

Integrating Remote Pumping and Storage into an Irrigation System

When things work together – they work better

“I need irrigation, pumping and water storage all integrated into my automation system”

The Problem: Pumping and water storage are provided and controlled by other systems. I need a single system.

- I need my irrigation system to suspend watering when there is a fire because I need to conserve water for firefighting.
- I need to increase pump speeds when water levels are low to keep a constant pressure and predictable flow rate.
- I need to cut back on irrigation when my water tank levels are low.
- I need other higher priority systems to be able to suspend or cancel irrigation.
- I need speed control of my pumps not just on/off relays.

“I need my irrigation system to suspend watering when there is a fire because I need to conserve water for firefighting”

“I need to increase pump speeds when water levels are low to keep a constant pressure and predictable flow

Integrating Pump Stations

Many pump stations can be equipped with their own software and connection options for automation systems. In addition, most will automatically turn on or off, based on their own sensors.

Hunter ACC controllers have 2 Pump/Master Valve (PMV) outputs, and ACC2 controllers may have up to 6. These outputs may be used to start local pumps via pump start relay, when necessary.

Higher level pump monitoring (for example, motor temperature or other alarm conditions) should be monitored by the pump interface with the automation system, and any resulting actions for the controllers can be sent with the standard command set.



1 – Who controls the pump Station? Firefighting or Irrigation? - You can automate and use your resources more effectively when you integrate into a single system.



2 – Do not use all your water. Suspend irrigation when levels are low.

Integrating Water Storage and Use

Irrigation may use water from a common shared water storage facility. A site might use grey water for cleaning purposes, firefighting, irrigation and landscaping features. The integrated system may wish to reduce, suspend or cancel irrigation when water levels are low and other systems have a higher priority.

Flow Sensors

ACC Hunter ACC controllers allow direct connection of a flow sensor. ACC2 controllers allow direct connection of up to 6 flow sensors.

In most irrigation scenarios, we recommend direct connection of the irrigation flow sensors to the controller, which is already programmed to monitor and report flow on command.

- Controllers can learn the typical flow of each zone of irrigation and allow adjustment to alarm limits and delay factors to prevent false alarms.
- The controllers are therefore able to detect high or low flow conditions on their own and perform local diagnostics to identify and shutdown malfunctioning devices.
- They will report the details of such alarms to the system, after the situation is diagnosed.



1 – Magnet Flow Tubes can measure high volume flow rates on large and small diameter piping.



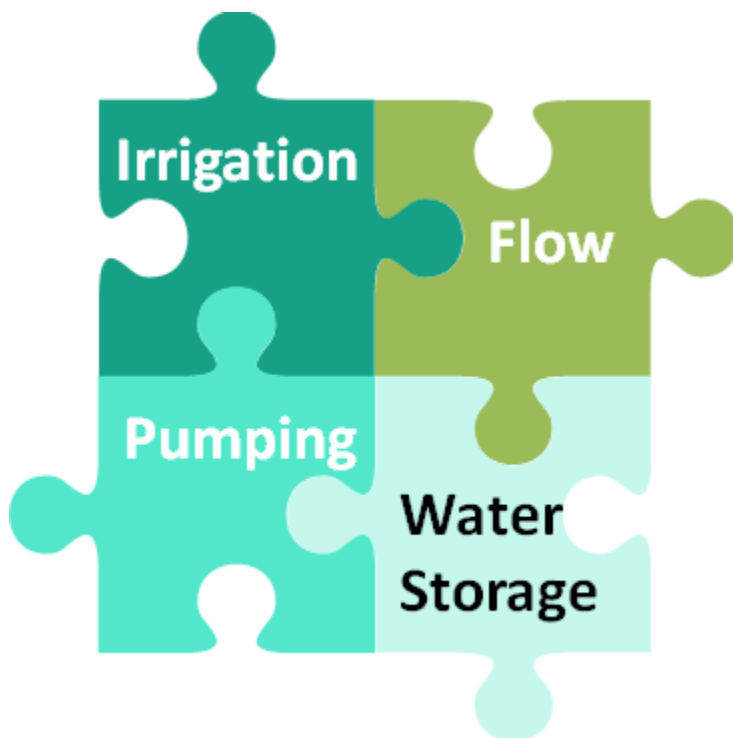
2 - Wireless Flow Sensor from Hunter

Integrating Alternative Flow Sources

It is possible to accept flow information from sensors connected separately to the automation system, and then issue commands to the controllers based on those inputs. However, local diagnostics require a high level of real-time interaction with the field outputs, as the controller halts irrigation, then samples suspect stations one by one to determine which one is causing the condition. Controllers can learn the typical flow of each zone of irrigation and allow adjustment to alarm limits and delay factors to prevent false alarms.

- Flow diagnostics require access to a station database, with all the elements the controller already has.
- The flow diagnostic process will create more data traffic on the network.
- Latency between the flow source and the controller during diagnostics has the potential to create erroneous results, which may have serious consequences.

Higher level functions are certainly possible via automation connection to external flow sensors, such as cancelling irrigation when total flows have exceeded a user-defined limit, or switching to another water source.



How does one go about this?

Site Integration

Use a gateway to expose settings and operational data to your site automation system. Now your site automation system can monitor faults and operation data and also send commands to start / stop / pause / increase / decrease irrigation. Site operators now see irrigation system as 'part of' their automation system. In a sense, the site automation takes over the automation of the irrigation using the irrigation system as a slave or secondary system.

Foreign Device Integration

Using gateways 3rd party devices such as Variable Frequency pump drives, flow sensors etc., water level sensors can be made to share their data or to accept commands from the Irrigation System. In this integration – Irrigation remains in charge and other systems such as pump stations, water storage and flow become the slaves or secondaries to the irrigation system.

When systems work together,
they work better

