

# Refinery Integrates Production Data with Wireless, Solar Power Tank Level Gauging System

With 55 storage tanks and 5 production lines, the refinery needed a new system to quickly and accurately gauge tank levels while minimizing expensive, complex wiring logistics.



## Main Objective

The customer required a single system that could produce tank scan rates that would enable production decisions based on near real-time input. The radio system needed to be able to communicate with existing protocols, and the data had to be integrated into the existing distributed control system (DCS). Savings on conduit and wire made the wireless, solar-powered approach economically attractive.

## Customer Results

Once delivered, the project met all of the customer's expectations and did not require any major modifications to the power and communications infrastructure. The system was delivered at a fraction of the price of a hard-wired, conventionally powered system.

## Application Description

- **Staging:** The system components were specified, and a system simulation was created to demonstrate the efficacy of the design. Working closely with the customer and its DCS supplier, MAVERICK overcame multiple programming and design hurdles in the course of fitting modern instrumentation and systems into an aging production facility and its storage tanks.
- **Major Design Elements:** To minimize space requirements and provide a low-maintenance system, each tank was provided with stand-alone DC power storage and solar panels, along with a separate control panel that contained radio equipment in an intrinsically safe design. Radar tank level gauges were installed on each tank with minimal conduit runs from tank top to the panel frames located at the base of each tank. Radio transmission of tank level data from all 50 tanks could be scanned in less than 30 seconds. MAVERICK integrated the tank level data and designed the graphics for the HMI.
- **Construction Challenges:** The MAVERICK team had to field-design many of the installations due to the unique features of the tanks. Logistical challenges resulted from the remote location of the facility and weather extremes encountered during construction. The MAVERICK construction team included journeyman electricians, mechanical and instrumentation technicians, communication and programming engineers and mechanical engineers. Construction management also required the coordination of local contractors who provided civil construction and radio component installation and integration.
- **Completion:** In order to meet completion deadlines, the construction team integrated field updates with the design team as field survey data was updated and refined. MAVERICK closely managed the design process, integrating customer input for this new approach within the facility while maintaining fabrication and construction schedules.

## The MAVERICK Difference

The MAVERICK team provided value at every step in this project, exceeding customer expectations. By staging a prototype communication system prior to commissioning, issues were identified and addressed during design, eliminating unscheduled downtime. This project was delivered at a fraction of the price of conventional systems.