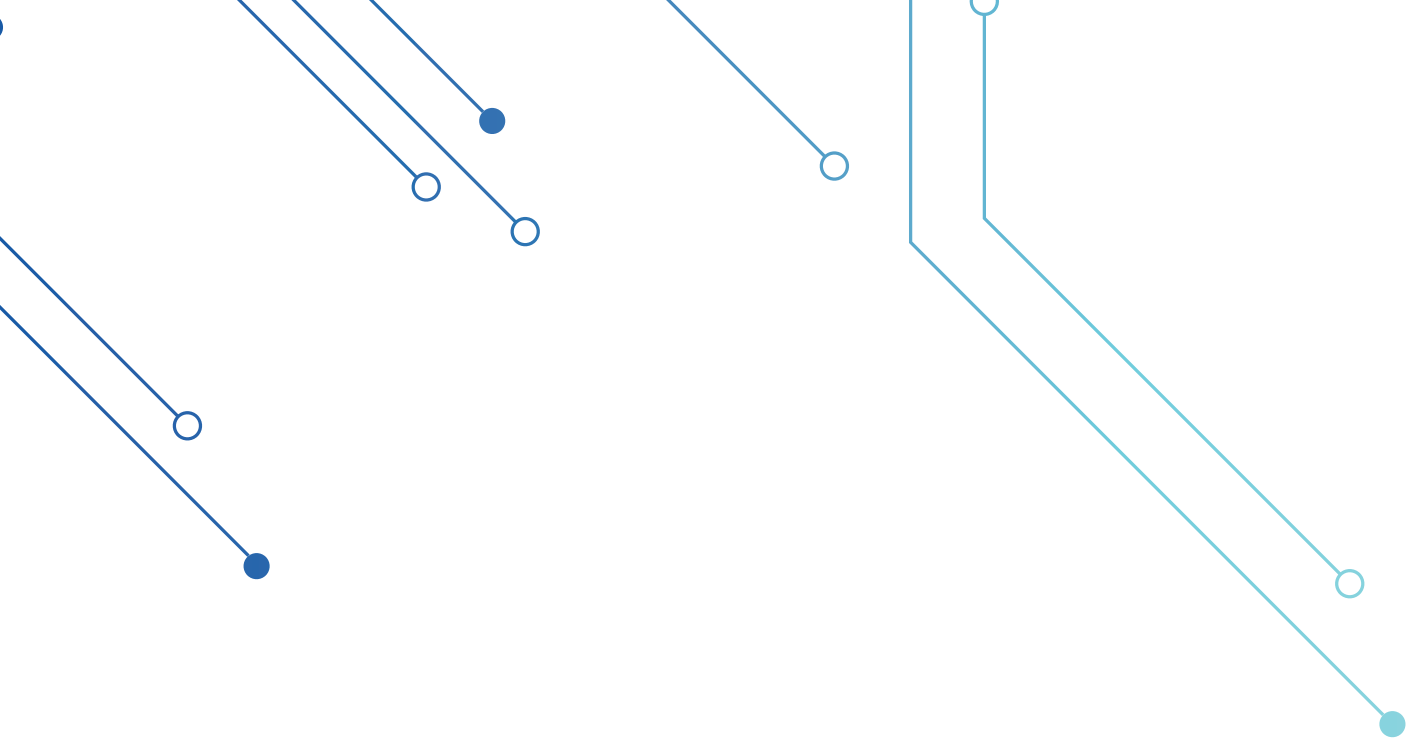


ISAAC *Engineering*

PROJECT REFERENCE BOOK



CONTENTS

Process Automation
Factory Automation
Renewable Energy
Smart Factory
Big Data
Reference List

All about **Digitalization!**

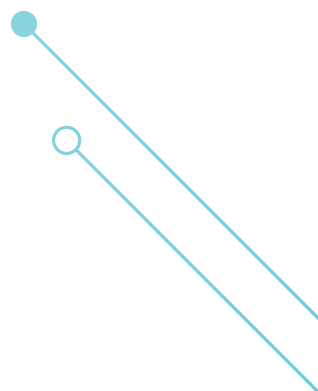
Since its establishment in 2006, ISAAC Engineering Co., Ltd. has grown to be a company specializing in the Design, Manufacturing, Installation, Commissioning, and Maintenance of Process and Factory Automation.

In addition, we are securing the special technologies for a smart factory and energy in response to the 4th Industrial Revolution.

ISAAC Engineering Co., Ltd. will never stop becoming the best company in the era of a new paradigm through persistent innovation, securing new technologies, and customer-oriented management.

Please keep an eye out for the new future that ISAAC Engineering will make and stay with us as we grow into a company that satisfies customers.

Thank you!







Process Automation

- M14 Phase-1 HVAC System Project
- M14 Phase-2 HVAC System Project
- High-Pressure CO2 Monitoring Construction
- M14 Phase-1 PGMS/TGMS Monitoring System Project
- CHINA WUXI PGMS/TGMS Migration Project
- M14 Phase-2 PGMS/TGMS Monitoring System Project
- PETRONAS RAPID PROJECT(Package-No.6 & No.11)
- Timimoun Field Development Project
- SOCAR Ammonia & Urea Complex Project
- SK Hynix M10 FAB PGS Integration Monitoring System



SK Hynix

Project location
Icheon SK hynix Plant
M14 PH-1

Duration
2014.03 ~ 2015.07



M14 Phase-1 HVAC System Project

Project Background

M14 PH-1 HVAC Control and Monitoring System
Construction

Solutions

PLC System SIEMENS Solutions

- SIEMENS PLC 417-5H 9 sets Redundancy.

HMI Program WinCC OA

- Server Redundancy
WinCC OA Redundancy Server Settings, Total 3 sets & FFU Individual Server settings, Data Point Reading as utilizing S7 Driver & Modbus Driver.
- Server ↔ Client
Distributed connection between Server and Client.
- Client Setting
Displaying the Data point created from the server on the screen and showing P&ID (Piping and Instrumentation Diagram), Screen change and Layout.
- Remote I/O Panel 160 Communication Network Construction.
- I/O 12,000 Point M14 PH-1 HVAC Control and Monitoring System Construction M14PH-1 HVAC Control and Monitoring System Construction.
- HMI Unlimited TAG.

Customer's Benefits

1. PLC Redundancy

It enables a stable check on PC without turning off the system.

- No Data loss.
- Maintaining alarm interrupt information.
- The programs for Redundancy function are processed by H OS.
(Operating System)

Reliability on the system is secured because the programs related to 'Redundancy' ,such as self-diagnosis, connection with stand-by system, Data and program updating, event synchronization, and change of master and slave are automatically processed by OS.

- Implementing PLC program for automatic replacement operation
(PCW PUMP, SCR, OAC FAN).

2. HMI server is configured with Redundancy by process and Data are synchronized in real time. Therefore, when a certain server fails, the Data of the troubled server are automatically connected (transferred) to a backup server. As a result, server failure does not have an impact on operation.

Highlights

HVAC (Heating, Ventilation & Air Conditioning)
Temperature & Humidity Control

M14 Phase-2

HVAC System Project



Project Background

M14 PH-2 HVAC Control and Monitoring System Construction

Solutions

PLC System SIEMENS Solutions

- SIEMENS PLC 417-5H 8 sets Redundancy

HMI Program WinCC OA

- Server Redundancy
 - WinCC OA Redundancy Server Setting Total 3 sets & FFU individual Server Setting.
 - Data Point Reading as utilizing S7 Driver and Modbus Driver.
- Server ↔ Client
 - Distributed connection between Server and Client.
- Client Setting
 - Displaying the Data point created from the server on the screen and showing P&ID (Piping and Instrumentation Diagram), Screen change and layout.
- Remote I/O Panel 141 Communication Network Construction.
- I/O 11,400 Point.
- HMI Unlimited TAG.

