



**ENGINEERED  
CONTROL SOLUTIONS**



**WATER**  
Water is essential...  
Control is critical.  
**CONTROL**

INTEGRATED TELEMETRY, CONTROL AND SCADA SOLUTIONS

# Simple Solutions to Complex Control Requirements

## Unlocking the Truth About Telemetry and SCADA

At some point in the life of a Water Distribution System there comes a need to upgrade an existing or acquire a new Water Distribution Control System. Deliberating this acquisition and making the decision on exactly what approach to take often is an agonizing decision. The decision process asks owners, operating personnel and design consultants to make decisions and selections beyond their zone of comfort.

While the Owner's consulting engineer is integral to the Control System Development Team, in many cases this same consulting engineer is a Civil Engineer whose expertise does not include Control System design and development. Where do System Owners and Operators turn for help?

This decision discomfort can be avoided by teaming with a qualified, Control System Integrator who knows water distribution and who has the resources to design, build, implement and service an effective and cost efficient Water System Control package. Engineered Control Solutions is such a company.

## Forming the Telemetry and SCADA Decision

The first aspect of the decision process is to make a Statement of Project Objective. The Statement should define clearly what is the intended outcome of upgrading or acquiring a Telemetry or SCADA system.

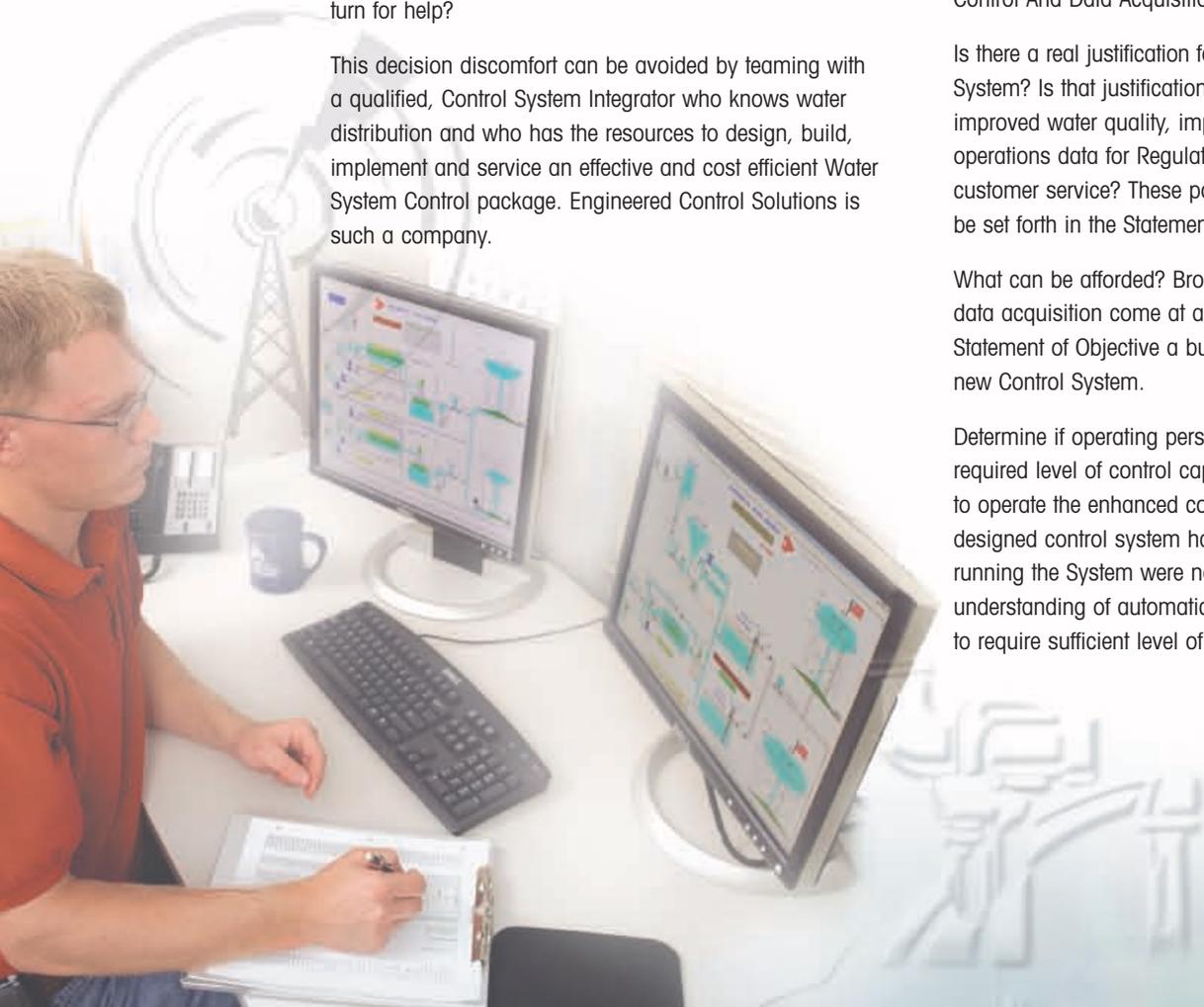
There are certain basic points the Statement of Objective must spell out.

