



WebDT Mobile POS Tablet Conducts Intelligent Inspections at the South China Electrical Substation



The South China Electrical Substation is one of the modern electricity substations in China that have adapted intelligent facility management using information technology and automation. Previously, the substation required manual switching of equipment and collection of data. As the complexity of distribution networks grew, it became necessary to have automated supervision and control of the substation, allowing overall coordination and increasing operation efficiency.

The Challenge

Before deploying an electronic management system, inspections at the South China Electrical Substation were completed manually on paper, resulting in serious issues, including:

- Lack of accuracy, clearance, and unification of handwritten data
- Difficulty ensuring thorough inspections on thousands of pieces of equipment
- Lack of efficient and systematic management on inspection and maintenance procedures
- Lack of data analysis capability to process the huge amount of collected information

To better manage station operations, quickly detect any abnormal status of equipment, and increase maintenance efficiency, an advanced facility inspection and management system was required to upgrade the substation from a traditional, paper-based operation.

The Solution

The Intelligent Facility Inspection and Management System was implemented at the South China Electrical Substation to handle inspection and maintenance procedures, from onsite equipment data collection, data transmission, staff management, to report generation and maintenance assignment.

The system has established a control center equipped with strong database processing capability and the 3G network for fast and safe data transmission. Following the standard inspection procedures and schedules, inspectors are sent to different sections of the substation, electronically collecting data on equipment and sending it back to the control center. After receiving data from the field, the system can quickly analyze it to produce various reports - crucial for equipment maintenance such as repairs, updates, upgrades, replacement, and testing.

For accurate data collection, the substation has replaced label stickers with the RFID identification tags attached to the equipment. With the RFID tags, inspectors can electronically confirm the equipment matching their assignment and ensure accurate reading of the equipment ID code better than on a fading sticker.

To implement the intelligent inspection system, a powerful mobile computing device was necessary for inspectors to document the status of the equipment, collect data, and send the information back to the control center. The mobile computer must be equipped with the 3G network interface and the RFID reader, and capable of performing outdoors, in harsh industrial environments. It must be fully integrated with the system so that the mobile computer can receive the inspection orders from the center, and the collected information can be easily sent back and processed in the database.

The Mobile Solution: WebDT 390 Mobile POS Tablet

The WebDT 390 Mobile POS Tablet was chosen by the South China Electrical Substation as its mobile computing device to facilitate use of the Intelligent Facility Inspection and Management System. Combining an 8.9-inch LCD touch display with outdoor viewable option, and the high performance processing



WebDT 390 Mobile POS Tablet

capability, the WebDT 390 offers a wide range of data capture options for point-of-service applications. In this case, the WebDT 390 has a fully integrated RFID reader that enables accurate equipment identification for facility inspections. The 3G wireless WAN with GPS option adds to the mobility with wireless networking inside the substation.

The WebDT 390 is IP64-rated for water and dust resistance and meets the US Military Standard MIL-STD-810G for shock and vibration protection, lending itself to perform in demanding environments and enduring real-life handling. The WebDT 390 offers optional hot-swappable batteries for continuous operation, as well as optional battery charging accessories. Weighing just over 2 pounds, the WebDT 390 provides reliable information access and entry, going wherever needed for prompt services.

Results

The WebDT 390 Mobile POS Tablets deployed in the South China Electrical Substation have provided streamlined

and efficient data collection and transmission. During inspections, the inspector first uses the RFID reader on the WebDT 390 to capture the equipment ID code in the RFID tag. Within 5 milliseconds, the WebDT 390 can record the ID code, time and place of inspections. This allows the inspector to identify and confirm that the equipment is the correct one for the assignment. With the built-in application, the WebDT 390 displays the corresponding check list of this equipment on the screen, and guides the inspector to enter the data and document the status with easy-to-see, step-by-step instructions. All information is saved on the WebDT 390 and later transmitted to the control center via 3G for data analysis and report generation.

• Increased Information Accuracy

Inspection procedures are now done electronically without any handwritten steps, and thus largely reduce human errors on data recording. Interaction with the WebDT 390 is menu-driven, instruction-oriented, and point-and-click, via a sensitive touch screen. Inspectors simply enter

the information following a clear and unified data recording method. Using RFID tags also ensures the correct equipment is being inspected and no mismatch of collected data.

• Better Staff Management

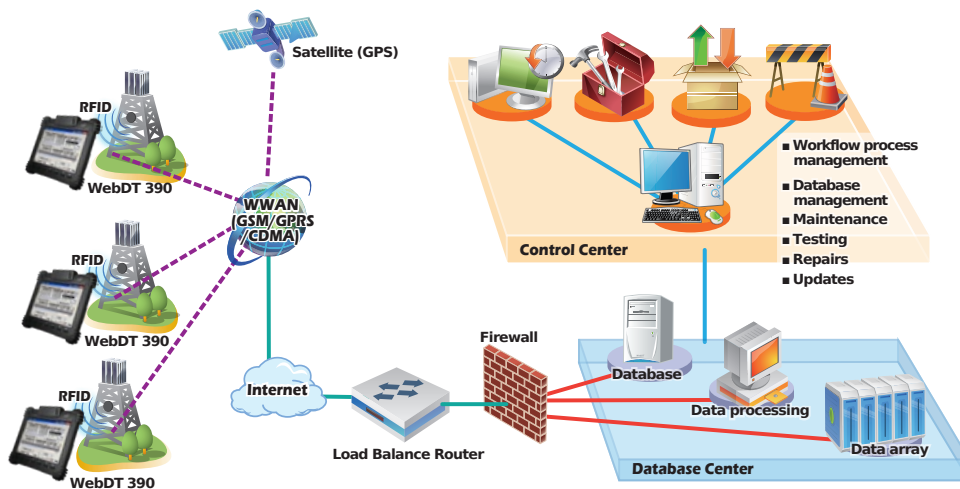
The WebDT 390 requires the user to sign in before use and can record the exact starting and ending time of inspections. The system manager can monitor the progress on inspections and make sure all assigned equipment has been checked within the required timeframe and all items for inspections have been completed.

• Increased Operation Efficiency

The WebDT 390 Mobile POS Tablet works anywhere the inspector needs to go. Electronic information collected by the WebDT 390 can be sent by 3G in real time to the database, quickly analyzed and reports generated. Any abnormal event can then be detected early and repaired in time to reduce the possibility of malfunctioning and avoid damages in the substation.

For more information about the WebDT Mobile POS Tablet, visit www.dtresearch.com

System Architecture



About DT Research



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