Customer's Benefits

1. PLC Redundancy

It enables a stable check on PC without turning off the system

- No Data loss.
- Maintaining alarm interrupt information.
- The programs for Redundancy function are processed by H OS. (Operating System)

Reliability on the system is secured because the programs related to 'Redundancy' ,such as self-diagnosis, connection with stand-by system, Data and program updating, event synchronization, and change of master and slave are automatically processed by OS.

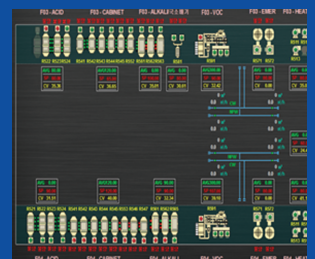
- Implementing PLC program for automatic replacement operation (PCW PUMP, SCR, OAC FAN)

2. HMI server is configured with Redundancy by process and Data are synchronized in real time. Therefore, when a certain server fails, the Data of the troubled server are automatically connected (transferred) to a backup server. As a result, server failure does not have an impact on operation.

SK Hynix

Project location
Icheon SK hynix
Plant M14 PH-2

Duration
2016.12 ~ 2017.08



Highlights

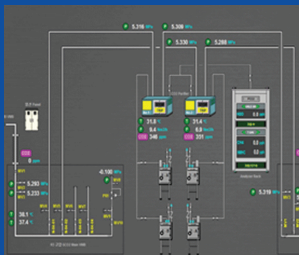
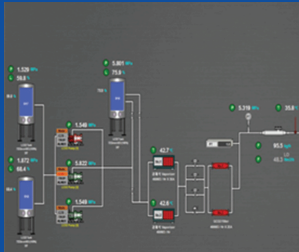
HVAC (Heating, Ventilation & Air Conditioning) Temperature & Humidity Control



SK Hynix

Project location
Icheon SK hynix Plant
M14 / M10B

Duration
2017.07 ~ 2017.12



High-Pressure CO2 Monitoring Construction

Project Background

High-pressure CO2 Supply Monitoring System

Solutions

PLC System	SIEMENS CPU 315-2 DP S7-300
HMI Program	WinCC OA
Interface device	ETOS

Customer's Benefits

- Collecting the Data of a high-pressure CO2 purifier and monitoring the manufacturing process.
- Controlling the temperature of hot wire.
- High pressure CO2 Data monitoring.
- M14 Gas Monitoring System.

Highlights

Monitoring System

M14 Phase-1 PGMS/TGMS Monitoring System Project



Project Background

Implementing the Process Gas/Toxic Gas Monitoring System of the new FAB in SK Hynix M14

- PGMS Constructing the Network through which the Data of SIEMENS 1500 Series (Gas supply devices) are transmitted to a remote place.
- TGMS Constructing the Network through which the Data of a gas detector is transmitted to a remote place.
- Designed with the logic to receive SMS and shut it down when an alarm occurs.
- The interior work of PGS Control room.

Solutions

HMI Program SIEMENS WinCC OA

Network Infra

- Dual Network (Optical and Ethernet) based on CISCO Network system to ensure a fast and safe Network.
- Making HMI and a connected system compatible.
- Standardizing the system design, manufacturing, and on-site construction of PGMS/TGMS.
- Establishing the Control system of PGS operation room.

Customer's Benefits

- It is able to monitor and take a necessary action quickly.
- It realizes HMI functions that meet user's requirements.
- It is easy to maintain and manage through systematical operation.
- It shortens the period and cost of construction by minimizing reworks.
- It reduces stabilization period after completion.
- It is able to provide Data to other systems due to the compatibility of HMI and them.

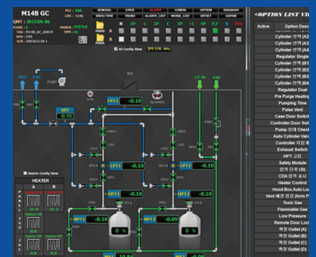
Highlights

- Receiving Data in a sec. and realizing human-machine interface.(HMI)
- Making an optimal manual for users and providing education/training to them.
- 2-year warranty and technical support after delivery.
- Providing a solution for additional function and/or Data migration.
- Managing 'As-Built' Data of a final drawing.

SK Hynix

Project location
SK hynix Icheon
M14 FAB

Duration
2014.03 ~ 2015.03

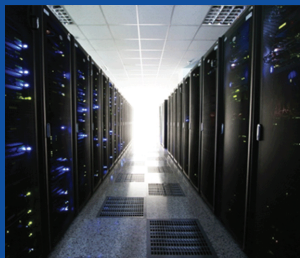
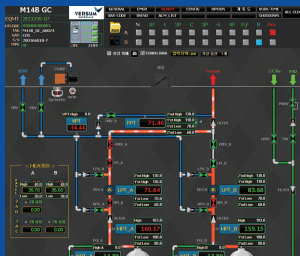




SK Hynix

Project location
CHINA WUXI

Duration
2015.06 ~ 2016.12



CHINA WUXI PGMS/TGMS Migration Project

Project Background

Implementing the Process GAS / Toxic GAS Monitoring System of the existing FAB in SK Hynix Wuxi

- PGMS Constructing the Network System through which the Data of OMRON PLC Series (Gas supply devices) are transmitted to a remote place.
- TGMS Constructing the Network through which the Data of a Gas Detector is transmitted to a remote place.
- Designed with the logic to receive SMS and shut it down when an alarm occurs.

Solutions

HMI Program SIEMENS WinCC OA

Network Infra

- Collecting sub-Data based on the existing Network system (Fast & Safety Network)
- Making HMI and a connected system compatible.
- Standardizing the system design, manufacturing, and on-site construction of PGMS/TGMS.

Customer's Benefits

- It is able to monitor and take a necessary action quickly.
- It realizes HMI functions that meet user's requirements.
- It is easy to maintain and manage through systematical operation.
- It shortens the period and cost of construction by minimizing reworks.
- It reduces stabilization period after completion.
- It is able to provide Data to other systems due to the compatibility of HMI and them.

Highlights

- Receiving Data in a sec. and realizing human-machine interface.(HMI)
- Making an optimal manual for users and providing education/training to them.
- 2-year warranty and technical support after delivery.
- Providing a solution for additional function and/or Data migration.
- Managing 'As-Built' Data of a final drawing.

M14 Phase-2 PGMS/TGMS Monitoring System Project



Project Background

SK hynix M14 New FAB Process GAS / Toxic GAS Monitoring System

- PGMS Constructing the Network through which the Data of SIEMENS 1500 Series (gas supply devices) are transmitted to a remote place.
- TGMS Constructing the Network through which the Data of a gas detector is transmitted to a remote place.
- Designed with the logic to receive SMS and shut it down when an alarm occurs.
- The interior work of PGS Control room.

Solutions

HMI Program SIEMENS WinCC OA

Network Infra

- Optical/Ethernet Redundancy Network (Fast & Safety Network) based on CISCO Network System
- Making HMI and a connected system compatible.
- Standardizing the system design, manufacturing, and on-site construction of PGMS/TGMS.
- Establishing the control system of PGS operation room.

Customer's Benefits

- It is able to monitor and take a necessary action quickly.
- It realizes HMI functions that meet user's requirements.
- It is easy to maintain and manage through systematical operation.
- It shortens the period and cost of construction by minimizing reworks.
- It reduces stabilization period after completion.
- It is able to provide Data to other systems due to the compatibility of HMI and them.

Highlights

- Receiving Data in a sec. and realizing human-machine interface.(HMI)
- Making an optimal manual for users and providing education/training to them.
- 2-year warranty and technical support after delivery.
- Providing a solution for additional function and/or Data migration.
- Managing 'As-Built' Data of a final drawing.

