

Case Study

Honeywell Migration Solutions Help Saudi Electricity Company Revitalize Control System and Address Cyber Threats



“The success of the Experion® PKS Control System migration and Cyber Security implementation complements our mission to achieve the highest levels of reliability, safety and efficiency. Honeywell delivered outstanding performance during all project phases.”

Background

Saudi Electricity Company (SEC) is a public utility company with majority stake from the Saudi Arabian Government. SEC meets more than 75% of the Kingdom’s electrical energy demand and has the largest consumer base in the Arab World.

With its giant generation capacity of 65 GW, SEC is pivotal to the promotion of wider industrialization and development policies of the Kingdom, including powering the new economic and industrial cities.



The SEC power plant at Qurayyah is the most efficient power station of its kind in the country, and one of the largest in the world.

Challenge

Continuous and uninterrupted power supply is critical for any consumer and it demands the most reliable systems and equipment for high uptime of the power plants.

The existing Honeywell DCS was operating on software release R211, using Windows® 2000 for servers and Windows® 2000 Professional for stations. Extended support from Microsoft had expired. Unsupported software and lack of operating system and security software patches posed a serious threat and control system vulnerability.

In addition, the network infrastructure hardware was obsolete and SEC faced the following major challenges in maintaining the system:

- System Reliability concerns,
- System controllers and network loading,
- Cyber security threats,
- Network component hardware obsolescence management, and
- Lifecycle and technology enhancement at minimal capital investment.

Solution

SEC awarded a migration project to Honeywell for the existing control system DCS upgrade, network infrastructure upgrade and cyber security implementation for their 4x625MW power plant units at Qurayyah Power Plant – QPP1.

The major scope of the project included:

- Hardware and software (R430) refresh for 52 EPKS nodes;
- IT infrastructure – upgrade switches, routers, and firewalls;
- Upgrade 12 redundant C200 controllers to C300 controllers;
- Upgrade Safety Manager to R150;
- Upgrade eServer;
- Upgrade PHD,
- Upgrade Matrikon OPC to interface with GE MARK VI;
- Replace 11 large video screen with 55” LED; and
- Implement cyber security & remote service node.

SEC challenged the project team to deliver the complete scope (design, engineering, procurement, testing and supply) within two months. The commissioning for each unit was performed in tandem and was completed well within the schedule.

Benefits

The project delivered with the latest hardware and software platforms and yielded higher reliability, enhanced performance and higher safety with the cyber security implementation.

Results

The DCS was upgraded successfully to Experion® PKS R430 without any difficulties. The site observed significant improvements in the system's operations, reliability and security aspects.

Specifically, the following results were highlighted:

- Addressed vulnerability with cyber secured system,
- Improved display call up and process parameters update rate, and
- Improved controller loading by 35% with C300 controller upgrade.

About Migration Solutions: Experion® PKS and C200 to C300

Honeywell's Experion® PKS Migration solutions include standard hardware / software refresh programs, enabling Honeywell customers to reap the benefits of technology advancements and increased reliability. The solutions' evolutionary design enable on-process implementation, without a need for plant shut-down.

The C200 to C300 upgrade enables users to benefit from of the Experion Series C system by upgrading to the C300 controller. The upgrade is simple since there is no investment and planning required for additional space and cabinets when using the hardware upgrade kit. With this upgrade, the existing C200/C200E chassis space is reused to mount and install the C200 to C300 upgrade kit. Investment is required only for procuring the hardware upgrade kit.

For More Information

To learn more about Honeywell's products and services, visit our website www.honeywellprocess.com or contact your Honeywell account manager.

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The upgrade uses standard kits and software conversion tools, providing many benefits to the users, including:

- Higher controller processing power and 4X memory, resulting in reduced controller load.
- Enhanced control algorithms.
- Efficient peer to peer transfer.
- Space savings; no extra cabinets required.
- Same CEE for C200 and C300 controllers; re-test simulations of loops not required.

About Cyber Security

Honeywell's Industrial Cyber Security Solutions help plants and critical infrastructure sectors defend the availability, reliability and safety of their industrial control systems (ICS) and plant operations.

From assessments and audits to response and recovery, the portfolio of end-to-end solutions leverages Honeywell's industry leading expertise and experience in process control and cyber security. Having delivered more than 1,000 projects globally, Honeywell's certified experts help users improve their cyber security posture. Its managed services and complete solutions are designed for the specific needs of process control environments including Oil & Gas, Chemicals, Refining & Petrochemicals, Energy & Power, Minerals, Mining & Metals, and Pulp & Paper.

With continuous investments in people, processes, and technology, Honeywell is committed to helping industrial users reduce risk and stay ahead of future classes of cyber attacks.