.

Through continuous research and developmental efforts and investment in global pioneers like Chapin, API, NaanDanJain, Gavish, Puresense, Observant and ETwater made it its mission to adopt this technology to suit all types of soil, crops and agro climatic conditions. Today, Jain Irrigation is synonymous with Drip Irrigation. Jain is on its way to achieve a preferred status with the global farmers for all its micro irrigation needs. Like wheat, pulses, oilseed, Jain Irrigation has pioneered the concept of drip irrigation for cultivation of rice, a crop which is traditionally grown in standing water, leading its efforts towards water, energy and food security.

JAIN have till date covered 8,500,000 acres of land for 52 different types of crops in all corners of India and is leading in many other geographic locations around the globe.

AgTech:

AgTech is where agriculture meets technology to cater for increasing food demands. Agtech represents Software and Hardware technologies used in agriculture. Agriculture is an industry which deals with maximum variables, erratic and untimely rains, diseases and pest attacks, unskilled manpower, market linkages etc. The farmer needs timely decision support system which can help him to take the right decision at the right time. As one of the largest companies in the agriculture industry in the country, we are focusing now on Agtech products which includes hardware like advanced irrigation controllers, and software support to control and monitor the field irrigation requirements through the same. We are also focusing on development of various app - Digital Tech Solutions for the growers like app for onion growers, expert advisory system for the farmers. All these services are described under the brand of 'Jain Logic™'. We have also invested in Agtech companies focused on monitoring and control solutions like Puresense, Observant, Gavish and ETwater.

Plastic Piping:

Presently, JISL is the largest producer in Asia of PVC and PE piping systems for all conceivable applications with pipes ranging from as small as 3 mm to 2500 mm in diameter and in pressure ratings ranging from 1.00 kgf/cm^2 to 25 kgf/cm^2. JISL has a production capacity of over 5,00,000 tonnes per annum or 8000 km/day of plastic pipes. The Piping Division includes a variety of PVC and PE Fittings catering to irrigation needs of the farmers apart from the urban and rural infrastructure needs. The pipes are manufactured conforming to Customised specifications of Consultants & End Users.

Turnkey Projects:

JISL undertakes Integrated Agricultural Development Projects on turnkey basis from Concept to Commissioning with value added services. JISL offers cost effective, down-to-earth solutions for complex challenges backed by our core strength of global knowledge and experience combined with local manpower which is an ideal combination of technology, intelligence and common sense. Whatever be the nature of the project requirement, JISL can assure total turnkey solutions and maximum value for the farmers. It can also undertake watershed or wasteland development projects. Such projects normally begins with selection of site, survey of the command area, identification of appropriate crops, designing of the suitable irrigation systems, determination of agronomic practices, use of other hi-tech agro inputs, providing on-going technical services & training and pre & post harvesting techniques, provide not only assistance but also training for operation and maintenance of the systems. JISL has successfully executed large scale turnkey irrigation projects from conception to completion not only in India but also overseas.

Jain Irrigation offers following turnkey solutions:

- Integrated irrigation solutions.
- Integrated agricultural development projects.
- Reuse of waste water for agriculture.
- 24x7 Drinking Water Supply Systems.
- Effluent conveyance & disposal systems.
- Fluid conveying systems, sewerage lines etc.
- Marine On-shore & Off-shore piping.
- Relining and rehabilitation of existing pipelines.
- Solar pumping systems.

In a nutshell, JISL is the only 'one-stop shop' encompassing manufacturing and marketing of hi-tech agricultural solutions/systems and piping services as well as processing of agri produce. No wonder, JISL has distinguished itself as a leader in the domestic as well as global markets. The JISL's product range improves productivity and adds value to the agri-sector. Conservation of scarce natural resources, protection and improvement of the environment emerge as a blessed outcome. The reward has been over millions of smiling farmers and innumerable customers spread in more than 126 countries.

Sustainability:

Every business of JISL, ensures to create shared value, nurtures the environment and contributes significantly to the Water, Food and Energy security of the World.

JAIN Logic ™

DIGITAL-TECH SOLUTIONS

SOFTWARES

HARDWARE – CONTROLLERS, RTU's AND ACCESSORIES

IRRICARE
Smart Irrigation schedule for precision farming

HARDWARE FOR MONITORING AND CONTROL SOLUTIONS

IRRIGATION CONTROLLERS

GREENLINE
Irrigation & Climate Control for Green House & Open Field

C3

SPIRIT PRO

ETWATER

IRRISMART

FILT-O-CLEAN

ETWATER MANAGER
Advanced Irrigation Scheduler Based on Forecasted ET

SOLO

SPIRIT PRO - IRRIGATION

SMARTBOX

IRRISMART - HW

IRRICARE - IRP
Irrigation Control and Management

CAMERA V1

SPIRIT PRO - HYBRID

SMART WORKS

IRRISMART - C

M&C SOLUTIONS
Decision Support and Advisory System

SPIRIT PRO - FIELD

HERMITCRAB

IRRISMART - WL

JAIN Logic ™

THINKING ONE STEP AHEAD
TECHNOLOGY FOR THE CHALLENGES OF TOMORROW

JAIN LOGIC™ - Integrated Automation Solutions

Jain Logic is an amalgam of Digital- Tech Solutions created to fulfill precision agriculture and irrigation management requirements. It includes monitoring and control devices, software applications and real time analytical intelligence and prediction analysis for decision support system.

SENSORS	FERTIGATION MACHINES	REMOTE SENSING SERVICES - DRONE/SATELLITE

RTU's AND ACCESSORIES	CLIMATE / WEATHER Temprature, Humidity, Wind Speed, Wind Velocity, Solar Radiation, Rain	NUTRICARE Low Flow, Medium Flow, High Flow	WEATHER FORECASTING
IRRICONNECT MASTER	FERTIGATION EC, PH	NUTRICARE PH - ECO	SOIL MOISTURE MAPPING
IRRICONNECT PRO	WATER CONVEYANCE Pressure, Flow, Level	NUTRICARE ECO	EVAPOTRANSPIRATION
IRRICONNECT	OTHER Soil Moisture, Leaf Wetness	NUTRICARE PRECIMIX	BIOMASS PRODUCTION
			WATER PRODUCTIVITY

JAIN Logic™   LET US BRING FUTURE TO YOUR FARMS

Products and Services

1) IrriCare – Smart – Modular irrigation and fertigation controller for precision agriculture

IrriCare – Smart is an advanced software solution which works with IrriSmart. It has advanced decision support system for irrigation and fertigation on the basis of weather forecasting and soil moisture movement.

IrriCare Smart works with IrriSmart Modular controller which has three variants on the basis of expansion modules, 3 modules, 5 modules and 12 modules. User has flexibility to choose the expansion modules. Available expansion modules are,

1) DC Module with 4 no. of 12 VDC Latch Digital Outputs and 4 No. of Digital Inputs

2) AC Module with 8 no. of 24 VAC Output

3) Sensor Module with 4 no. of analogue and 3 no. of digital inputs

2) GreenLine : Software interface for the Spirit PRO Family

Spirit PRO is most popular and trusted name among the users. All Spirit PRO controllers are supported by "GreenLine" software interface. Spirit PRO controllers are designed to cater irrigation, fertigation and climate control requirements of the user. It provides state-of-the-art, easy to use hardware platform for the users. There are many variants available in Spirit PRO family.

i) Spirit PRO - Irrigation: Specially designed for open field irrigation applications. It can be used as a standard hardwired controller and if required can be expanded wirelessly using IrriConnect RTUs. It comes with Spirit Pro computer controlled fertilizer injection machine like Precimix and NutriCare with advanced software and instrumentation. This combination allows you to set up multiple fertilizer programs for various crops.

ii) Spirit PRO Field: Spirit PRO Field is designed for irrigation control of large and scattered fields. It wirelessly communicates with IrriConnect RTUs.

iii) Spirit PRO Hybrid: It is a combination of irrigation and climate control to fulfill the requirements of greenhouses, poultry houses etc. It is compatible with advance fertigation machines. It can communicate wirelessly with IrriConnect RTUs.

