RACO®
REMOTE ALARMS AND CONTROLS

Verbatim
Gateway

A small town now has around-the-clock alarm monitoring and control of three remote, unmanned wastewater pumping stations with their new Programmable Logic Controller network and Verbatim Gateway autodialer.

Each of the three remote pumping stations is equipped with a programmable logic controller for local control and alarm monitoring. A fourth controller, a PC-based SCADA system, and a Verbatim Gateway autodialer are located at the main Sewage Treatment Plant.

The programmable logic controller at the main plant, which acts as a data concentrator, provides a communications link between the remote controllers and the SCADA system. The Verbatim Gateway is linked with the concentrator PLC.

Under the control of the SCADA system, the data concentrator continuously polls the remote programmable logic controllers at the pumping stations for alarms and collects operating data such as levels, flows, pumps on or off, and how long the pumps have been running. Data collected from the remote stations is stored in the SCADA system memory and used for control data and operating reports.

Any alarms at the remote stations are immediately sensed by the data concentrator, which is continuously polled by the Verbatim Gateway System. When an alarm is detected, the Verbatim Gateway is programmed to automatically call a list of operations personnel and report the alarm condition.

The Verbatim Gateway is also equipped for local data logging. In this case, the System is connected to a parallel printer to provide a hardcopy record of all events. At user-programmable intervals, the system will print the status of all channels on the local printer including run time, totalizer, and analog input values. Reports also include details of alarm activity such as station identification, date and time of report, alarm status, phone numbers called, and conditions of acknowledgement.

Treatment plant personnel have made frequent use of the ability to call into the Verbatim Gateway from any standard TouchTone® phone for status reports and to change the call list phone numbers depending on which operator was on call.

VERBATIM GATEWAY

The RACO Verbatim Gateway is an Automatic Dialing and Remote Monitoring System combining an autodialer with an alarm and control system having full microprocessor-based operation and convenient user programmability.

Verbatim Gateway units provide bidirectional communications with programmable logic controller networks via serial cable connection. The Verbatim Gateway does this without requiring the use of controller outputs or modification of programs. The Verbatim Gateway, in turn, is connected to the public telephone network via standard plug-in phone jacks.
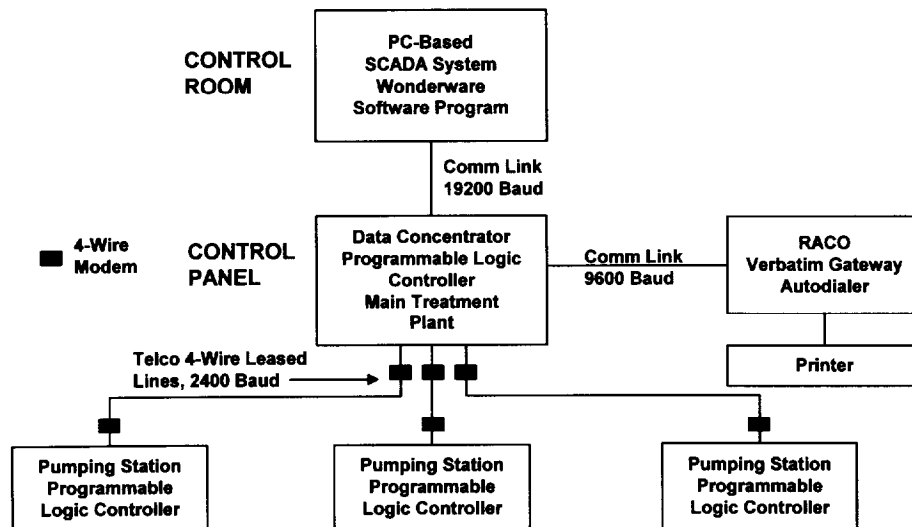
Water Pollution Control Plant System Diagram

Upon receipt of appropriate contact or logic level inputs from the programmable logic controller network indicating an alarm, the Verbatim Gateway calls a list of phone numbers and provides clear voice-message reports of the alarm condition.

Operating personnel can also call in at any time from any standard TouchTone® telephone to check the status of any channel, modify alarm criteria and monitoring points, and alter process variables and setpoints.

Continuous real-time communication between the Verbatim Gateway and the programmable logic controller network is performed via a serial link using the protocols supported by specific controller models. Any controller I/O points and data registers can be manually altered. In addition, the system provides automatic monitoring of as many as 96 points — points reflecting any combination of discrete, analog, timer, counter, or other controller data objects.

The Verbatim Gateway uses only a single cable connection to deliver its extensive functionality, avoiding the cost of complex wiring, additional controller outputs, and relays. Monitoring points can be added at costs that are about 40% less than those associated with traditional controller-to-input configurations.

Upon receipt of an alarm condition, the Verbatim Gateway starts calling a list of up to 16 pre-programmed phone numbers, calling until it gets an answer. When a connection is made, the system reports the station identity and alarm condition by way of the user's own voice-recorded messages.

When used in the status checking mode, the user can call in at any time from any standard TouchTone® telephone to hear a voice message giving the current status of monitored functions.

Alarm and status messages are digitally pre-recorded in the user's own voice and stored in the Verbatim Gateway's non-volatile memory. The messages are then selectively played back exactly as recorded when an alarm occurs or a status condition is requested.

The system described in this bulletin is different than originally planned. The initial system specifications called for a programmable logic controller network, an autodialer, and a separate radio-based pager system to be hardwired to the data concentrator. The customer wanted a 32-channel system initially, but have it expandable to 64 channels in the future.

After reviewing available equipment, it was determined that it would be more economical to operate with cellular phones than radio. The phone system would operate with the controller network and autodialer as initially proposed.

The customer had considered a standard RACO Verbatim System for the autodialer function, but the maximum hardwired capacity of the Verbatim is 32 channels. A second Verbatim unit would be required to meet the 64-channel expansion requirement. A major obstacle to a second unit was that there would not be room for it on the control panel with the other equipment. It would have had to be located somewhere else, which was undesirable from an operating standpoint.

At this point, the RACO Verbatim Gateway was introduced to the proceedings. Because of its ability to interface programmable logic controllers as well as provide autodialing functions, a single Verbatim Gateway system was able to solve the control panel space problem while saving the cost of configuring 64 output points on the controller.

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