SK Hynix

Project location
SK hynix Icheon
M14 FAB

Duration
2017.01 ~ 2018.02



PETRONAS RAPID PROJECT

(Package-No.6 & No.11)



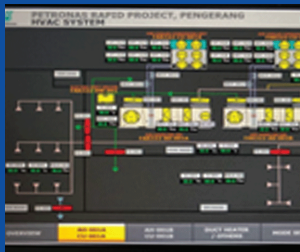
ALAMDINGIN

Project location

Malaysia_Pengerang,
Mukim of Pengerang,
Kota Tinggi District,
Johor

Duration

2017.04 ~ 2018.05



Project Background

Business Portfolio	Refinery & Petrochemical
Name of Owner	PRPC Polymer Sdn. Bhd.
Name of Contractor	Samsung Engineering

Solutions

Redundancy Controller, Power Supply & Communication

PLC	Siemens S7-300
HMI	Siemens TP-1900
Enclosure	Rittal 'TS8 SERIES'

Customer's Benefits

- Professional commissioning, Factory Acceptance Test, Training, Technical Support and Site Acceptance Test service.
- Engineering & Documentation service. (English version)
- Spare Parts For Installation, commissioning & Start up.
- Siemens advanced Control system is the guarantee for the running stable.

Highlights

- Business Owner : PETRONAS Reference
- Integrated Monitoring System (HVAC & Fire, Gas and Smoke Detection Systems)
- Human Machine Interface and Control Room Design

Timimoun Field

Development Project



SAMSUNG ENGINEERING

Project Background

Business Portfolio	Gas Fields
Name of Owner	Groupement TIMIMOUN (GTIM)
Name of Contractor	Samsung Engineering

Solutions

Redundancy Controller, Power Supply & Communication

PLC	AB Control Logic 1756 Series
HMI	Weintek MT8150XE
Enclosure	Rittal 'TS8 Series'

Customer's Benefits

- Professional commissioning, Factory Acceptance Test, Training, Technical Support and Site Acceptance Test service.
- Engineering & Documentation service (English version & French version) & Construction drawing service.
- Spare Parts For Installation, Commissioning & Start up.
- Siemens advanced Control system is the guarantee for the running stable.
- Instruments & Bulk (Control cable, tray, conduit) Material delivery.

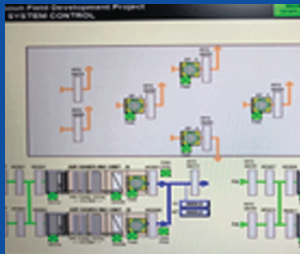
Highlights

- Business : Algeria Reference
- Programmable microprocessor based SIL2 safety (Fault tolerant) PLC modules type
- Hot-swappable : CPU CARD, Power supply card
- Integrated Monitoring System (HVAC & Fire, Gas and Smoke Detection Systems)
- Human Machine Interface and Control Room Design

Samsung Engineering

Project location
Algeria_
Hassi Messaound

Duration
2016.02 ~ 2018.04

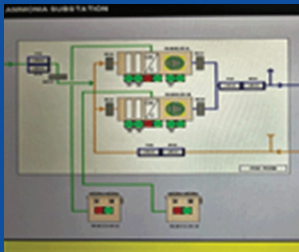


SOCAR Ammonia & Urea Complex Project

Samsung Engineering

Project location
Azerbaijan_Sumgait

Duration
2015.07 ~ 2018.05



Project Background

Business Portfolio	Gas & Refinery
Name of Owner	SOCAR. State Oil Company of Azerbaijan Republic
Name of Contractor	Samsung Engineering

Solutions

Redundancy Controller, Power Supply & Communication

DDC	Siemens Climatix
HMI	Siemens TP-1500
Enclosure	Rittal 'TS8 SERIES'

Customer's Benefits

- Professional commissioning, Factory Acceptance Test, Training, Technical Support and Site Acceptance Test service.
- HVAC Equipment vender : In cooperation with Train Korea and Train Turkey
- Engineering & Documentation service (English version).
- Spare Parts For Installation, commissioning & Start up.
- Siemens advanced Control system is the guarantee for the running stable.

Highlights

- Business Owner : SOCAR
- Integrated Monitoring System (HVAC & Fire, Gas and Smoke Detection Systems)
- Human Machine Interface and Control Room Design

SK Hynix M10 FAB PGS

Integration Monitoring System

Project Background

It is project for monitoring process gas supply and leak status of semiconductor FAB.

Solutions

- System is configured with PLC and HMI, including 4 sets of S7-417 Redundancy, 2 sets of WinCC OA Redundancy.
- WinCC OA communicate with RTDB and Database system (ORACLE) on redundant configuration.

Customer's Benefits

- High availability with Siemens S7-417 redundant hardware system.
- Flexibility and availability with WinCC Open Architecture HMI system.
- Human safety.

Highlights

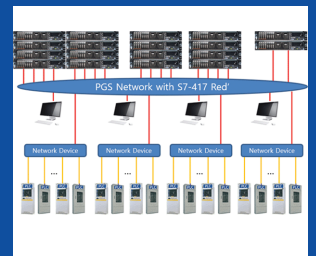
- WinCC OA first applied project of SK Hynix
- Over 1,000 sets of gas supply cabinet communication with PLC & WinCC OA
- Integration of S7-417 redundant and WinCC OA redundant system



SK Hynix

Project location
SK Hynix Icheon Campus

Duration
2014.01. ~ 2014.12





Factory Automation

- Cooling Bed Revamping Project
- Gwangyang POSCO 3CGL Project
- Moorim Paper PM1 DC Drive System Revamping
- POSCO GWANG YANG 1SMP LANCE

Hyundai steel

Project location
Incheon, Korea

Duration
2017.11 ~ 2018.01



Cooling Bed Revamping Project

Project Background

- Easy to maintain and do engineering thanks to Profinet-based Communication
- Superior in energy saving and safety for converter redundancy structure.

Solutions

SINAMICS
S120

SIMATIC
S7-400

Position/
Synchronization
Technology

Customer's Benefits

- Professional commissioning, training, technical support and service.
- Easy to maintain spare parts.
- Energy saving by using regenerating of Smart Line Module.
- Siemens advance Control system is the guarantee for the stable running

Highlights

- Replaced old SIMOVERT MASTER DRIVES with SINAMICS S120.
- The integration of cooling bed know-how and position/synchronization technology.

Gwangyang POSCO 3CGL Project

posco

Project Background

- It is aimed to establish an improved production facility by replacing 15-year-old facility, which has often failed quality and production due to frequent error, with a new facility.

Solutions

- Easy to maintain and do engineering thanks to Profinet-based Communication.
- Superior in energy saving and safety for converter redundancy structure.

Customer's Benefits

- The standardized module-based design is easy to maintain and saves cost.
- It is simple to replace the modules when changing the converter and the inverter because they are constructed in modules.

Highlights

- Trust was earned by customers after replacing the old facility.
- It will much contribute to improving the efficiency of repair work because of the stabilized facility.

POSCO

Project location
Gwangyang
POSCO 3CGL

Duration
2015.08 ~ 2015.11

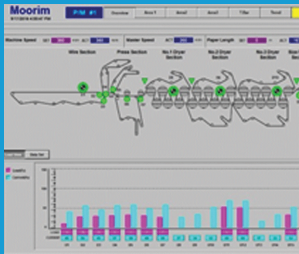




MOORIM PAPER

Project location
Jinju, Korea

Duration
2014.03~2014.09
2016.06~2016.10



Moorim Paper PM1 DC Drive System Revamping

Project Background

- Replace old DC motor(YASKAWA) with SIEMENS AC motor
- Change DC Drive(SIMOREG 6RA24) to AC Drive(SINAMICS S120)
- Modify PLC program
- Modify HMI screen & Touch panel

Solutions

- SINAMICS S120 system
Basic Line Module + Motor Module + SMC30
- SIMOTICS M-1PH8 motors
- SIMATIC S7-400 + WINCC FLEXIBLE

Customer's Benefits

- Low noise in electrical room
- Easy to maintain spare parts with the latest equipment
- Help to save space by removing DC reactor
- Simple and accurate HMI screen increase operability

Highlights

- Completion of motor installation and commissioning for short term construction.
- Change from DC drive to AC drive program in STEP7
- Improved stability and accuracy by motor and drive capacity upgrade.