3) ET Water Manager :

Etwater Manager™ is the award-winning, web-based smart irrigation management system that drives the ETwater solution. All ETwater hardware products work with this easy-to-use, powerful system, accessible from any internet-connected device. ETwater manager handles following controllers,

i) ETwater SmartBox: Designed for new construction or when you need to completely replace an old system. This top-of-the-line system is a complete controller in a Lightweight, durable aluminum enclosure that mounts on a wall or in a pedestal, It installs in approximately two hours.

ii) HermitCrab: The ETwater HermitCrab upgrades conventional controllers to ETwater Internet-based technology. In 10 minutes or less, this simple box converts many brands of conventional controllers by plugging into the remote control port of your controller.

4) IrriCare IRP - Integrated irrigation solution for collective irrigation project

IrriCare IRP is a software platform designed for irrigation management of large community based collective irrigation projects where several thousand (theoretically, no upper limit) users can access this platform through internet to monitor the irrigation activity.

IrriCare IRP communicates over cellular network with specially designed, dedicated hardware devices called 'IrriConnect Master'. IrriConnect Master further communicates through RF with filed remote terminal units (RTU) called 'IrriConnect PRO'.

5) M&C - Monitoring and Control Solutions - Your personalised decision support system

M&C - Monitoring and control solutions is an IOT based decision support system. It delivers real time data from sensors in the field to any Internet connected mobile device, tablet or computer in an easy to use and intuitive interface. Jain Logic Monitoring and Control Solution is the only water management software farmers need to achieve more crop per drop.

M&C - Monitoring and Control Solutions is designed to use by individual farmer. He can subscribe the services to get sensor information, data analysis, advisory based on accumulated data.

The hardware support for M&C is provided by devices like C3 and Solo.

6) Decision Support System using Remote Sensing

Agricultural Decision support system is provided using data captured through remote sensing. The services includes,

i) Weather Forecasting : Reliable weather prediction for next seven days.

ii) Soil Moisture Mapping : Soil moisture mapping helps us to answer two very important questions in irrigation, when to irrigate? And how much to irrigate?

iii) Evapotranspiration : Dynamic evapotranspiration is calculated using energy balance model to provide exact amount of water required by the plant.

iv) Biomass production : It gives crop health in absolute terms; Can be used to predict yield 4 weeks before harvest.

v) Water productivity : Tells about efficient use of (scarce) natural resources; What are the food and feed returns from water consumed in terms of kg/m³.
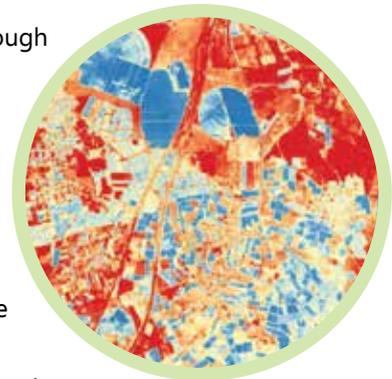
7) Sensors

Jain Logic has the capability to handle almost any type of sensors used for water distribution and agriculture.

8) Advance Fertigation Machines

Plants must receive all of the nutrients at a specific EC (Electric conductivity) and pH (acidity) level .Therefore fertigation needs to be carried out according to the EC/pH of the irrigation water. Another advantage of irrigation according to EC-pH control is the ability to maintain the desired concentration of the fertilizer in the water regardless of preparation error, material chemistry etc.

They are available in following variants

a) Precimix: Most advanced fertigation machine with ready to use fertilizer injection with precontrolled EC/pH levels.

b) NutriCare™: By pass fertigation machine with EC/pH monitoring for combination of fertilizer injection.

c) NutriCare™ pH - ECO: By pass fertigation machine with two fertilizer pumps and pH controller. It is a standalone fertigation facility wherein user can inject fertilizer with controller pH without requirement of Spirit PRO controller interface.

d) Nutricare™ ECO: NutriCare ECO is economical fertigation machine without any EC/pH control. It facilitates easy yet precise fertilizer injection with manual fertigation control.
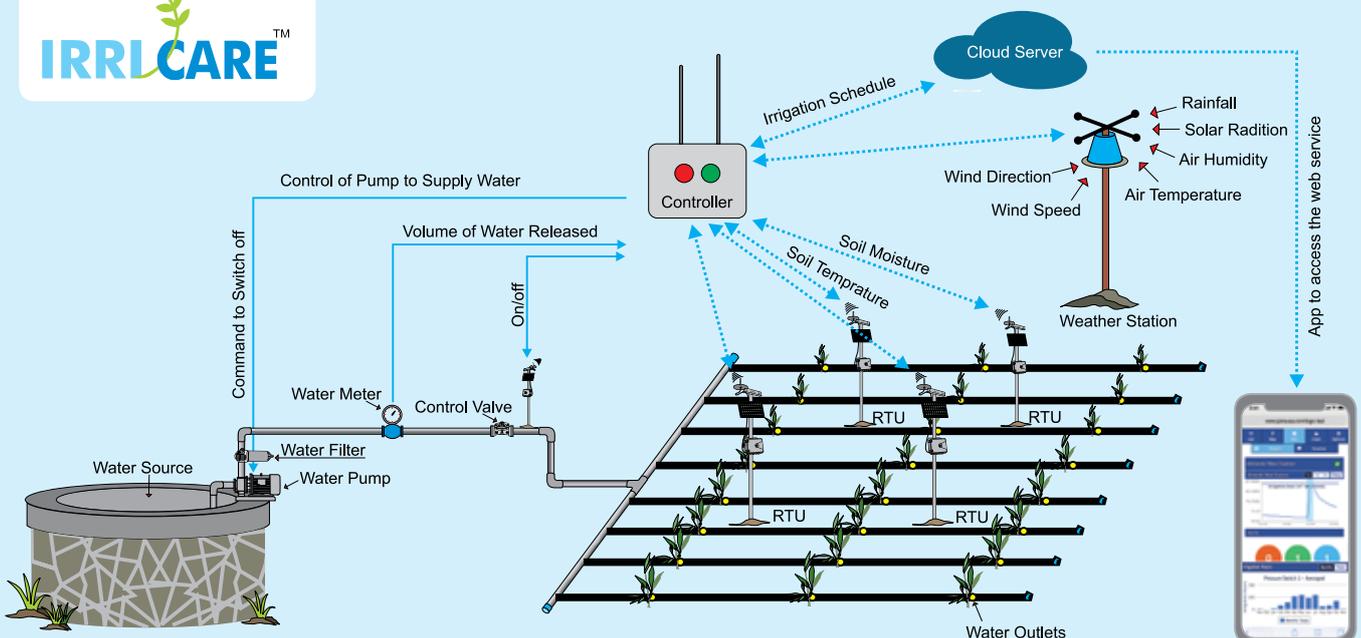
IrriCare - IRP (Irrigation Resource Planning)

IrriCare IRP

IrriCare IRP is an IOT based software and analytical platform designed to operate large scale irrigation projects. It helps to control and monitor right from SCADA system in pump house to irrigation valves in farmers' fields through internet. It can take inputs from different types of sensors like pressure, flow, level, soil moisture, rain etc.

Project administrator can make multiple irrigation schedules through IrriCare IRP. These schedules are then transferred to IrriConnect Master, which is brain of the system. It transfers these schedules to IrriConnect PRO remote terminal units. IrriConnect PRO has the ability to store the schedule and operate accordingly. Even if the communication breaks, IrriConnect PRO operates as a standalone controller with the schedules stored in it.

IrriCare IRP Precision Irrigation Solution

- IrriCare IRP allows you to control and monitor your irrigation system remotely through intelligently designed web interface software. It allows you to view your current irrigation status 24/7.
- Remotely accessible around the globe.
- Designed with highly advanced electronics for RF communication.
- Specially designed for small and large irrigation projects.
- Monitoring and management of irrigation can be done very easily.
- It has facility to send alerts / notifications of irrigation schedules/ faults / theft / etc.
- Underflow and overflow alarm.
- Flexible software provides the facility to connect unlimited IrriConnect Master devices .

