



Water Measurement & Management

- Began in 1994
- Supervisory Command And Data Acquisition (SCADA) based system
- 14 parks
- 1,100 parks (currently)
- 1,500 controllers
- Largest municipal parks control system in the world

Abilities

Controlling:

- · Water pumps and boosters
- Reservoirs and canal gates
- Master valves
- Irrigation zone valves
- Automatic Irrigation Scheduling
- Electrical and Lighting systems

Monitoring:

- Water meters, flow rates, pressure
- Water level
- Soil moisture, temperature, humidity
- Weather station, ET calculation
- Alarms: high and low flow, clogging, burst
- Electricity consumption
- · Security intrusion & theft
- Comprehensive management reports: daily, monthly, yearly of:
 - Accumulation of water
 - Weather condition
 - Power consumption
 - Abnormal events as:

High flow - broken laterals or valve failures

Low flow - clogged laterals or valve failures

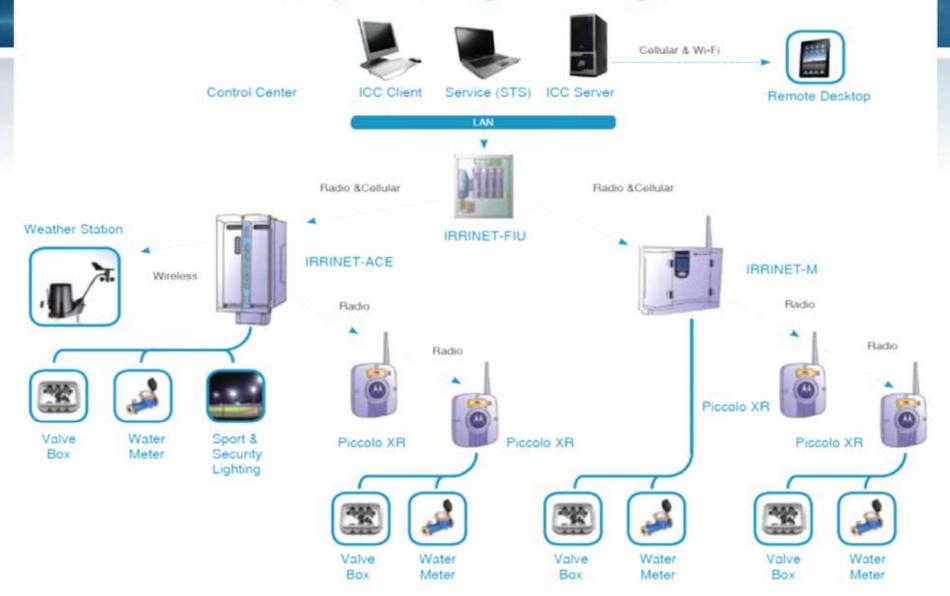
Water leak - uncontrolled water

Water burst - broken lines

System on/off - not according to the irrigation scheduling



ICC System Configuration Diagram



System Backend



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Central Control Servers

- -System software
- Alarms/ reports



- Monitor, control, modify programs
- Activate remote control hardware





Field Components





IRRinet Remote Terminal Unit (RTU)

- Considered the "Master"
- Controls local valves
- Has resident intelligence
- Support communication relay
- Controls remote slave units
- Supports inputs for area conditions





Field Components

IRRinet M Remote



- •Can be either "Master" or "Slave" unit
- Controls local valves
- •Has resident intelligence in "Master" mode
- •Receives instructions from master in "Slave" mode

Scorpio Remote



- Receives instructions from master
- No field intelligence
- •Can operate in stand alone (with intelegence

Piccolo XR Remote

- •Receives instruction from Master
- No direct field wiring







Field Components



Hydrometer or Meter Master Valve (MMV)

Meter/Master Valve (MMV)

Wired to Input on Controller





Double Check Valve (DCV)

- Controller reads when the switch opens and closes.
- Controller calculates flow rate as irrigation system waters

Measurement Units













Weather Sensors

(Installed at Masters locations)

Rain Switch

- Switch opens when wet and pauses program
- Connects to controller input







Freeze Switch

- •Switch circuit opens at or below 3 degrees Celsius
- •Connected to input on controller.
- •Controller reads open circuit and will stop program

Weather Stations

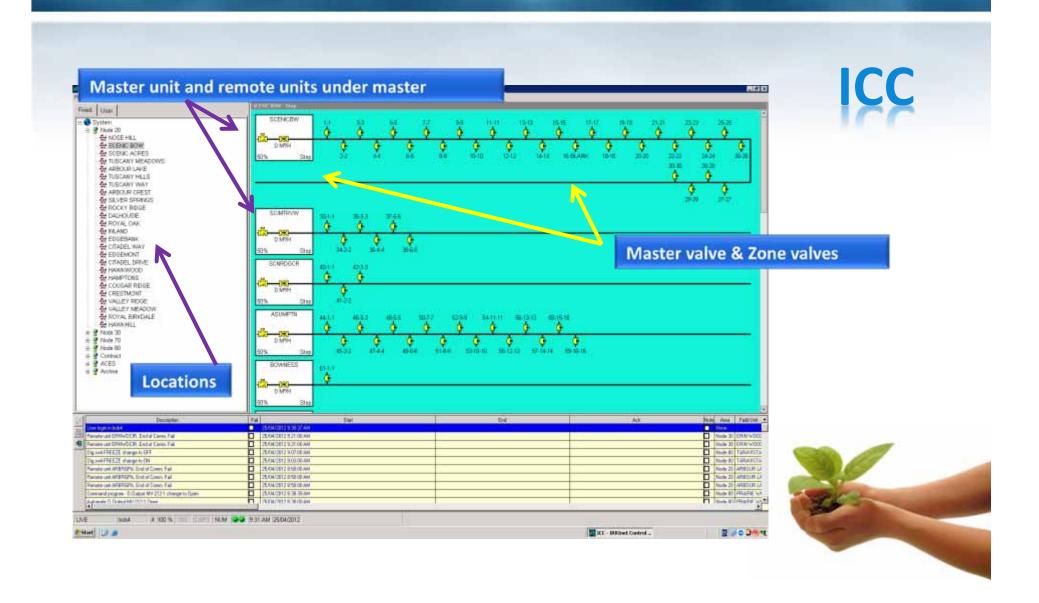
- •Collects data on daily weather
- Receives data and calculate daily Evapotranspiration (ET)
- ICC converts ET to Water Factor (WF) % adjustment and dispatches to (RTU)





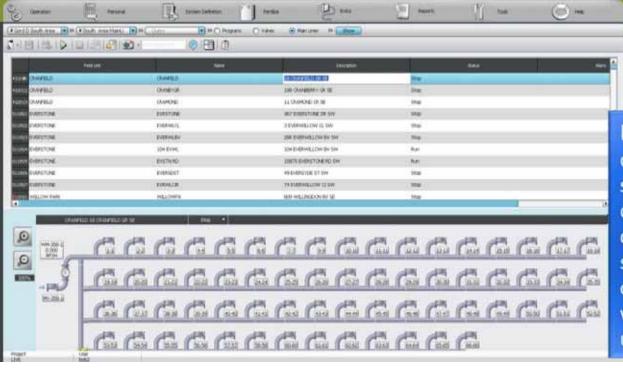


Control & Monitoring Software



Alerts & Reports

IMS



IMS software analysis the data from the control software, controllers & devices then generates daily reports of the of the systems condition, status of functions, alarms, water usage and ultimately plant health