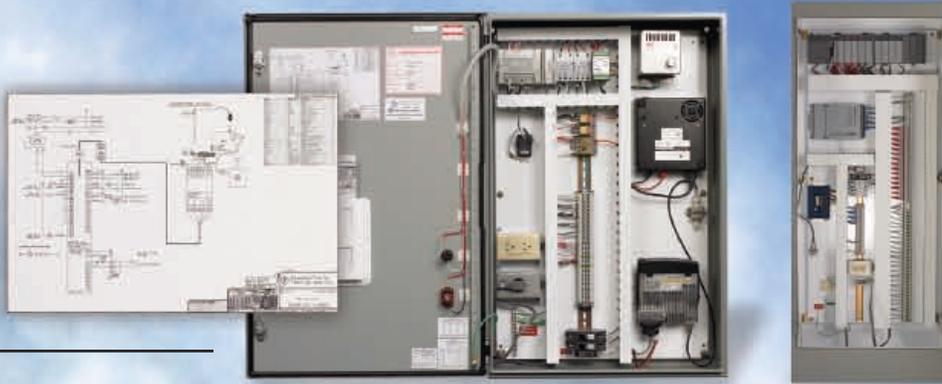
Should the Control System be a Distributed Control System with smaller segments of the water distribution system being controlled independently? Should the Control System be a Centralized Control System wherein overall water distribution control resides at one central point? This Centralized Control System reflects SCADA – Supervisory Control And Data Acquisition.

Is there a real justification for the new or enhanced Control System? Is that justification better manpower utilization, improved water quality, improved system information and operations data for Regulatory compliance or better customer service? These points of justification should be set forth in the Statement of Objective.

What can be afforded? Broadened control and greater data acquisition come at a cost. Establish within the Statement of Objective a budgetary constraint for the new Control System.

Determine if operating personnel are trained to the required level of control capability and sophistication to operate the enhanced control system. Many a well designed control system has failed because the people running the System were not comfortable in their understanding of automatic control. Make a statement to require sufficient level of operator training and skill.





## **Project Definition — The Operation Description**

No other aspect of developing a Telemetry or SCADA system is more basic nor more important to project success than is a clear definition of the various control points, the transmission of data and the control actions to be taken for a water distribution system – how the system works to properly move water.

The control system must monitor critical bits of data and from this data the control system must make control decisions and prescribe control actions. This defining of the control actions is called the Operational Description and it describes how the system is intended to operate. The Operational Description will be used by the Control System Integrator to program the PLC logic. The PLC logic will make the proper control decisions if the Operational Description has been properly structured.

The Control System Integrator should be involved in constructing the Operational Description but the best source of operational information is the operating staff and also the consulting engineer who has been involved in designing the water distribution system. The Operational Description is a KEY.

## **The Control System**

Today's control systems are based on microprocessor technology developed in the 70's and 80's and now widely used in Programmable Logic Controllers (PLC). The Programmable Logic Controller has replaced discrete component electronics systems with greater capability in a smaller package. The PLC uses computer-on-a-chip technology and software logic to make control decisions.

A Control System Integrator must capably and successfully integrate software and the PLC together to build an operating control system. Engineered Control Solutions has the Hardware and Software Design Engineers on staff doing nothing but Hardware design and Software development to build Potable water distribution control systems and place these systems into successful operation. These combined capabilities are a Key Factor in project success.

## **Experience**

How many times have you heard "They just couldn't make it work" in relation to implementing a control system. In most cases "They" will refer to a control system supplier who has reasonable design and engineering capability but who does not have sufficient depth of experience dealing with potable water distribution systems. It is essential the System Integrator have experience with and understand the operation of water distribution systems. This direct experience is a Key factor in project success.

Engineered Control Solutions benefits from nearly 50 years of continuous experience in designing and building equipment for Water Distribution Systems – no one has this depth and breadth of experience.

## **Equipment and Components**

Control System specifiers tend to think of a control system in terms of hardware and components – which PLC or whose Radio Modem or what Graphic Interface should be used, The single most important point to remember in evaluating hardware and software is to make sure the components used in the system are non-proprietary and can be purchased from multiple sources at fair market pricing. Specially designed components available from only one source are to be avoided because service and replacement parts become a serious problem.

ECS selects their equipment and software from well known and widely available National manufactures whose actively support their products and who have parts available close by from independent distributors. Programming and logic routines can be provided to the customer for their own use and editing if they so choose.





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