IRRICARE ™ irrigation system diagram showing: Cloud Server, Irrigation Schedule, Controller, Control of Pump to Supply Water, Command to Switch off, Volume of Water Released, On/off, Water Meter, Control Valve, Water Source, Water Filter, Water Pump, RTU, Water Outlets, Soil Moisture, Soil Temprature, Weather Station (Rainfall, Solar Radiation, Air Humidity, Air Temperature, Wind Speed, Wind Direction), App to access the web service

IrriCare IRP – Software Features

- **Unlimited Outputs/Inputs:** Maximum 100 no. of RTU can be covered with single network. Maximum valves per network, 800 no. (Considering IrriConnect 8 DO.

- Unlimited Users access : User can get access to his authorized access area.
  - E.g farmer – View only to his farms in the command area,
  - Field Technician – Only for repair/ troubleshoot RTU.

- **Multiple Screen Dashboard :** User can choose from multiple screen options to monitor multiple entities at a time.

- **Global/Local Library**

  IrriCare IRP has facility to select inputs, outputs, RTU's through a common global library.

- **Event Logbook:** Logs each and every event and keeps record.

- **Rule Setting:** Authorised user can set rules/ conditions for operations. For example if pressure is high open the bypass valve.

- **Manual Override:**

  There are two types of manual override through server,

  a) Scheduled override : User can schedule the operation e.g. shut off the valves during system maintenance.

  b) Override now : Immediate action.

- **User Authorisation**

  Predefined role and privileges for each user:

- **User Management:**

  a) Admin can assign access area and role for the user. Each role has predefined authorities.

  a) Further in user management, admin / agronomist can make user groups, save them and can send message to entire group through electronic media.

- **Unlimited Schedules/Sequence**

  a) User can organize sequence of valves/valve groups to be operated.

  b) There is no limit for number of sequences.

  c) Every sequence is validated before it passes on to the respective IrriConnect – Master.

  d) User can make dummy sequences.

Jain Logic™ - M&C (Monitoring & Control Solutions)

Jain logic™ - M&C (monitoring and control) is a suite of field monitoring technology growers trust. It delivers real time data from sensors in the field to any internet connected mobile device, tablet or computer in an easy to use and intuitive interface

A) Soil Moisture Monitoring

Take the guesswork out of irrigation. Soil moisture monitoring is a core component of Jain Logic™. Soil moisture monitoring provides valuable information about what is happening below the surface of the soil. It provides confidence. Irrigation is meeting your crop needs without wasting important inputs like water and nutrients.

B) Agronomic Tools and Widgets

A wide variety of tools create charts from field data and raw numbers, create useful information helping you make faster and more powerful decisions.
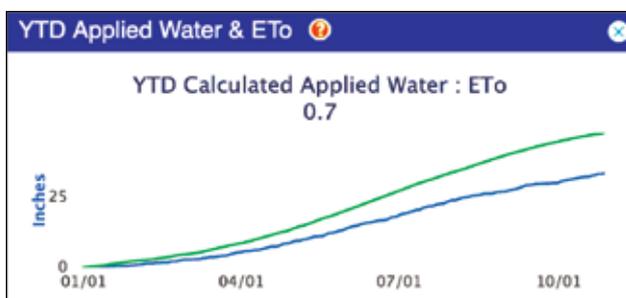
i) Understand Your Irrigation

Compare irrigation efforts to reference crop evapotranspiration (ETo) year to date, to better understand if applied water is keeping up with plant water requirements
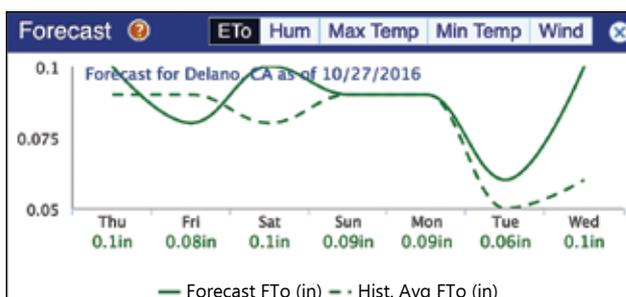
ii) Forecast

Weather forecasts for the upcoming week including ETo forecast. Track against historical weather data for the site.
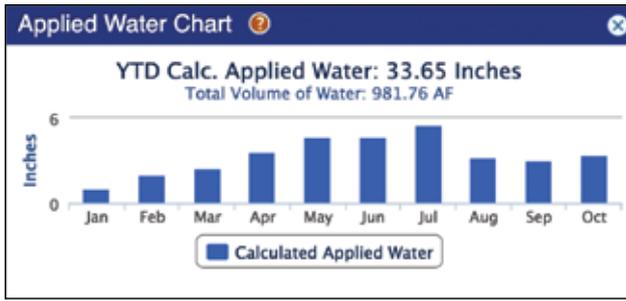
iii) Applied Water Chart

View total irrigation hours by the month or year.
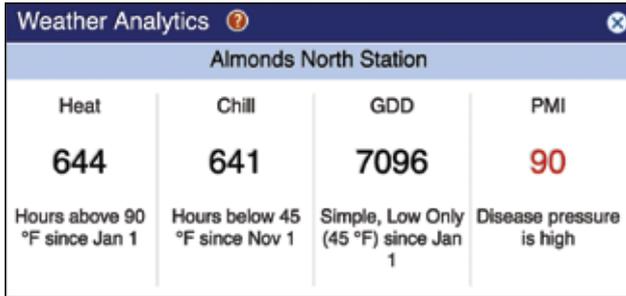
iv) Weather Analytics

Weather analytics tracking heat units, chill hours, growing degree days and powdery.
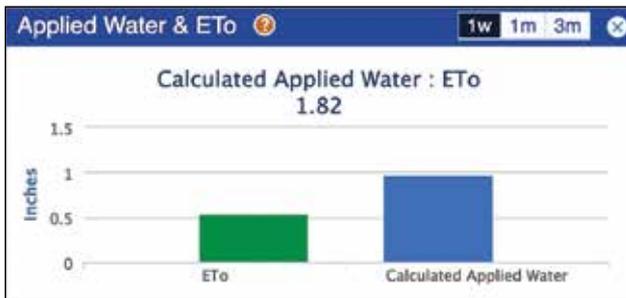
v) Applied Water & ETo

Quickly compare applied water to ETo in your blocks by the week, month or quarter.
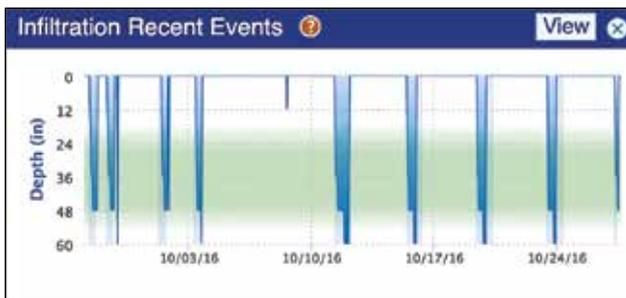
vi) Infiltration Recent Events

Visual display of infiltration showing the time it takes for water to move through the soil profile.
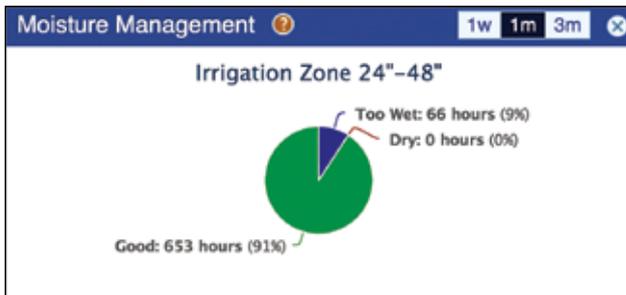
vii) Moisture Management

Visual display of irrigation performance to better understand the time your soil has had the desired water content.

C) Irrigation Scheduler

Managing your irrigation schedule shouldn't be another time-consuming task in a busy day. Take the guesswork out of your irrigation decisions. The irrigation scheduler provides a simple way for growers to create a weekly irrigation schedule. It integrates directly with notifications, so growers can easily share schedules electronically or in hard copy with staff.