POSCO GWANG YANG

1SMP LANCE

posco

Project Background

- Replacing the old DC motor with SIEMENS AC motor.
- Replacing DC drive (SIMOREG 6RA24+SYMADIN) with AC drive (SINAMICS S120)
- Establishing LANCE operating PLC with S7-300T installed.
- Modifying HMI with TP900 installed.

Solutions

- SINAMICS S120 system
Active(Smart) Line Module + Motor Module + SMC30
- SIMOTICS LOW VOLTAGE motors: 1LE, 1LA
- SIMATIC S7-300T + TP900 + WINCC FLEXIBLE

Customer's Benefits

- Increasing the efficiency of maintenance by switching SYMADIN Control with PLC Control
- Improving the efficiency of maintenance with AC MOTOR

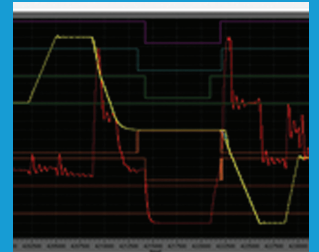
Highlights

- Changing SYMADIN Program to S7 Program
- Reproducing the characteristic curve of DC motor with AC moto
- High accuracy on position Control($\pm 5\text{mm}$)

POSCO

Project location
Gwang yang, Korea

Duration
2016.08 ~ 2017.02
2017.10 ~ now





Renewable Energy

- Geochang Wind Power Generation Energy Storage System
- Development of Total Energy Storage Management System and Demonstration of 28MW BESS Application

Geochang Wind Power Generation Energy Storage System

Daemyung GEC, Intech FA

Project location
Geochang
Wind Power Plant

Duration
2016.06 ~ 2017.06



Project Background

Daemyung wanted to add new ESS facilities to existing wind farms to generate new generation of renewable energy.

The ESS linkage of renewable energy is one of the national upgrading projects.

Solutions

- Power conditioning system of ISAAC Engineering Co.,Ltd. is configured Sinamics drive system with S7-300 PLC.
- Siemens touch panel is used to operation and monitoring.

Customer's Benefits

- High efficiency of PCS system
- High stability Control system with Siemens S7-300
- Increase profit by power energy margins
- Having infinite energy source

Highlights

- 3 sets 1MW PCS / 3 sets 3.2MW Li Battery
- Realtime power generation monitoring
- First Siemens PCS in Korea

Development of Total Energy Storage Management System and Demonstration of 28MW BESS Application



Project Background

For the integrated monitoring Control of multiple BESS, we develop a hierarchical Control system of TEMS (Total Energy-storage Management System) and LPESS (Local Power Management System) which are BESS Control system.

Solutions

- Power conditioning system of ISAAC Engineering Co.,Ltd. is configured Sinamics drive system with S7-300 PLC.
- Siemens touch panel is used for operation and monitoring.

Customer's Benefits

- ESS system R&D
- Continuous operation test
- Establishing technical standards

Highlights

- First Siemens 2 sets 2MW PCS is used in Korea.
- Installed in 40 feet container with HVAC system.

Korea Electric Power Corporation / Korea Electric Power Research Institute

Project location
Gochang, Korea

Duration
2016. 10 ~ 2018.11



A series of white and light green lines on a green background, resembling a circuit board. The lines start from the left edge and branch out towards the center, ending in small circles. Some circles are solid green, while others are white with green outlines.

Smart Factory

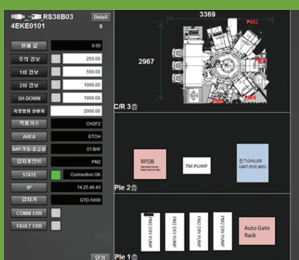
- M14 TGMS Monitoring Construction Project
- M14 PGMS Monitoring Construction Project
- Teleperm M DCS Migration
- M10 CCSS Integrated Monitoring Construction Project
- Samsung Semiconductor Package Platform
- Pulmuone CPG PLM
- Hyundai Electric BOM System Construction and Design
Utility Program Development with Teamcenter
- Hyundai Heavy Industries Planning system for 3D-Based
Welding Work
- Hyundai Heavy Industries System to Check Mounting
Interference
- Samsung Heavy Industries Production Technologies
Integrating System
- Hyundai Samho Heavy Industries Block Arrangement System



SK Hynix

Project location
Icheon

Duration
2015.02 ~ 2017.08



M14 TGMS Monitoring Construction Project

Project Background

- Establishing the integrated Monitoring System for the toxic sensors installed widely in a semiconductor production lines.
- The existing TGMS system is hard to manage because it has to be divided into several units to monitor the sensors which are too many.

Solutions



Customer's Benefits

- It is able to detect and take a necessary action quickly when toxic gas is generated.
- Structured with a server and Client, it is possible to monitor the sensors anywhere with Client PC using an intranet.
- It is able to analyze Data for a long-term trend and carry out correlation analysis.
- It is interlinked with an internally integrated DB so that the entire departments can share Data.

Highlights

- Collecting the Data and alarm status of more than 10,000 sensors in real time and managing them with a single system. (A real-time integrated management)
- Minimizing damage and loss by sending SMS of abnormal status of a sensor to the department in charge and/or the relevant department(s).
- Saving all Data in a company's integrated Database in real time and reading them for inquiry.
- Composition with a redundant server & Client and web client interface.

M14 PGMS Monitoring Construction Project



Project Background

- Establishing the integrated Monitoring System for a process gas supply cabinet supplied to a semiconductor production line.
- Necessary to have PGMS system that is new, runs faster, and can provide an integrated management because the existing one is old and slow in detection.
- Managing gas consumption trend and gas cabinet through the Data analysis of gas supply devices.

Solutions



Customer's Benefits

- It prevents an accident by detecting the leak of the abnormal process gas early.
- It detects a potential accident, which can be caused by a worker's mistake when he or she changes a gas cylinder, at an early stage.
- A long-term gas consumption analysis allows managing PM schedule.
- It monitors the values of PGS parameters to analyze the correlation between parameters.
- The composition of a server and client allows monitoring the sensors by client PC anywhere through an intranet.

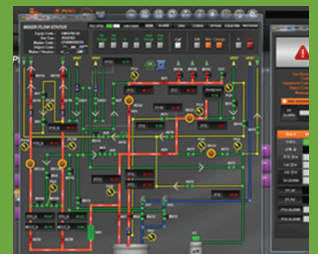
Highlights

- Collecting the data and alarm status of more than 2,000 process gas supply cabinets in real time and managing them with a single system. (a real-time integrated management)
- Controlling supply gas pressure based on the forecast by its long-term trend.
- Combining the data dispersed to each FAB into one company-level DB, saving and reading for inquiry.
- Composition with a redundant server & client and web client interface.

SK Hynix

Project location
Icheon

Duration
2015.02 ~ 2016.04



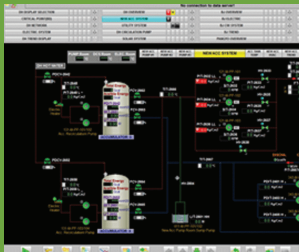


KOREA DISTRICT HEATING CORP.

KDHC (Korea District Heating Corp.)

Project location
Bundang

Duration
2016.04 ~ 2016.11



Teleperm M DCS Migration

Project Background

- Necessary to replace hardware of the existing Siemens Teleperm M DCS with PCS7 DCS system because the former is old and its production discontinues.
- Replacing the existing single system with the redundant system and integrating several DCS HMIs into a single system.
- Integrating the Networks of DH DCS, PLB DCS, and BS DCS.

