



Application Note 108

Greenacres Turf Farm Irrigation Control

HIGHLIGHTS

Centrally located SCADA system

Fully programmable pivot, lateral irrigator, watering station and pump station controllers

Operator-friendly touch screen interface with program entry, historical alarms and system status indication

Continuous RS485 and radio links between controllers

Data-logging of pump usage, weather data, and programs operated

INTRODUCTION

Greenacres Turf Farm is situated in the Serpentine region of WA. The turf farm makes use of a number of pivots, a lateral irrigator, floppy sprinklers and numerous conventional sprinkler stations.

In the interest of minimising the use of water, whilst ensuring that crops are successful, Greenacres approached Industrial Automation to develop an innovative irrigation system to suit their needs.

SCOPE

With prior developments in the area of irrigation, including the Waterman controller and controllers produced for Rainmaster pivots, Industrial Automation is to develop a comprehensive irrigation system including the following:

- Two pump stations, each capable of controlling numerous watering stations, as well as supplying water for the pivots.
- A lateral irrigator controller, capable of automating and monitoring the operation of the irrigator and connected pump
- Four pivot controllers
- A master controller, allowing communication via radio to the lateral irrigator, and via RS485 to all other controllers
- Full monitoring and control of each controller from a centrally located PC SCADA package
- Evapotranspiration calculations based on information from an on-site weather station
- Full data logging capabilities for each watering and pump station

EQUIPMENT USED

- 5" QuickPanel touch screens (by Total Control)
- Koyo series 05 and 06 PLCs
- Sixnet Mini-VersaTRAK PLCs
- IA Telemetry equipment
- Waterman SCADA Package

END RESULT

The completed system allows a user to control all watering stations, including pivots and the lateral irrigator, from either on site touch screens, or from a central operating station with a customized SCADA package. Each watering station may be run manually, on semi-automatic syringe cycles, or automated programs, entered by the user. The pivot and lateral controllers utilise position sensing to allow the user to water different areas to the desired application rate, or operate on a dry run.

Engineering data is accessible from the on site touch screens, to allow many of the system characteristics to be modified by the site operator, in case of equipment replacement, or the inclusion or removal of certain sensor units that are pre-existing in the programming. This data is password protected to ensure that it will not be accessed by unauthorised persons.

The system incorporates numerous sensors and alarm signals to ensure that in the event of any unexpected or emergency circumstances, the user will be notified at the central station, and where necessary the controllers will shut down the current watering cycle. This minimises any risk that damage may occur to the existing equipment.