Forecast Hours

The following were used to calculate the forecast ETc hours:

- Forecast Location: Delano, CA
- Kc Curve: Almond - Sanden (2012), 2/22/2016
- Irrigation System: Spinners, 6/20/2013

| Factor	07/03	07/04	07/05	07/06	07/07	07/08	07/09
Day ETo	0.33	0.33	0.34	0.33	0.32	0.3	0.32
Kc Coefficient	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Environmental Factor	1	1	1	1	1	1	1
Day ETc	0.3	0.3	0.31	0.3	0.29	0.27	0.29
Application Rate	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Distribution Uniformity	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Forecast Hours	8	8	8	8	8	7	8

i) Precise Guidance

We provide the recommended number of hours of irrigation required for each irrigation zone. This recommendation uses the closest, most accurate weather forecast available. Using data specific to your land, crop, and irrigation system. Ensuring you receive precise, targeted guidance every week, for every zone. Using the recommendations you can schedule irrigation using the irrigation scheduling tool.

Scheduled Hours

Duration		Start		Stop	
12	hrs	Sun 7/3	06:00 pm ▼	Mon 7/4 6:00 am	🗑
12	hrs	Tue 7/5	07:00 am ▼	Tue 7/5 7:00 pm	🗑
12	hrs	Thu 7/7	07:00 am ▼	Thu 7/7 7:00 pm	🗑

Add to the Schedule

| 8 | hrs | Sunday ▼ | 12:00 am ▼ | ➕ |

ii) Creating a Schedule

We make it easy to build out the schedule. We make it easy to re-use and adjust schedules, so you don't have to start from scratch every time. You can even create future schedules based on actual irrigation practices.

Thu Jul 7	Fri Jul 8	Sat Jul 9	Scheduled Hours	Actual Hours
20.5	4	0	60	65
12	0	0	36	34
0	0	15.5	50	50.25
13.5	10.5	0	24	19.25
19	0	0	20	17
0	4.5	8	19	19
1.5	12.5	0	14	14

iii) Tracking Performance

You created the perfect schedule – but what actually happened? We'll let you know if your irrigation schedules ran according to plan. If you have a pressure switch or pressure sensor, we'll show you the start and stop times of your irrigation events – right next to the scheduled events.

D) Water Level Monitoring

Knowing your farm's water levels is crucial to ensuring you reduce risks and efficiently manage your water supplies. Jain Logic can help you monitor these levels and set alerts via your smartphone, tablet and/or computer.

E) Image Capture

Keep an eye on your farm using Camera Kit. Get a visual on your farm's stock, troughs, fences and/or water points and use your mobile device to take a snapshot.

F) Flow and Line Pressure Monitoring

Monitoring the flow and pressure of pumps and irrigation lines is critical to ensure efficiency in your irrigation system. Jain Logic works as a stand-alone monitoring system to let you know what pressure gauge, flow meters and other devices are recording, both current and prior recordings.

G) Weather and Environment Monitoring

Knowing local climate conditions can help you minimise risk and maximise profits. Jain Logic provides you with current and historical data using evapotranspiration calculations to make informed decisions around crop management processes.

H) Pump Management

Jain Logic helps you to monitor and control pumps remotely so you can improve the operation of your entire farm, combined with water monitoring you can save on time, hours and improve productivity by automating your farm system.

Components of Jain Logic™ - M & C

Jain Logic™ M & C is a suite of field monitoring technology growers trust. It delivers real time data from sensors in the field to any internet connected mobile device, tablet or computer in an easy to use and intuitive interface

C3

C3 Field Station can remotely monitor a large range of agricultural and irrigation equipment with integrated access to the Jain Logic™ software platform for data management and system control

Solo

Solo can be paired with a soil moisture probe or pressure sensor for moisture monitoring or purchased as a DIY kit for tank level monitoring or in-field camera use. The perfect choice for stand-alone locations needing a compact robust field station.

Camera

The V1 Camera features a robust design in an all weather camera. It takes still image photos. Photos can be captured on timer or on command. It has photo history.

Sensors

Sensors are used in precision agriculture, providing data that helps farmers monitor and optimize crops, as well as adapt to changing environmental factors.

Precision Agriculture

O & M related alerts to field engineers.

SCADA, Pump and drive operation within the pump house & Synchronization with Network

Project Activities & Irrigation Schedule monitoring & control by Administrator

Jain IrriCare

Irriconnect Pro
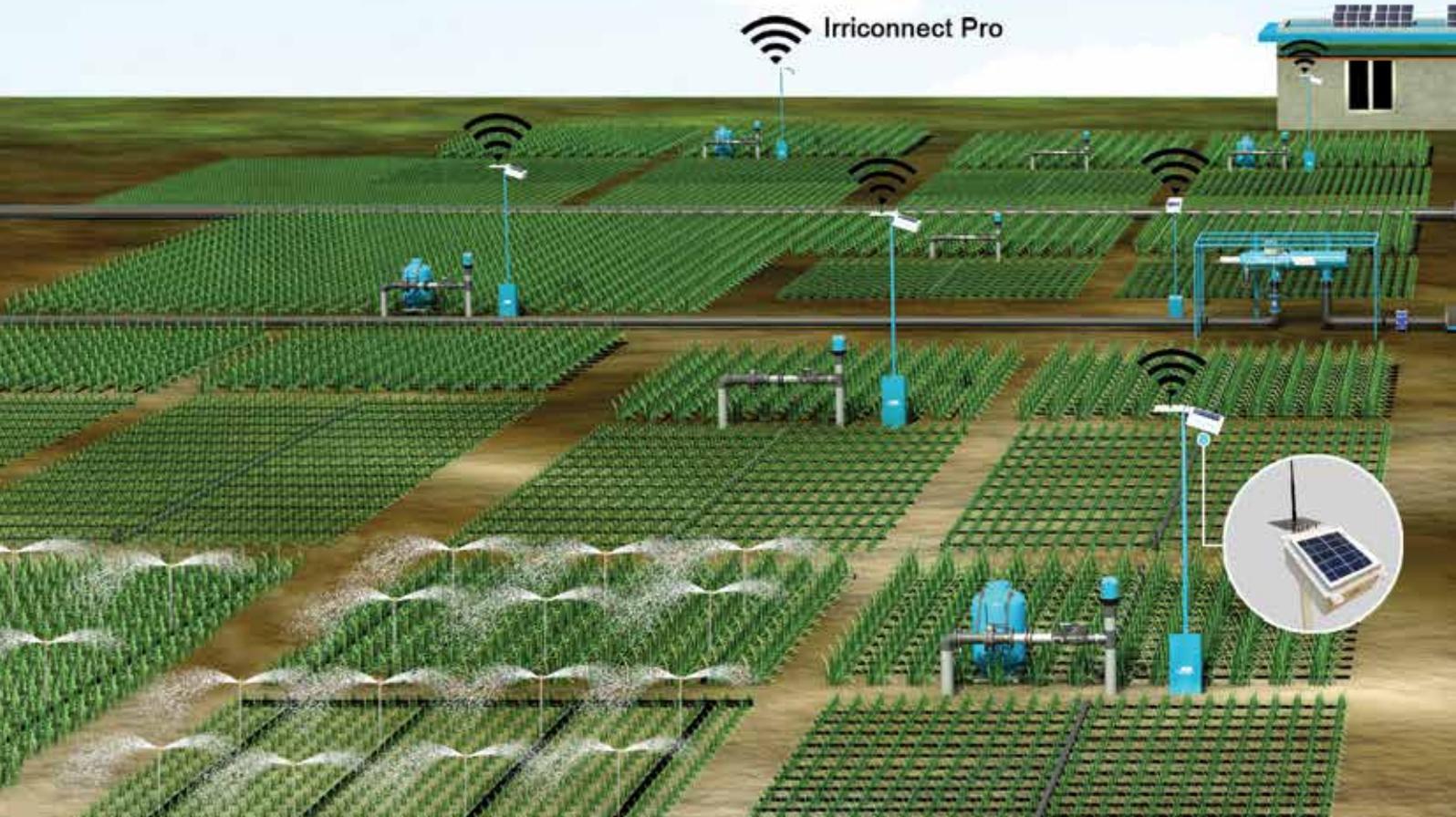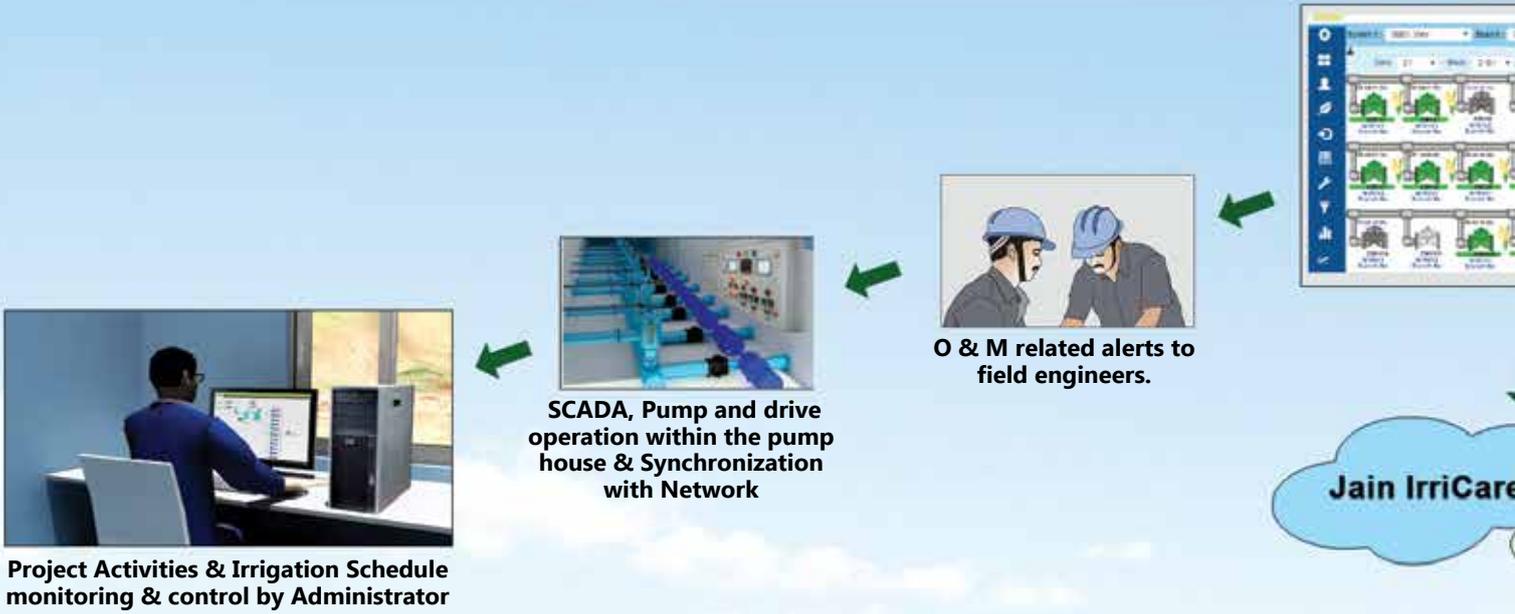
JAIN Logic ™