Solutions

Siemens PCS7
(AS+OS)

Customer's Benefits

- It configures CPU and OS server of DCS with 'redundant' to secure the stability and reliability of the system.
- Integrating the HMIs (OSs) of district heating DCS, boiler DCS, and boosting station DCS enables the rationalization of operation and maintenance and the integrated management of Data.
- It relieves Communication load by upgrading CPU of DCS.

Highlights

- Improving operational logic and the screen composition of HMI.
- Integrating the system with PLB DCS
- Upgrading DH DCS
- Simple Network structure

M10 CCSS Integrated Monitoring Construction Project



Project Background

- Integrating the Monitoring Systems of the chemical feeding facilities in the semiconductor process.
- Necessary to unify Communication methods to facilitate the extension and replacement of facility because it was difficult to maintain the existing system due to the coexistence of several Communication methods.
- Unifying the existing multiple systems that work separately by the type of chemical facility and company.

Solutions

Siemens
WinCC OA
HMI

Customer's Benefits

- It can make it easy to manage data and maintain the system by integrating the existing systems that scattered in several kinds.
- Because it is structured with a server and client, it is possible to monitor the sensors anywhere with client PC using an intranet.
- It establishes system standardization and settles down operational consistency by classifying the existing methods according to the type of equipment.

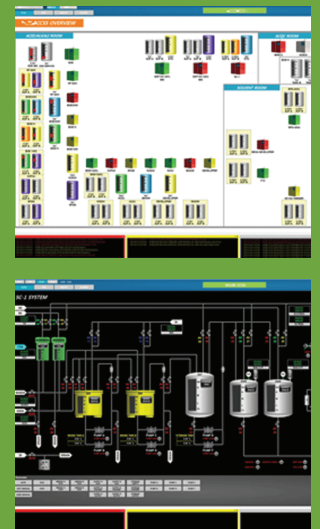
Highlights

- Replacing all the existing Communication methods (mixed with serial and Ethernet) with Ethernet Communication only for simplification.
- Improving the stability and speed of the whole system through Improved operation screen and modified Communication method.
- Designed to monitor the chemical equipment of other FABs, too.

SK Hynix

Project location
Icheon

Duration
2016.10 ~ 2017.12





Samsung Semiconductor Package Platform

SIEMENS/ Samsung Electronics

Project location
Samsung
Electronics
Hwaseong Factory

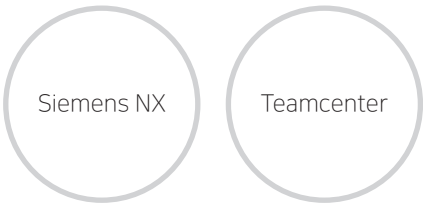
Duration
2017.08 ~ Now

Project Background

The high temperature that arises during the process of production can deform the package platform. Therefore, this issue should be taken into consideration in designing it so that products can be made normally. To do so, simulation is conducted in advance for forecast and reflecting the results on the design work.

However, it is not an easy job to run simulations with complicate design Data because it is hard to use the Data itself. On the other hand, it takes workers a lot of manual labor and time to simplify simulation. Therefore, this automation project came in to save both time and cost.

Solutions



Customer's Benefits

- It automates the analysis of semiconductor package warpage.

Highlights

- Developing a Data converter for design software and analysis software.
- Optimizing mash for simplified analysis.

Pulmuone CPG PLM



Project Background

The items and volume of Data have kept increasing in the food and beverage (F&B) industry as more new products come out in the market. And it has become more important to launch more diversified new and renewed products in time.

As a result, it is necessary to integrate the Data, which has been handled at individual level, and the systems and processes related to the development of a new product and product operation at the company level. The answer is to introduce PLM solution.

SIEMENS / Pulmuone

Project location
Pulmuone
Headquarter

Duration
2017.08 ~ 2018.01

Solutions



Customer's Benefits

- It can shorten the lead time for product development by customer and market.
- It improves the success rate of a new product by establishing product development process.
- It establishes a decision-making system for a project through an efficient and accurate information management.

Highlights

- Constructing CPG PLM system that implements the established work process.



Hyundai Autoever / Hynudai Electric

Project location
Hynudai Electric
Ulsan

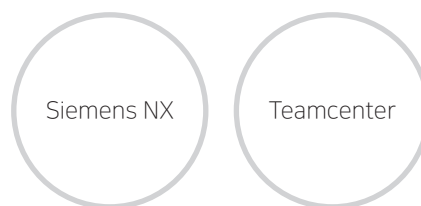
Duration
2015.02 ~ 2017.07

Hyundai Electric BOM System Construction and Design Utility Program Development with Teamcenter

Project Background

It is aimed to build a system that links between the existing PLM system and other systems; establishes the design environment based in Teamcenter and NX for the purpose of settling down 3D CAD design; reduces the time of design work by improving usability and system performance for a designer; and helps design in a consistent process.

Solutions



Customer's Benefits

- It can broaden the applicability of Data with PLM system interface.
- It establishes the basic environment for design work.
- It minimizes the time of design work through a consistent process.

Highlights

- Establishing BOM system and developing NX Utility program.

Hyundai Heavy Industries Planning system for 3D-Based Welding Work

▲ HYUNDAI BS&C

▲ HYUNDAI
HEAVY INDUSTRIES

Project Background

For PE/loading work at the shipbuilding department, a direction is given with a piece of hand-written paper or just orally because there is no specific work plan. It causes the on-site workers to get confused with block shapes and what to do.

It is aimed to develop a system to give a clear direction so that the workers cannot be confused due to the absence of management by establishing an individual plan using 3D shapes.

Solutions



Customer's Benefits

- It is easy to make a systematic work plan.
- It shortens work time through an automated system.
- Worker management system construction.

Highlights

- Developing the planning system for 3D welding work and JT converter for welding work.

**Hyundai
BS&C/
Hyundai
Heavy
Industries**

Project location
Hyundai Heavy
Industries Ulsan

Duration
2014.05 ~ 2014.11

Hyundai
BS&C /
Hyundai
Heavy
Industries

Project location
Icheon

Duration
2013.12 ~ 2014.07

Hyundai Heavy Industries System to Check Mounting Interference

Project Background

In case that there occurs the interference of a new block in the previously mounted block(s), such fixtures as a pipe spool and a pipe support have to be removed and re-installed after the mounting work.

It is aimed to establish a system that can check mounting interference in advance through simulation so that the standby time of a crane and installation M/H, which are caused by the foregoing interference, can be avoided.

Solutions



Customer's Benefits

- It reduces work time through simulation.
- It saves the cost of demolition and re-installation.

Highlights

- Developing mounting interference check system and a JT converter for mounting work.

Samsung Heavy Industries Production Technologies Integrating System

SIEMENS



SAMSUNG HEAVY INDUSTRIES

Project Background

It is aimed to develop an integrated management system that integrates production technologies such as design verification, construction method management, schedule management, purchase management, and so on; links design and production, and establishes verification system; minimizes production error; and honors the date of delivery on time.

Solutions



Customer's Benefits

- It links design and production and establishes a verification system.
- It builds a system to verify and support production for minimizing production error.
- It establishes the base on which logistics is verified to honor the date of delivery on time.

Highlights

- Establishing a system to integrate production technology, which is necessary to verify and support production.

SIEMENS /
Samsung
Heavy
Industries

Project location
Samsung Heavy
Industry Geoje

Duration
2012.12 ~ 2013.11

SIEMENS / Hyundai Samho Heavy Industries

Project location
Hyundai Samho
Heavy Industries
Mokpo

Duration
2012.04 ~ 2012.11

Hyundai Samho Heavy Industries Block Arrangement System

Project Background

The block assembly productivity, which are the basic unit of shipbuilding, directly leads to that of shipbuilding as a whole.

