



A Rockwell Automation Company

## City of Saskatoon Water Treatment Plant

### The Client:

The City of Saskatoon operates a water treatment plant which has a rated capacity of 227,000 m<sup>3</sup>/day. The facility is certified by the Provincial Department of Environment as a Class 4 treatment plant, the highest classification obtainable

in the province of Saskatchewan. The plant pumps over 40 million m<sup>3</sup> of water each year to residential, commercial and industrial users in Saskatoon.

### The Requirement:

The City of Saskatoon Water Treatment Plant has been in service at its original site since 1911. Over the years the facility has continually been expanded and updated, taking advantage of new technology to meet the growing needs of the city. The present plant configuration consists of three reservoirs with a total storage capacity of 108,000 m<sup>3</sup>. There are nine high lift pumps with a total capacity of 400,800 m<sup>3</sup>/day. The plant has three clarifiers with a total capacity of 226,500 m<sup>3</sup>/day, and 33 filters. The low lift pumping is performed by nine pumps with a total capacity of 499,400 m<sup>3</sup>/day.

The water treatment plant had a control system that was starting to become dated. It was based on a combination of

single loop controllers and first generation PLCs, with a conventional mimic panel and control desk for an operator interface. The City wanted to upgrade the plant PLC system and Operator Interface to a complete SCADA system. The system needed to control all aspects of the plant, as well as provide control data from the remote pumping and reservoir sites. The system also needed extensive reporting and trending capabilities and a link into the LAN based Management Information System (MIS). The SCADA system had to interface to much of the existing field instrumentation.

### The Design Solution:

The first phase of the project involved the selection of the hardware and software for the SCADA system. Many aspects were taken into consideration when making the decision including cost, service and support, familiarity by plant personnel, acceptance by industry, ease of programming, etc. The system chosen is comprised of Texas Instrument PLC 545s and Wonderware's "InTouch" software. The Control Console consists of three 486 PCs with 21" monitors for large high resolution graphics display. The Operator Interface is connected via Ethernet to the plant's Management Information System and via TIWAY to the PLCs. The remote sites are connected to TIWAY via dedicated line modems.

The PLC software was developed taking advantage of the dual processor configuration on the TI PLC and the extensive instruction set available for discrete and process control. There were eight PLCs in all, five located at the main plant and three remote units. One of the unique challenges was to design the system to work in conjunction with much of the older instrumentation in the plant. Some of the instrumentation was replaced where needed.

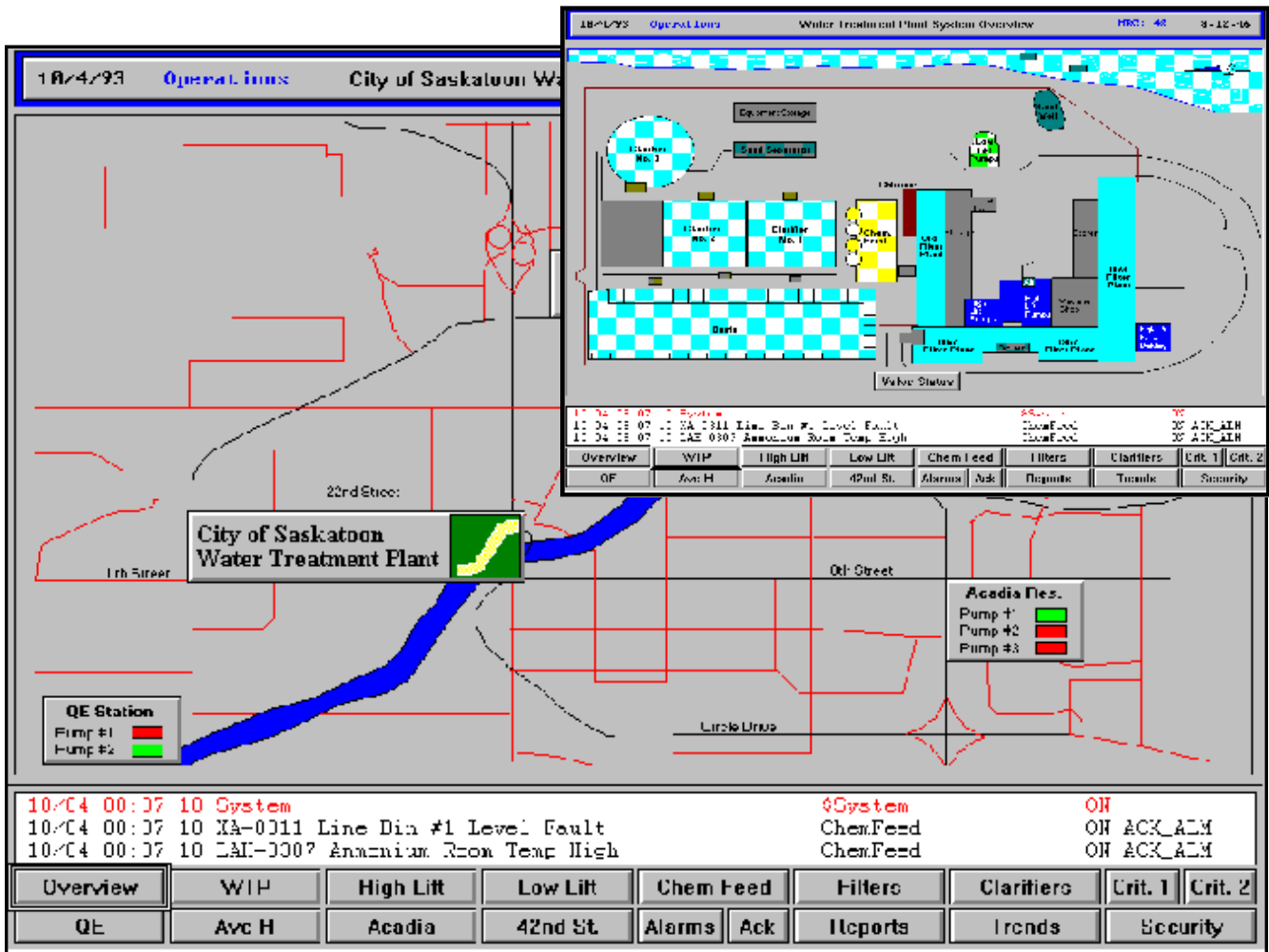
The Wonderware operator interface has over 120 graphic

pages (includes all loop control faceplates as well). The entry page is an overview map of the city, (see back page) that allows the operator to click the mouse on the main plant location or any of the remote locations to zoom into the more detailed pages showing the different processes such as chemical feed, clarifiers, or lift station pump control. Each screen has hot buttons that allow easy mouse-controlled actions or link to additional pages that display alarms, reports, trending and security. An extensive report generation and operators information system was developed using Microsoft Excel and Windows Dynamic Data Exchange (DDE). The reports generated include alarm reports, shift reports, monthly and yearly accumulated totals as well as reports on demand. The operator also has an electronic note pad that allows him to quickly record operations notes, and messages to other operators. This system provides an email like interface as well that allows a much smoother information flow between operators and management than conventional paper systems.



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## System Specifications:

- 8 Texas Instrument 545 PLCs
- 3 Remote Sites via Modem
- 600 Total Digital I/O
- 270 Total Analog I/O
- 50 PID loops
- 3 i486DX workstations c/w 21" monitors
- Wonderware MMI Software
- 3100 MMI tags
- 3000 Microsoft Excel tags for Reports
- 121 Graphics pages

For further information or to contact a Hinz office near you, please check our website at:

[www.hinz.com](http://www.hinz.com)