Digital-Tech Solutions

Real time remote access to client for data & reports

Expert agronomic advice to the farmers
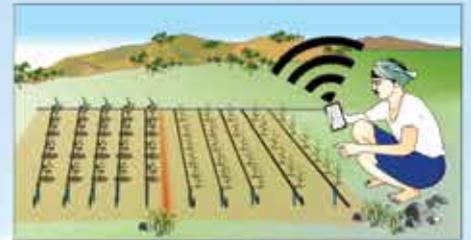
Customer gets alerts & has access to his data

Cloud/Server

Irriconnect Master

IRRICARE™ - IRP
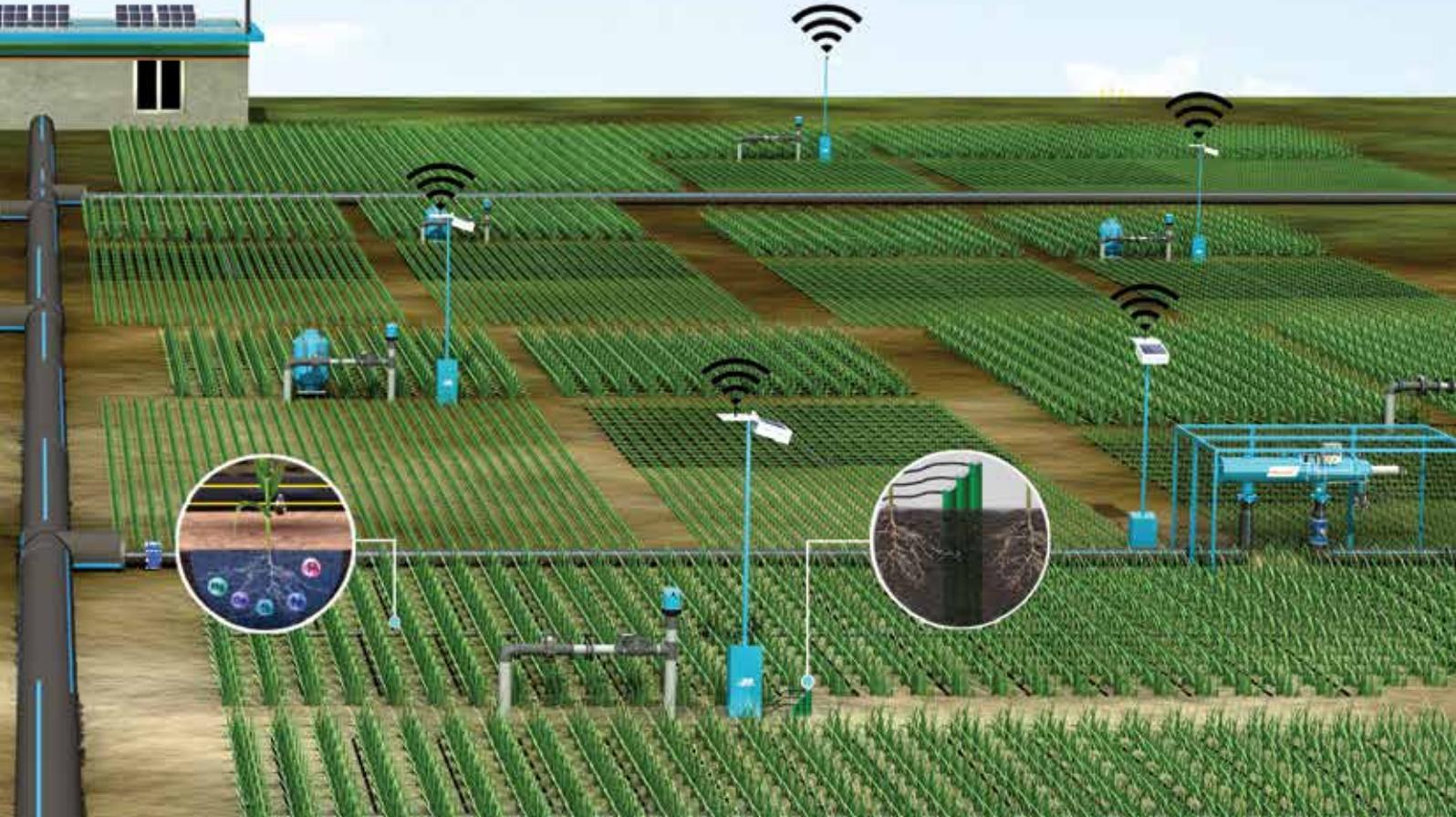
Farmer Subscription

Data Management

Jain Logic™ Monitoring and Control solution provides robust soil moisture and field condition monitoring data that is reliable and secure. It provides analysis and presentation tools allowing you to use your field data to simplify farming decisions.

Your data warehouse

Jain Logic™ securely stores all of your field and farm data automatically, so you don't have to worry about it. Gone are the days of keeping track of endless spreadsheets and notebooks. You can access your entire history of data at anytime from any web connected device. Some of our early customers currently access data going back more than 10 years.
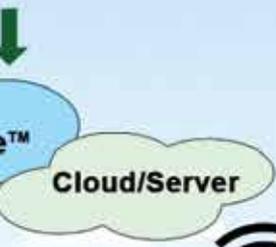
Safe and secure

Your data is sent to our servers over a secure VPN tunnel, and any data accessed from our servers is protected by industry standard SSL encryption. Our servers are protected by biometric locks and 24/7 video surveillance. Only authorized personnel have access to the data center. 24 hours a day onsite staff provide additional protection against unauthorized entry and security breaches.