It is aimed to provide a system that can carry out the optimal arrangement of the block assemble workplace (base plate) by increasing the efficiency of its use through real shapes; honor the delivery date of the blocks, and maximize the use of the space.

Solutions



Customer's Benefits

- It improves the accuracy of space optimization with correct Data of block shapes.
- It improves the efficiency of arrangement work through the automatized arrangement.
- It reduces the error of arrangement through load analysis.
- It reduces the time to make an arrangement plan and improves process compliance.

Highlights

- Developing block arrangement system and a converter for block arrangement.







Big Data

- MS Azure Education Content and Hands-on Lab
- 2017 Convergent Smart Content Production Support
(Development of database server and management tools
for Big Data Analysis)
- Integrated Management System for Big Data Analysis
of Streaming and Batch Data - Plug N' Tap

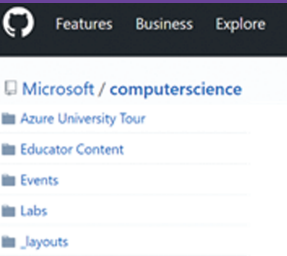
MS Azure Education Content and Hands-on Lab



Microsoft Azure Cloud Service

Project location
United States of America

Duration
2016.09 ~ 2016.12



Project Background

Microsoft desired to create education content that showcased their Azure Cloud service.

Solutions

We created 4 modules (Cloud Computing, Hadoop and Hive, Data Science Using Spark ML, Azure IoT) that are currently used by university to teach basic Big Data and Azure concepts.

Customer's Benefits

Microsoft marketing and advertisement through the use of lectures and hands-on lab.

Highlights

- Cloud Computing
- Hadoop and Hive
- Data Science Using Spark ML
- MS Azure IoT

2017 Convergent Smart Content Production Support

(Development of database server and management tools for Big Data Analysis)

Project Background

Puto Entertainment is developing a voice recognition augmented reality application based on Pororo (Intellectual Property), a popular children's character in Korea.

Solutions

Using a Hadoop Cluster running HDFS, Hive, Impala and Spark, we developed a dashboard that provided information to the client on the use of their system by clients.

Customer's Benefits

Based on the information we provided, the customer was able to adjust and add features to their system to better serve their user base.

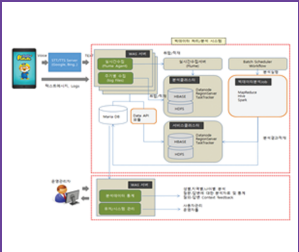
Highlights

- Hadoop HDFS Storage
- Hive and Impala Query dashboard
- Dataset ETL using Apache Spark

Puto Entertainment Corporation

Project location
Gyeonggi-do, Pangyo

Duration
2017.06 ~ 2017.11

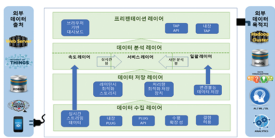


Integrated Management System for Big Data Analysis of Streaming and Batch Data - Plug N' Tap

2018 Technology Startup Growth Development - Stepping Stone 1

Project location
Gyeonggi-do, Pangyo

Duration
2018.04 ~ Present



WIKEN

Project Background

- Hadoop has established itself as de facto platform for Big Data. However, Hadoop is not an user-friendly system that end-users can easily utilize for self-service data analysis and data science.
- An integrated solution that allows end-users to easily collect and analyze the data without having to worry about the setup process is critical for the mass adoption of Big Data.

Solutions

- Integration of Apache Kafka with HDFS, Kudu, and NoSQL storage systems
- Out-of-box connectors for various data sources and data sinks
- Customizable and expandable using Connector API
- Lambda Architecture for Streaming View and Batch View Join Analysis

Customer's Benefits

- Easy self-service setup of datalakes from various data sources
- Expandable and customizable list of data sources and data sinks
- Web based GUI to setup datalakes as well analyze streaming data and batch data

Highlights

- Apache Kafka Message Passing System
- Integratoin of Hadoop HDFS, Kudo, and other NoSQL Storage systems
- Lambda Architecture to combine and analyze data-at-rest and data-in-motion
- Web based dashboard to allow easy setup and configuration of datalake sources and sinks





Reference List

2018

SK Hynix
SK Hynix

IBA Korea System
Hwaseong S&E
OCST
SIEMENS
Samsung Electronics
SK Hynix

SK Construction

ECO Energen
Hyundai Steel
ALAMDINGIN
SUNJIN control
SK Hynix
SK Hynix
Samjung Pulp
Intermec
SK C&C (Beijing)
Samsung Engineering
SK Hynix
Changsung P&R
KEPCO KPS
SK Hynix
SK Hynix
SK Hynix
SK Hynix

SK Hyeng
SK Hynix
SK Hynix
SK Hynix
SK Hynix
SK Hynix
SK Hynix

Hyundai Steel
SK Hynix
CSI

Korea District
Heating Corp.
Now Engineering
Intermec
Now Engineering

SK hynix Icheon M10 TGMS Network Installation Project
SK hynix Icheon M14 PH2B Production Equipment and Supply device
TGMS Network Project
Dongkuk Steel No.1 Strand Inverter Upgrade
Dongkuk Steel Pohang Control System Project
Hyundai Steel Incheon QMS Project
Samsung Semiconductor PKG Platform
Samsung Electronics Design Management security Utility Maintenance
SK hynix Cheongju M15 PH-1 HVAC Automatic Control Project
(Plant Manufacturing)
SK hynix Cheongju M15 PH-1 HVAC Automatic Control Project
(Site Installation)
SK hynix Icheon M14 EP Automatic Control System Revamping
CENTRAL LUB OIL PUMP MOTOR Panel Manufacturing
RAPID 6A PRESSURE DIFFERENTIAL TRANSMITTER
SK hynix Cheongju VOC FAN Installation Control Project
SK hynix Icheon M10C GAS LN2 Tank Monitoring Project
SKhynix Icheon M14 GAS N2 Purifier Alarm additional Project
Samjung Pulp FAN Replacement Work
WINCC MIGRATION V7
SK Hynix Wuxi C2F PH-1 HVAC Automatic Control Project
Timimoun Field Development(TFD)_Instrument
SK hynix Icheon TGMS 2Q Maintenance Project
C17-208-222 Inverter Supply and Commissioning
Hwaseong PLC Inspection
SK hynix Icheon 2018 1Q PGMS Maintenance Project
SK hynix Icheon Bulk GAS Monitoring System upgrad ability Project
SK hynix Icheon Campus VOC Scrubber CMS Monitoring Project
SK hynix Icheon 2018 first-half Bulk GAS Control SYSTEM
Maintenance Project
SK hynix Icheon P&T1 3F Hybrid Tester Capa-up Project
SK hynix Icheon R3 W-Slurry Supply System Project
SK hynix Icheon 2018 first-half Siemens Maintenance Project
SK hynix Icheon M14 Basement Tank Valve Project
SK hynix Icheon M14 2F 33BAY Control Project
SK hynix Icheon M10F GAS_WT extension Project
SK hynix Icheon M14 & M10 PGMS additional and Combination
Control Project
Hyundai Steel Incheon Rolling BD PLC Revamping Project
SK hynix Icheon M14 additional Work Project
Maaden PAP PJT_2 Year Spare Part
Hwaseong STEP7 Installation Project

SK hynix Icheon O2 Densitometer Installation Project
Program Setting
SK hynix Icheon M14 Ph-2 D2 bay Revamping Project

Now Engineering
SK Hynix
SK Hynix
Hyundai Steel

SamsungEngineering
Now Engineering
Now Engineering

Now Engineering
Hynudai Steel

Fluid Serve
Solvay Korea
Citek System
IBA KoreaSystem
MERCK Anseong Plant
Hyundai Steel
SIEMENS
ISAAC E&I

