WALCHEM

IWAKI America Inc.

Agriculture

APPLICATION NOTE

OVERVIEW

Irrigation water usage has nearly doubled since 1950 and continues to increase. This increase has caused more regulation, and a greater need for conservation to reduce the quantity of this precious resource. Sprinkler and micro irrigation (drip or trickle irrigation) are now utilized on nearly 1/2 of all crop acreage. These particular methods use less water but are more difficult to maintain unless advanced chemical methods are used to prevent clogging and biological growth.

SOLUTION

When using center pivot sprinkler and micro irrigation, chemicals can be added directly to the lines carrying water to increase yields and reduce or eliminate problems. There are three major applications that utilize chemical pumps and controllers to accomplish this treatment.

IRRIGATION WATER PH CONTROL

In many parts of the country, hard, alkaline water is present in both surface and underground systems. The hardness and alkalinity produce scale (calcium carbonate) in the sprinklers and drip emitters. Alkaline soils also cause problems with many types of crops, and decrease the porosity of the soil. By controlling the pH using an acid, the carbonate is converted to carbon dioxide which reduces the scaling potential. This is a fairly simple chemical addition, if the flow through the lines is consistent; however with changing flows, it becomes much more problematic.

When changing flows are present it is necessary to have a chemical pump that reacts to the increased flow (EWN, EHE, LKN or IX) as well as a controller (Intuition 6/W100) that has a pulse proportional
output. These algorithms allow the controller to compensate for changes in flow and pH of the water.

FERTIGATION

Fertigation is the application of fertilizers in the irrigation lines. This method provides a consistent and uniform amount of fertilizer to each of the crops provided the system is plumbed properly. The end result is higher crop yield and reduced consumption of fertilizer and water.

IRRIGATION WATER DISINFECTION

Many cases of crop contamination have occurred due to contaminated irrigation water mainly coming from surface water usage. More farms are beginning to disinfect the irrigation water by using chlorine or chlorine dioxide at the well head or the pump station. This type of treatment reduces contaminated product by ensuring that the water that accumulates on the outside of the plant is treated, and also the water that may enter the plant through damage areas is disinfected.

OTHER WALCHEM PRODUCTS FOR AGRICULTURE
FREE CHLORINE, CHLORINE DIOXIDE, PH AND CONDUCTIVITY CONTROLLERS

INTUITION 6 SERIES

- Completely Programmable from Touch Screen
- On-Screen Graphing and Variable Data Logging
- Variable Sensor Input Configurations- Walchem or 4-20 mA sensors
- Remote Communications-via Ethernet
- 6 Relays- Powered, Pulse Proportional or Dry Contacts
- Optional Dual Analog Output Card

W100 SERIES

- Standalone controllers that can be wall or panel mounted to meet the particular needs of a system.
- 4-20 mA output, pulse proportional control to drive chemical pumps or standard
- powered relays with many algorithms for precise control.
- Utilize specific sensors for chlorine, chlorine dioxide, conductivity and pH.

CHEMICAL PUMPS

Walchem chemical pumps have been engineered for accuracy and reliability. The pumps have a high degree of adjustability (360 spm, 1800:1 turndown ratio) for accurate chemical metering. They also have a two-year warranty and require minimal maintenance and flexible control

Walchem has been involved in the control of water quality in various types of water systems for over 35 years. Control products have been developed for very simple to complex water management systems. All Walchem products are designed to work together and with most other manufacturers' control products. Walchem manufactures the chemical metering pumps, mag drive pumps and controllers for all of these systems.

SENSOR SPECIFICATIONS

Sensor	Range	Temperature	Pressure	Process Connection	Materials
pH	-2 to 16 pH	50 to 158°F	0 to 100 psi	1" NPTM submersion ¾" NPTF in-line tee	CPVC, Glass, FKM o-rings, HDPE, Titanium rod, glass filled PP tee
ORP	-1400 to 1400 mV	32 to 158°F	0 to 100 psi	1" NPTM submersion ¾" NPTF in-line tee	CPVC, Glass, FKM o-rings, HDPE, Titanium rod, glass filled PP tee
Contacting Conductivity (Graphite)	10 to 10,000µS/cm	32 to 158°F	0 to 140 psi	¾" NPTF tee	Graphite, glass-filled PP, FKM o-ring
Free Chlorine/Bromine High pH Range	0 to 8 mg/l 0 to 10 mg/l	41 to 113°F	0 to 14.7 psi	¼" NPTF Inlet ¾" NPTF Outlet	PVC, Polycarbonate, silicone rubber, SS, FKM, Isoplast
Chlorine Dioxide	0 to 20 mg/l	41 to 122°F	0 to 14.7 psi	¼" NPTF Inlet ,¾" NPTF	PVC, Polycarbonate, silicone rubber, FKM, Isoplast

(Other sensor ranges available)

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