You're busy, let Jain Logic™ help

Jain Logic™ provides advanced analysis and reporting out of the box. It is easy to access your summary reports directly online at any time. We have a range of alerts and reports that are delivered via email, text, or voice.

Reliable

Jain Logic™ Monitoring and Control Solution servers consistently achieve 99.9% uptime. Our servers and infrastructure have a built-in redundancy, to protect you from loss of data. Your data is backed up, both on and off site so it can be restored in the unlikely case of failure.

Irrigation Controllers

In most of the cases, controller is specially designed to fulfill the requirements of Open field, Greenhouse, Landscape, Community Irrigation, Poultry Applications and Water Management applications etc. Controllers have additional feature of filter backwash.

GreenLine Software and Spirit Pro Controllers

It is a Time, Volume, Sensor based controller. It has flexibility in irrigation and fertigation scheduling. It is used in open field, greenhouse, landscape, community irrigation, poultry application and water management applications. Its compatible with all fertigation machine.

Spirit PRO controller is operated wirelessly with help of RTU. RTU and controller communicates with radio frequency signal.

There are several variants in Sprit PRO family of controllers.

Spirit PRO Irrigation

Spirit PRO Irrigation is suitable for open field application which includes irrigation, fertigation.

The GreenLine application of "Spirit Pro Hybrid" may contain 20 Spirit Pro Hybrid controllers.

Spirit PRO Hybrid

Spirit PRO Hybrid is suitable for open field and multiple greenhouse application which includes irrigation, fertigation and climate control.

The GreenLine application of "Spirit Pro Hybrid" may contain 20 Spirit Pro Hybrid controllers.

Spirit PRO Field

Spirit PRO - Field is suitable for open field application. This is complete wireless solution without any hardwire output. Maximum 100 Nos of IrriConnect RTU, which means maximum 800 valves can be controlled wireless. Spirit PRO Field is recommended for scattered field application.

Custom Made Controllers

Sometime client has customized requirements, such requirements can be fulfilled through our custom made controllers developed using standard PLC and HMI. A team of skill programmers can develop solutions on-demand.

JAINLogic™ DIGITAL-TECH SOLUTIONS
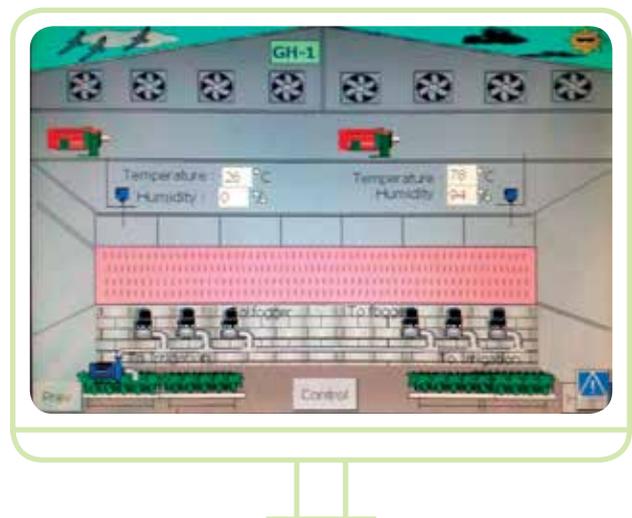
IRRISMART

IrriSmart is a smart irrigation solution used for precision farming applications. Irrismart is used with IrriCare™ software platform. IrriSmart is a modular irrigation controller which provides user complete freedom to choose the controller suitable for his requirements.

A) Choice on the basis of communication
- Blue-tooth
- GSM (2G, 3G, 4G)
- RS485

B) Choice on the basis of valve operation
- Hardwire (HW)
- Wireless (WL)

C) Choice on the basis of valve output
- 12 V DC latch output
- 24 V AC output

D) Choice on the basis of sensor connectivity
- 4-20 mA
- 0-10 V
- SDI 12
- Digital / Pulse input
- Weather station

All above mentioned flexibilities makes IrriSmart most modular controller available. Additionally, IrriCare software platform provided for IrriSmart is also flexible wherein user can choose software applications for open field, greenhouse, landscape, water conveyance project etc.

Model	Spirit PRO Irrigation	Spirit PRO Hybrid	Spirit PRO Field
Application	Open Field	Open Field+ Green houses	Open Field
Connectivity Option	Hardwire+Wireless	Hardwire+Wireless	Wireless
Controllers in a PC network*	7	7	7
Irrigation			
Max hardwired outputs	200	200	-
Max hardwired inputs	80 (50 Analog)	80 (50 Analog)	-
Hardwired connected valves	200	200	-
RTUs	100	100	100
Irrigation heads	14	5	13
Irrigation programs	99	70	90
Fertigation			
Fertilization programs	60	40	60
Fert pumps at a head	7	6	7
Possibility of different control method for each fert pump	Yes	Yes	Yes
Fert agitator at a head	1	1	1
Mixing junction at a head	1	1	1
Pump station with 5 pumps	1	1	1
Tanks	4	4	4
Filter			
Filter batteries	3	3	3
Rooting			
Rooting valves	40	40	40
Greenhouse			
Greenhouses	-	5	-
Roof windows in a Green House	-	4	-
Side windows in a Green House	-	4	-
Internal screen in a Green House	-	2	-
External screen in a Green House	-	2	-
Exhaust Fans in a Green House	-	4	-
Circulation fans in a Green House	-	-	-
Foggers in a Green House	-	16	-
Wet pads in a Green House	-	-	-
Lightings in a Green House	-	4	-
Air Heaters in a Green House	-	-	-
Hot water heating systems in a Green House	-	-	-
Ventilated cells in a Green House	-	2	-
Sensors in a Green House	-	1	-
CO_2 sensors in a Green House	-	1	-
CO sensors in a Green House	-	1	-
Photo synthetic active			
Radiation sensors in a Green House	-	1	-
Climate station	1	1	1

Insights Into Your Landscape

Every drop of water counts, more than ever. Over 60% of the water we use on an annual basis is for outdoor water use, and 50% of that is wasted due to overwatering. It is a waste we can prevent with a simple technology solution.

The ETwater Smart Outdoors mobile app let's anyone see how much water they're using outside their home or business. It provides insights into precisely how much water is needed to keep your lawn, garden, or property healthy. The ETwater app takes the guesswork out of planning and the costs for maintaining your landscape. Current customers who want easy remote access to their smart controller please use the ETwater QuickDraw mobile app. Click here and add QuickDraw to the home screen of your smartphone or tablet to do station/zone checks, wet tests and more anywhere, anytime.

Weather Forecasting

Leveraging your precise coordinates, we use the most reliable and accurate weather services from the same sources that meteorologists and scientists use.

Dynamic Scheduling

The water schedule can be fully automated, enabling adjustment or suspension when rain events occur, and accounting for the precise amount of water needed within specific time constraints.

Events and Alerts

We track the events and activity at your location(s) and can alert you via text message or email when something has changed or needs your attention.

Mobile Access

We provide the ability to monitor and control what is happening with remote access via any mobile device, and there are an advanced set of applications that let you program and customize your setup.

Precise Watering

We know the amount of rain that fell at your site(s) and we combine this information with what we know about your landscape, and the plant types and you get the precise amount of water needed.

SAVE UP TO 50%
OF YOUR OUTDOOR WATER USE.

ETwater is the culmination of years of experience with landscape design, environmental science, and information technology.

ETwater®

ETwater is the pioneer of cloud-based smart irrigation. The culmination of years of experience with landscape design, environmental science, and information technology. We have the smartest irrigation system and controllers available. We know the precise amount of water you need for your landscape. We adapt to changes in weather before it happens, we know the amount of rainfall it received, we know just how much water the plant life needs, and we give you the ability to monitor and control what is happening with any mobile device or computer. We're also the ones with the patented technology who can convert a conventional water controller or sprinkler timer to smart irrigation. There's never need to rip and replace an existing controller or related pieces of irrigation with ETwater.