Samsung Engineering
SK Hynix
Hyundai Steel
DA Information
Hyundai Steel
Nexen Tire
Hyundai Steel

Changsung P&R
Hyundai Steel

Hyundai Steel
Korea District
Heating Corp.
Korea Minting and
Security Printing
Corporation
KIMIES
SIEMENS
Genergy
Daehwa
Hyundai Samho
Heavy Industries
Hyundai Samho
Heavy Industries

SK hynix Icheon M14 Ph-2 Photo E3~E5 Bay Revamping Project
SK hynix Icheon P&T1 LN2 Vent Heater Monitoring Project and others
SK hynix M15 WSS PLC Control Project
Hyundai Steel Continuous Casting Machine Mold Operation Panel
Installation Work
Timimoun Field Development [TFD]PJT_2Yr Spare Part
2 Campus Boiler 10 Ton #1 CO Control Installation Project
3 Campus 3F Computer Room O2 Densitometer Installation Project HMI
additional Project
3 Campus CCS ROOM Temperature Monitoring Project, HMI additional Project
Hyundai Steel Incheon 80 Ton Continuous Casting Machine Improvement
Project
Pohang POSCO Steel Sheet Project
ESD Removal Program Work
HYOSUNG Goodsprings PLM Service
Dongkuk Steel Technical Support
2018 MERCK Yearly Maintenance
Special steel Inspection & L1 System Improvement Work
LS Mtron PLM Project
POSCO Gwangyang Steel Making#1 Convector#2 LANCE Panel
Manufacturing, Commissioning
Timimoun (TFD) PJT_S/V
SK HYNIX Cheongju VOC Mid High Alarm additional Project
S7 Basic Training
Deep Freezer PLC Program Revamping
Hyundai Steel Dangjin Sintering Environment EP Program Improvement Project
MIXER#5 DRIVE Tuning Work
Special Steel Inspection & Non-destructive Inspection Equipment Sequence
Improvement
MAIN DRIVE Commissioning #2 additional Project
Hyundai Steel 1 Hot rolling Table Motor Load Monitoring Equipment
Modernize Project
Hyundai Steel SIEMENS Program Training
Distribution Control Equipment & Thermal storaging Tank Valve
Control Logic Project
Computer,Industrial, Workstation Repair

SamsungElectronics Siemens SVC
SamsungElectronics MES Project
LS Mtron PLM Project
Descaling V/V Program Revamping
Hyundai Samho Heavy Industries Maintenance - Citek

Hyundai Samho Heavy Industries Maintenance Support

2017

SKHynix
Hyundai Steel
SKHynix
SKHynix
Lotte Confectionery
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SKHynix
POSCO ICT
HERTZ
SKHynix
SKHynix

SKHynix
SKHynix
POSCOConstruction-HQ
Poongsan HC
SKHynix
Hyundai Steel
SKHynix
SKHynix
SKHynix
SKHynix
POSCO
Hyundai Steel
SKHynix
Samjung Pulp
SamsungEngineering
Hyundai Steel

Hyundai Steel
SKHynix
SKHynix

SKhynix Icheon M14 PH-2 PGMS
Hyundai Steel Suncheon Cold RollingPlant 3CGL Main Equipment
SKhynix Icheon PNT1 AHU DUCT MODIFYControlProject
SKhynix Icheon M14 PH-2 TGMS
Production Equipment PLC PROGRAM PLC
SKhynix Icheon Center Emergency Room CDA Comp Monitoring
SKhynix Icheon M14 PH-2 SIDE FAB
SKHYNIX Icheon M14 PH-1 CLEANING Equipment additional
1MW PCS TYPE TEST
SKhynix Icheon 1Q PM MaintenanceProject
SKhynix Icheon M10PGMS 1Q
SKhynix Cheongju 2Plant Waste water Monitoring Project
SKhynix Icheon M10C Existing Panel Instrument supply
IBA PDA EXPLORER Training and Instrument
MAP(META ARAMID PAPER) Extension PLCPanel Manufacturing
SKhynix Icheon M14 OAC WSS ConstructionProject
Cheongju Hynix 3Campus HMI Alarm Construction for Breakaway from
Average Value
SKhynix Icheon M14 Ph-1 Capa-up Action PGMS Switch Extension Project
SKhynix Icheon M14 Ph-2 NH3 ISO Tank Monitoring Construction Project
PANAMA COLON GAS PROJECT
TENSION LEVELLER DRIVE Procurement and Commissioning
SKhynix Cheongju 3Plant EP PANEL Control Project
iba bm-dp Upgrade
SKhynix Icheon M14 PH-2 WSS ControlProject
SKhynix Icheon M10C & F Chemical Alarm Monitoring Installation Project
SKHYNIX IcheonCampus 2017년 Control System Maintenance Contract
SKhynix P&T1 Anti-asphyxia Air Inflow Improvement Project
POSCO Pohang Bloom Casting Machine Project
Special steel No.1,2 servo Panel Project
SKhynix M10 TGMS Network Project
Samjung Pulp FAN ReplacementProject
Malaysia PETRONAS RAPID PROJECT
80 Ton Steel Making Continuous Casting Machine Strannnd PLC
Revamping(S5→S7) Project
A Hot rolling Main Drive HMI Revamping Project
SKhynix Icheon P&T1, R3 Dryer Monitoring Project
SKhynix Icheon Center Emergency Room LNG Combination Monitoring
Construction Project

Lotte Construction
SKHynix
Hyundai Steel
Hyundai Steel
SKHynix
Hanhwa Engineering
&Construction
SKHynix
SKHynix

POSCO
CSI
SKHynix
SKHynix
SKHynix
Changsung P&R
SKHynix

SKHynix
Hyundai Steel
Fluid Serve
SKHynix
SKHynix
Hyundai Steel
SKHynix
SKHynix
SKHynix
POSCO
Hyundai Steel
Hyundai Steel
SKHynix
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SKHynix

Lotte Beer LOP additional Project
SKhynix Cheongju M11 HMI MIGRATION
Special steel Plant off line extension project
Hyundai Steel Dangjin A Hot rolling SIMOVERT - DRIVE Revamping Project
M12 Inverter Communication Data Alarm and Trend additional Project
Algeria SCCPP_Damaged Materials for HVAC Control System

SKhynix Icheon M14 High-pressure CO2 Analysis System Control Project
SKhynix Icheon M10C CCSS Supply Pipe Leak Auto Shut-Down System
Construction
Gwangyang 1-3Continuous Casting Machine TCM PJ
PAP PJT-2YEAR SPARE PART
High-pressure CO2 PLC PANEL Manufacturing
SKhynix Icheon PGMS 2Q MaintenanceProject
SKhynix Icheon M10 PGMS 2Q EquipmentActionExtensionProject
Inverter Panel Design, Commissioning
SK HYNIX Cheongju 3Campus MAIN Utility revamping and Extension Control
Project
High-pressure CO2 PLC Panel Manufacturing
Hyundai Steel Suncheon ET200 RevampingProject
Samjin PRESSURE TESTER
SKhynix Icheon M14 Middle scrubber ImprovementProject
SKhynix Icheon M14 PHASE 2B Automatic ControlProject
Desulfurizer #3 Equipment HMI Server Installation Project
SKhynix Icheon R3 High-pressure CO2 supply System Project
SKhynix Icheon CDA supply pipe Project
SKhynix Icheon M14 CCSS CAPA UP Extension
POSCO Gwangyang 1-3Convector LANCE PJ
Plasticity Data Collecting and Analysis System Installation Project
Plasticity Electricity usage Transfer system ImprovementWork
SKHYNIX Icheon M14 EP Project
SKhynix Icheon TSV Automatic Control Project
SKhynix Icheon M14 PGMS CLIENT ExtensionProject
SKhynix Icheon M14 Ph-1 PGMS Server Extension Project
SKhynix Icheon M14 PGMS P&S Interlock Construction Project
SKhynix Icheon M10B Flowmeter additionalProject
SKhynix P&T1 Temperature-humidity additional Automatic
Control Project
SKhynix Icheon P&T1 Flowmeter additionalProject

