

# Selective HMI Migration through ARIDES

## Introduction

ARIDES is a fully functional distributed control system (DCS) supervisory and control solution that provides reliable and high-performance features for safe and efficient plant operation. ARIDES can continuously operate in nuclear, coal-fired, hydropower, and combined-cycle plants to optimize their overall operational status.

ARIDES allows power plants to replace just the aging HMI of the DCS, which is efficient and cost-effective for power plants. In addition, despite the numerous vendors and protocols of DCSs, ARIDES encompasses a variety of DCS protocols, including GE Mark V, ABB Procontrol, Siemens Teleperm XP, and MHI MIDAS 8000.

Even when the DCS and I/O cards are still functioning properly, decreased HMI performance could endanger the entire control and monitoring system's performance. Legacy historians that lack the necessary operator-oriented features keep operators from optimizing their operational efficiency. Due to outdated HMI's unavailability and high maintenance cost, power plants are sometimes forced to upgrade the entire control and monitoring system.

ARIDES alleviated many issues negatively impacting the efficient operation and management of process plants.

1. Legacy HMI systems threatened the plants' stable operation, keeping plants from maximizing their operational efficiency. Therefore, power plants needed legacy HMI replacement to achieve a safe plant operational environment.
2. Power plants needed a customized HMI to replace their legacy HMI. They were using different HMIs and did not have much knowledge about which HMI could replace the old one most effectively.
3. Many HMI vendors suggest that power plants replace the entire DCS, rather than just the HMI. Not only would the replacement cost be high, the plants would suffer from investment cost loss.

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# Offering an HMI Upgrading Solution

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ARIDES enables plants to selectively upgrade the HMI without replacing the entire control and monitoring system. Plant operators can benefit from greater HMI performance with ARIDES. They also do not need to worry about obsolete computer systems. ARIDES can replace or migrate the following interfaces:

## GE Mark V HMI

For high performance and a reliable system, ARIDES improves TCS performance and communication with Mark V DCS. With redundancy of ARCNET networks and ARIDES servers, the system can provide data from <C> core and <D> core without any loss.

- Korea East-West Power Company (EWP) Donghae Coal-Fired Power Plant Unit 1, 2
- Korea East-West Power Company (EWP) Dangjin Coal-Fired Power Complex Unit 1-3
- Korea Western Power Company (WP) Taean Thermal Power Complex Division Unit 2-4
- Saudi Electricity Company (SEC) Qurayat Gas-Fired Power Plant
- Saudi Electricity Company (SEC) Arar Gas-Fired Power Plant

## Siemens Teleperm XP

ARIDES improves Teleperm XP performance and communication with APIs.

- Korea Midland Power Company (KOMIPO) Incheon Thermal Power Plant Unit 1
- GS EPS Bugok Combined-Cycle Power Plant Unit 1

## ABB Procontrol 13/42

A high-speed network bridge board interfaces ABB Procontrol bus with the Ethernet. A special interface driver establishes a direct communication between the ABB Procontrol DCS and ARIDES real-time database.

- Korea South-East Power Company (KOEN) Bundang Combined-Cycle Power Plant Unit 1, 2
- Korea Midland Power Company (KOMIPO) Boryeong Thermal Power Plant Unit 1-4
- GS Power Anyang Combined Heat and Power Plant Unit 1-4

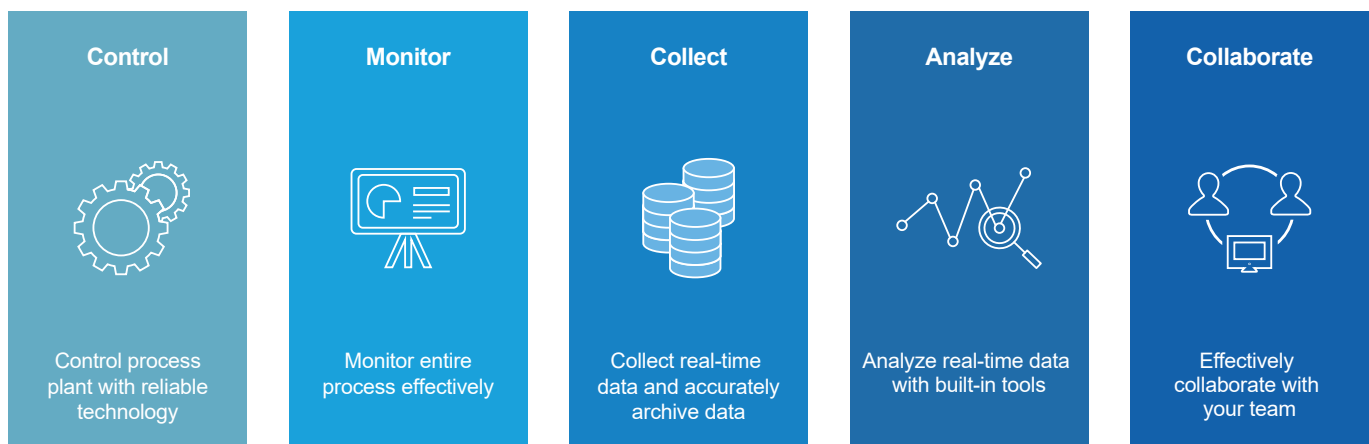
## Mitsubishi Heavy Industries MIDAS 8000

A special interface driver establishes a direct communication between the DCS and ARIDES real-time database.

- GS Power Bucheon Combined Heat and Power Plant Unit 1-3

In order to resolve the issues of aging HMIs, power plants replaced their legacy HMIs with ARIDES and started to see immediate results.

1. With ARIDES, power plants can manage the vast amount of data easily. ARIDES collects, archives, and analyzes data so users can accurately retrieve data and monitor plant operation and send control commands through the solution. Power plants can now effectively supervise and control the plant operation and achieve operational excellence through ARIDES.
2. ARIDES delivers reliable plant operation with redundant servers and networks. By having redundant servers, power plants have a safe environment for plant operation since they can prepare in advance in case the other server fails. With a reliable operational environment, operators can demonstrate their utmost control and monitoring performance to optimize the plant's operation.
3. When replacing various vendors' legacy HMI systems, ARIDES established a new database for data management and developed process flow diagrams (PFDs), customized for each power plant. With the new database and advanced PFD feature, operators maximized their data monitoring and equipment control capability, which led the overall plant operation efficiency to increase.
4. By only upgrading the legacy HMI, power plants saved a considerable amount of their capital by not replacing the entire DCS and by minimizing the system downtime. The decreased capital expenditure improved the plants' financial status, allowing business decision-makers to reallocate the saved capital to foster enterprise-wide operational excellence.



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