Smart Box®

- No baseline schedule required
- User guide is 12 pages
- No box and cloud synchronization
- Quad-band 3G GPRS modem
  - Installed as standard equipment
  - Firmware is adaptable
  - Data compression algorithm
- SIM is adaptive
- Microprocessor
  - Lexicon improves data transmission
  - Firmware is OTAP

Smart Works®

- First true smart controller retrofit product
- Identical functionality as ETwater SmartBox
- Compatible with Irritrol®, Rain Master®, and Rain Bird® Controllers
- No power wire or station wire installtion

HermitCrab®

- First "pure" smart controller retrofit product
- Connection via digital remote port
- Identical functionality as SmartBox and SmartWorks, except circuit testing.
- Schedules executed via on/off commands to the remote port
- Expands ETwater service platform to 85% of all conventional controllers
- Fully-compatible with all flow sensors and hydrometers

Radio Control Units

1) IrriConnect Master

IrriConnect Master is the heart of IrriCare IRP system. It communicates with IrriCare IRP through GSM. It receives configuration and scheduling information to operate IrriConnect PRO RTUs. Maximum 100 IrriConnect PROs can be controlled through one IrriConnect Master. Depending on the size of irrigation project, any number of IrriConnect Masters can be utilised.

IrriConnect Master has capability to take decision according to preset rules and thresholds. For any threshold cross, it can take appropriate decision.

2) IrriConnect PRO

IrriConnect PRO is a programmable remote terminal unit used with IrriConnect Master. Its unique feature is its ability to store schedules. With the virtue of this feature, even if by any chance RF communication fails, still it can operate preset schedules. IrriConnect PRO has inbuilt solar panel hence no external power source required.

IrriConnect PRO is available in different variants,

1) IrriConnect PRO – 4 digital outputs
2) IrriConnect PRO – 8 digital outputs
3) IrriConnect PRO – 8 digital outputs, 4 digital inputs and 4 analog inputs.

IrriConnect Master
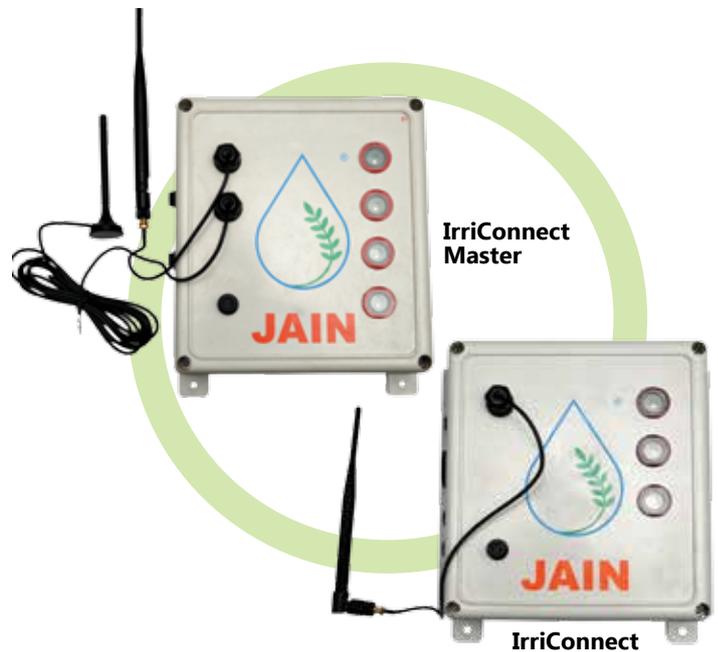
IrriConnect

3) IrriConnect

IrriConnect is a non-programmable remote terminal unit used with Spirit PRO hybrid and Spirit PRO field. IrriConnect will get the signal from Spirit PRO to trigger the valve. User can also connect different sensors with IrriConnect.

IrriConnect is also available in 4 and 8 digital output and 8 digital output with 4 analogue and 4 digital inputs

Filter Backwash Controller

Automatic Filter back flush reduces the clogging probability and enhance the performance of Micro – Irrigation system. Filt-O-Clean Controller is suitable for use in all types of filtration units such as Media filters, Disc filters and Automatic Screen Filters, etc.

Filt-O-Clean

Features

- 16 char x 2 line LCD screen.
- User friendly and self explanatory.
- Flush time can be set from 0 to 59 minutes in one minute increments.
- Wait interval can be set from 1 minute to 23 hrs & 59 minutes.
- Count down timer shows status of backflush.
- Pause option : can be paused during operation. Useful to pause backwash during fertigation.
- Output 12 VDC (pulse). 24 VAC model can be supplied on demand.
- Can be supplied with solar power option on demand
- Manual override facility
- Available in 1, 2, 3, 4, 5 & 6 station models. Higher models can be supplied on demand
- Inbuilt SMPS for spike suppression & compensation for frequent supply variations.
- Facility to operate on pressure differential mode, Inbuilt melody tune to alert the user for manual intervention, if pressure difference is not reduced to set point after two attempts by the controller
- Spacious wiring compartment

Filt-O-Clean®

Sensors

A Sensor converts the physical parameter (for example: temperature, humidity, moisture, etc.) into a signal which can be measured electrically. Sensor is an important part of IOT based system and even for Isolation (non internet based) devices.

Jain Logic has the capability to handle any type of sensors and multiple sensors at a time. Here are some examples of the sensors which can be utilised with Jain Logic. Most of the sensors which are used in Jain Logic are classified as analogue sensors and digital sensors.

A) Analogue Sensors:

These sensors produces continuous analogue output signal. This continuous output signal produced by the analogue sensors is proportional to the measurand. Electrical output produced by analogue sensors are mostly, current output 4-20ma, voltage output 0-10 VDC   or 0-5 VDC etc.There are various types of analogue sensors which are used with Jain Logic; practical examples of various types of analogue sensors are as follows: pressure sensors, flow sensors, level sensors, EC sensors, pH sensors and so on.

i) Pressure Sensors:

The analogue sensors that are used to measure the amount of pressure applied to a sensor are called as analogue pressure sensors. Pressure sensor will produce an analogue output signal that is proportional to the amount of applied pressure. Pressure sensors are available in range of 0-5 bar, 0-10 bar, 0-20 bar ratings.

ii) Flow Sensors:

There are various types of flow sensors available in analogue flow sensors like Electromagnetic flow sensors, ultrasonic flow sensors etc.

iii) Level Sensors:

Level sensor is used for continuous measurement of fluid levels. Using level sensor, operation of pump can be controlled. For example, if water level in the tank is low, tank filling pump can be switched ON and at the same time, system pump can be switched OFF.

iv) Temperature Sensors:

Temperature sensors are used to get the temperature data within the greenhouse. It is used in climate control system of Spirit PRO controllers.

v) Humidity Sensors:

Humidity sensors are also used in Greenhouse to measure the humidity levels and to trigger the misting system in the green house to change the humidity to desired pre-set levels.

Pressure Sensors

Flow Sensors

Level Sensors

Temperature Sensors

vi) EC sensors:

Electrical Conductivity is a measure of dissolved solids in the water. Higher EC indicates higher salinity. Efficiency of fertilizer used is a function of EC. Higher the EC, lower will be the fertilizer application efficiency. When we add fertilizer to the crops, EC increases. Hence EC sensors are used to notice change in EC with application of fertilizer and user can pre-set his desired level of EC so that he can get required fertilizer application efficiency.

vii) pH sensor:

Similar to EC senors, pH sensor is also used to maintain pre-set level of pH in irrigation water when applied with fertilisers. It allows to maintain the pH levels at which user can get optimum fertilizer application efficiency.

Both EC and pH sensors are used with advance fertigation machine like Nutricare and Precimix.

EC-pH Sensors

B. Digital Sensors:

In digital sensors, instead of continuous electrical output as in analogue sensors, only frequent pulse output is provided. Examples of digital sensors are, water meter, rain gauge, flow switch, pressure switch etc.

i) Water meter:

Water meter has a paddle wheel or woltman type of turbine which rotates and indicates changes in flow. It is connected to a magnetic switch which generate pulse output. This indicates volume water flowing between two consecutive pulses.

