



Keeping the Lights On: Modernizing Power for a High-Demand Island Power Grid

As the sole power producer for the Turks & Caicos Islands, this privately owned utility plays a critical role in daily life for residents and visitors alike. Serving a permanent population of roughly 50,000 people plus an additional 30,000 to 40,000 tourists on any given day, the reliability of power is essential.

Beginning in 2016, this utility partnered with RoviSys on a major modernization initiative to ensure its generation and control systems could support continued growth, resiliency, and long-term operational excellence. Nearly a decade later, this partnership is going strong.

Our Role

As part of a larger capital program that included construction of a new control operations building, RoviSys was selected to design and implement a complete, ground-up OT network and modern supervisory control environment for the plant. RoviSys was chosen through a public bid and RFP process based on our proven experience in power generation, industrial automation, and large-scale control system modernization, as well as our long-standing expertise with AVEVA platforms.

RoviSys was responsible for the full OT network architecture, spanning DCS, HMI, and plant-wide SCADA systems. A primary project objective was eliminating single points of failure within the communications infrastructure. The resulting design needed to incorporate fully redundant, parallel network paths and architectures. Failures within a trunk, backbone, or network segment needed to instantly re-route load without operator intervention and without impacting operations.

Additionally, RoviSys took the lead on migrating a legacy InTouch environment to an AVEVA System Platform SCADA solution, including procuring and implementing the servers, networking hardware, and software required to support the new system.



The Problem

The utility operates a centralized power generation facility on Providenciales, the largest island in the Turks & Caicos chain. At the start of the project, more than 90% of power generation was diesel-based, produced by multiple generators of different sizes and ages within a single facility. This configuration allowed for maintenance flexibility, but it placed significant demands on the control and communications infrastructure.

Additionally, the controls environment had become fragmented. The control network and an In-Touch based DCS had grown organically over two decades, creating a patchwork of individual updates instead of aligning to a structured approach or holistic plan. This environment was running outdated software versions that were behind on vendor support and no longer aligned with industry best practices. The control network had outgrown its original design, both technically and physically, and the existing control room could no longer support expanding operational needs.

The lack of a unified, modern network architecture introduced increasing operational risk. Single points of failure existed within the communications backbone, increasing the likelihood that equipment or network failures could result in outages. As grid demand grew toward 50 megawatts and higher, the risk associated with these weaknesses increased. Equipment failures and outages were becoming more frequent, and the utility had limited ability to scale or improve resiliency within the existing architecture.

Compounding these challenges, the facility had never undergone a full, plant-wide controls or network retrofit. Any modernization effort needed to be executed while maintaining continuous operations. Organizational leadership, along with government stakeholders, recognized the need for a comprehensive solution that would improve reliability, support growth, and establish a sustainable long-term platform for operations.



The Solution

RoviSys delivered a fully integrated upgrade of both the OT network and the plant's SCADA platform, treating them as one coordinated system. A legacy Ethernet network with limited protection was replaced with a purpose-built industrial architecture designed for continuous, fault-tolerant operation.

The new network included more than 1.4 kilometers of fiber-optic cable installed in a redundant loop around the entire plant. Parallel network paths, redundant switches, and automatic failover eliminated single points of failure. If any cable, switch, or network segment failed, traffic would reroute automatically with no operator action and no loss of control.

In parallel, RoviSys built out a new control room and migrated the plant from legacy AVEVA InTouch to AVEVA System Platform. System Platform became the core SCADA environment for all

generators and plant systems, providing higher availability, better redundancy, and a clean upgrade path for future expansion.

RoviSys managed the project with dedicated leadership for both SCADA and networking and supported the project with a team of dedicated engineers. Engineering and FAT were completed in Ohio, while RoviSys maintained a continuous on-site presence during installation, fiber deployment, and cutover. RoviSys also handled procurement, shipping, and on-island delivery of all servers, network hardware, and control system components.

The system was put to the test early when Hurricane Irma approached and made landfall on the island as a Category 5 Hurricane. Utility leadership decided to move plant operations into the new control room before formal commissioning. The network and SCADA system ran through the storm without interruption, validating the resiliency of the architecture under real-world conditions.

RoviSys leveraged its AVEVA Endorsed Partner status and Cisco PRP-certified networking expertise to provide the technical foundation needed to deliver a resilient, secure, and highly available power plant control system.



The Results

The modernization delivered exactly what the utility set out to achieve: a stable, fault-tolerant control and communications platform that eliminated single points of failure, reduced outage risk, and provided a foundation for continued growth. The plant moved from a fragmented, outdated controls environment to a fully redundant OT network and modern SCADA system capable of supporting increasing demand, equipment changes, and long-term expansion without compromising reliability.

Since completing the initial 20-month project, RoviSys has remained a long-term partner to the utility. They now rely on RoviSys for ongoing guidance, system planning, and modernization strategy, with regular planning sessions and continuous improvement efforts in place. That partnership continues today, with new upgrades and expansion initiatives underway to support the next phase of the island's power infrastructure.