Water meter

ii) Rain Sensor:

Digital Rain sensor or rain gauge has a tipping bucket type mechanism which provide pulse output for a given volume of rain. It indicates amount, intensity and frequency of rainfall.

iii) Switches:

There are different types of NO/NC switches used in irrigation systems. Some examples are flow switches, pressure switches, level switches. Switches are pre-set to a give value. Once this value is crossed, switch changes its position from NO to NC or vice versa.

Rain Sensor

Switches

Advanced Fertigation Machines

Plants must receive all of the nutrients at a specific EC (electric conductivity) and pH (acidity) level. Therefore, it requires that the fertigation will be carried out according to the EC/pH of the irrigation water. Another advantage of irrigation according to EC-pH control is the ability to maintain the desired concentration of the fertilizer in the water regardless of preparation error, material chemistry construction etc.

NutriCare

NutriCare with EC & pH

NutriCare™ is precise, extremely reliable, accurate and automated fertigation machine.

NurtiCare™ is recommended for optimal utilization of nutrients for increase in yield and income levels.

Distinctive Features

- Enables precise management of nutrition schedules.
- Expandable as per requirement, no need to replace entire manifold, just add on ventures for expansion.
- Can fit easily on existing drip systems.
- User friendly fertilizer program adjustments.
- Intelligent control and safe operations.
- Robust and strong construction.
- High quality components improve life span and performance of machine.
- Mounted on corrosion resistant aluminum profile frame.

NutriCare is available in 2 types

1) NutriCare with EC & pH

2) NutriCare without EC & pH In, both types following models are available
   - 2 Fert + 1 Acid
   - 3 Fert + 1 Acid
   - 4 Fert + 1 Acid
   - 5 Fert + 1 Acid

Jain NutriCare™ ECO

Economic By-Pass machine for manual or automatic fertigation. NutriCare ECO have highly accurate dosing channels, uniform & efficient distribution fertilizers. Fertigation machine is suitable for flow rate up to 100 m³/h and operating pressure up to 4kg/cm² .

NutriCare ECO with pH

- Modular Fertigation Machine with a booster pump.
- Highly accurate dosing channels, uniform and efficient distribution of fertilizers.
- Compact & robust cPVC pipe structure placed on a standard SS Frame.
- Available in single Venturi and dual Venturi.

Options

- NutriCare Eco without Booster Pump.

Jain PreciMix™

Precimix is an advanced fertigation machine that mixes various kinds of fertilizers in the specifically designed tank to achieve desired EC & pH. Precimix is extremely reliable accurate & automated fertigation equipment ideally suitable for precision agriculture. It regulates EC & pH and delivers nutrients into mixing tank through specially designed venturi pumps. It is recommended for the optimal utilization of nutrients / fertilizers, for increase in yield and profit.

Distinctive Features

- Water flow: 10 to 75 m³/h
- 3 to 5 venturi pumps
- Fertigation flow 350 L/h.
- Fertigation visual flow meters
- Fertigation counters

SCADA and VFD

SCADA

Supervisory control and data acquisition (SCADA) is a system of software and hardware elements that allows to:

- Control irrigation processes locally or at remote locations
- Monitor, gather, and process real-time data
- Directly interact with devices such as sensors, valves, pumps, motors, and more through human-machine interface (HMI) software
- Record events into a log file

SCADA systems are crucial for automation since they help to maintain efficiency, process data for smarter decisions, and communicate system issues to help mitigate downtime.

The basic SCADA architecture begins with programmable logic controllers (PLCs) or remote terminal units (RTUs). PLCs and RTUs communicate with an array of objects such as HMIs, sensors like flow, pressure, level etc., and end devices like valves, and then route the information from those objects to computers with SCADA software. The SCADA software processes, distributes, and displays the data, helping operators analyze the data and make important decisions.

Variable Frequency Drive (VFD)

Various automation processes need control of AC induction motors using AC drives or VFD. It can perform the function of switching on/off, varying the speed and direction of rotation of 3-phase induction motor.

In an irrigation scheme, pressure and flow are the basic parameters of system hydraulics. A VFD can smoothen the pressure or flow fluctuation within the system. For example, if valves are suddenly closed by the user, pressure in the pipeline rises, when this increase in pressure is sensed, VFD will lower the speed of the pump to maintain the pressure at preset level.

Electrical Control Panels

Automation Control Panels

Automation Control Panel is a panel with Programmable Logic Controller (PLC), Irrigation controller and VFD, which is capable of controlling various customised Environmental Control Agriculture. Automation Control Panel is used because of their ease of operation, simplicity of modification in logic, reduced size and enhances remote control operations. They can also be provided with HMI and SCADA for easier user interface.

Power Synchronization Panels

AC Grid, DG set and Solar Power are synchronised by this Power Synchronization Panel. Depending on the requirement and efficiency, the power is sourced from either of above. The panel operation is automated using PLC system. The synchronised supply is then given to local MCC Panels for further operations.

## Power Control Centre (PCC) Panel

PCC Panel is the panel which is used for the power distribution in industry. It is one of the essential part of electrical system of an industry. PCC panel consist of switchgears (ACBs, MCCBs, MCBs), indication lamp, measuring devices. PCC panels can designed and manufactured according to the load requirement.

Motor Control Centre (MCC) Panel

MCC Panel consist of multiple enclosed sections having a common bus bar and with each section containing a combination starters. In most of the MCCs, provision for Auto/Manual Operation is given. MCC panels are used in various industrial applications like production and assembly machines as well as agricultural applications like irrigation and pumping control operation.

More Crop Per Drop®
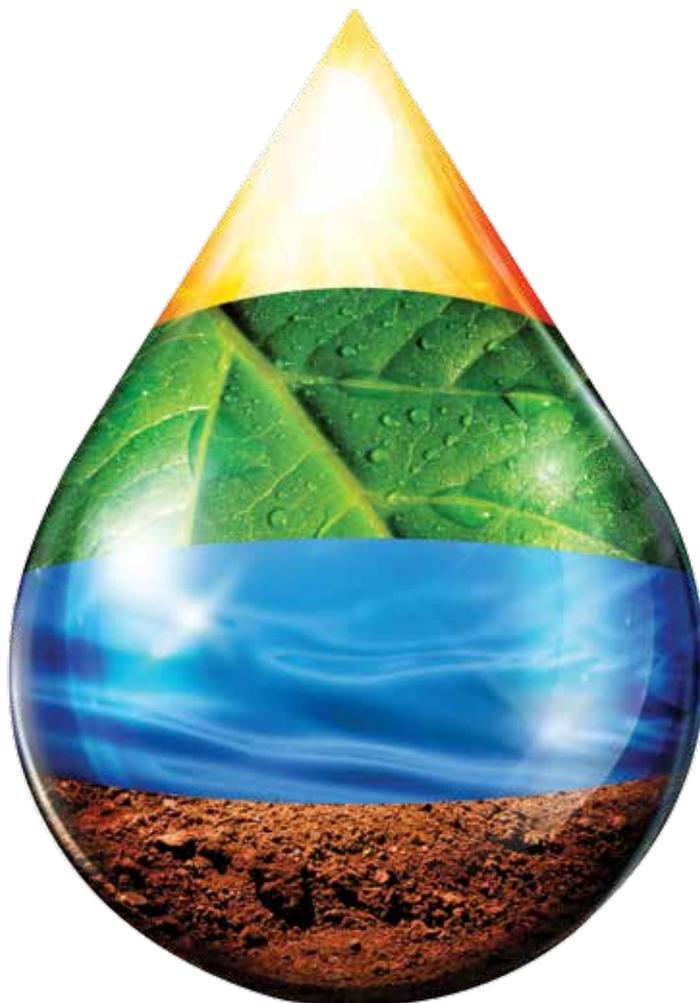
We revere these elements of our universe.
They reflect our ethos.

Yellow, Green, Blue and Brown are colours of Nature and have been embodied in our logo. They encapsulate the conviction of the Founder and the lasting commitment of the Corporation to agriculture. Jain Irrigation is striving to add value to the entire agri-chain. At the same time, they produce and process a complete range of agri-products for the exacting world markets and growing domestic clientele.

The Corporation is poised to grow and attain water, food and energy security.

JAIN®

Jain Irrigation Systems Ltd.
Small Ideas. Big Revolutions.®

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