Hyundai Steel	Hyundai Steel Incheon Rolling CM STAND H-ROLL MOTOR Revamping Project	Hanul Nuclear Power Site	SIEMENS PLC ENGINEER
Syscon Engineering	Filmmax Film Line DC Drive Revamping	Daelim Industrial	Daelim Industrial Saudi DRIVE Commissioning
SKHyunix	SKHyunix Icheon M10C NH3 BSGS Room PGMS Construction Project	Korea Minting and Security Printing Corporation	Korea Minting and Security Printing Corporation Project DRIVE Commissioning
SeAH Beesteel	Gunsan SeAH Beesteel Low pressure Descaler	SKHyunix	Cheongju 3Campus CDA Flowmeter Monitoring Project
SKHyunix	Cheongju Hynix 3Plant EOOCR additional Project	Hyundai Steel	PCS7, DRIVE, STEP7 Training
Hyundai Steel	CM Rolling Control Equipment Revamping Electric work, Cooling Bed Revamping Electric work, CB WB Inverter Revamping Project	Korea Minting and Security Printing Corporation	Korea Minting and Security Printing Corporation Project DRIVE Technical Support
POSCO ICT	Pohang Plant Cooling Bed Motor Drive Revamping	SKHyunix	M8 VOC Remote Control Monitoring Improvement Project
DongYeon System	DRIVE Communication TEST Commissioning Support	SKHyunix	Cheongju Hynix 3Campus M12 Network Programming
Hyundai Steel	Hyundai Steel Suncheon EGL DRIVE SYSTEM Modernize	SKHyunix	Cleanroom Inside Differential Pressure Monitoring Construction Project
SKHyunix	SKHyunix Icheon Cooperation #2 Building Extension Project	SKHyunix	CDA Flowmeter Monitoring additional Project
SKHyunix	SKHyunix Icheon R3 High-pressure CO2 Analysis Line EHT SYSTEM Project	SKHyunix	Cleanroom Inside O2 Detector Revamping Project
Hyundai Steel	Hyundai Steel #1 IBA System Upgrade	SKHyunix	3Campus VOC Installation HMI Project
SKHyunix	Cheongju Hynix 3Plant LNG Monitoring Project	SKHyunix	DC DRIVE Replacement Project
Hyundai Steel	Continuous Casting Machine CCM OS PANEL Manufacturing	SKHyunix	Danfoss Inverter Support
Hyundai Steel	1 Cold Rolling PLTCM ET200B MODULE Modernize	SKHyunix	GTU PJT_SUPERVISOR(Automatic Control Commissioning and Training)
Hyundai Steel	Hyundai Steel C#3 Scarfing IBA Installation Project	SKHyunix	Cheongju Hynix 2Campus Flowmeter, Temperature PLC/HMI PROGRAMMING
SKHyunix	SKHyunix Icheon M14 PH-2B PGMS	SKHyunix	Middle sized Rolling Panel Mounting Plate Manufacturing and selective Cooling System
Hyundai Steel	Special steel Small Bunding Press Equipment Inverter Project	SKHyunix	Hyundai Steel 1Plate Mill Rolling Line PROGRAMMING Project
Hyundai Steel	Hynudai Steel Dangjin A-SPM IBA	SKHyunix	Hyundai Steel Special steel PCS7, DRIVE, STEP7 Training
SKHyunix	1,2,3 Shaft furnace Body Stave Replacement	SKHyunix	Hyundai Steel 100ton Continuous Casting Machine spray PLC Revamping
SKHyunix	SKHyunix Icheon M14 PH-1 VOC Temperature & Pressuer additional Project	SKHyunix	Hyundai Steel Continuous Casting Machine wireless TCM Project
SKHyunix	SKHyunix Icheon M14 PCW additional Project	SKHyunix	1Plant EP Scrubber Monitoring Construction
SKHyunix	SKHyunix Icheon M14 Ph-2B TGMS Project, HMI System	SKHyunix	Hyundai Steel Dangjin Stoper Ar Control System Installation
SKHyunix	SKHyunix Icheon M14 Ph-2B TGMS Project_Local Rack	SKHyunix	Gwangyang 1~4 Continuous Casting Machine 21 Engineering Commissioning
SKHyunix	SKHyunix PNT3 NAND WT 3F Project	SKHyunix	2017 Distribution Control Equipment Regular Inspection Revamping Project
SKHyunix	SKHyunix Icheon M14 DAMPER/TMT Replacement and additional Project	SKHyunix	
SKConstruction	SKHyunix Icheon M14 PHASE 2B Automatic Control Project_Site Installation	SKHyunix	
Hyundai Steel	2Plate Mill Electricity Room Temperature Monitoring Project	SKHyunix	
SKHyunix	SKHyunix Icheon M14 PHASE-2A PMS Control Project	SKHyunix	
Hyundai Steel	A Hot Rolling Roller Table Panel Manufacturing	SKHyunix	
SKHyunix	Cooling Water TDS Concentration Monitoring System Construction Project	SKHyunix	
SKHyunix	SKHyunix Icheon 2017 3Q M10 PGMS Equipment Extension Action Project	SKHyunix	
SKHyunix	SKHyunix Icheon 2017 3Q Icheon PGMS Maintenance Project	SKHyunix	
SKHyunix	SKHyunix Icheon Second half Control Maintenance Project	SKHyunix	
SKHyunix	SKHyunix Icheon M10B Waste water Monitoring Project	SKHyunix	
KEPCO	SIEMENS EMP TEST	SKHyunix	
Electricity Plant	Morocco SAFLLicense Upgrade	SKHyunix	
SKHyunix	SKHyunix Icheon Chemical Area Temperature Monitoring Construction Project	SKHyunix	
SKHyunix	SKHyunix Icheon M14 PH-1 n 2 PGMS Combination Monitoring Project	SKHyunix	
Hyundai Steel	CENTRAL LUB OIL PUMP MOTOR Panel Manufacturing	SKHyunix	
SKHyunix	3 Campus Analysis Room Project and Neutralization Equipment Programming Project	SKHyunix	
SKHyunix	SKHyunix Icheon M14 CO2 Detector additional Project	SKHyunix	
KEPCO	MW ESS Performance and Safety Test Equipment	SKHyunix	
Moorimpaper	Moorimpaper Plant PM1 IBA PC Manufacturing	SKHyunix	
Kopak System	SIEMENS STEP7 Installation Work	SKHyunix	
Train Korea	SOCAR PJT_SV Instruments	SKHyunix	
SKHyunix	SKHyunix Icheon M10 A B F CCSS Heat Line Installation Project	SKHyunix	
SKHyunix	SKHyunix Icheon M10F HMI Set-up Control Project	SKHyunix	
SKHyunix	SKHyunix Cheongju C1 MASK FAB Automatic Control Project	SKHyunix	
POSCO	Pohang STS No.1 SPM Drive System	SKHyunix	
SKHyunix	SKHyunix Cheongju M15 UPW Automatic Control Project	SKHyunix	
SKHyunix	SKHyunix Icheon 2017 4Q Icheon PGMS Maintenance Project	SKHyunix	
Autech Carrier	Central Area Field Complex Spare Parts	SKHyunix	
SKHyunix	SKHyunix Icheon PGMS Earthquake Action Construction Project	SKHyunix	
SKHyunix	SKHyunix Icheon M10 DEVELOP CMS Construction Project	SKHyunix	
SKHyunix	SK HYNIX M11 AI CARD additional Project	SKHyunix	
SKHyunix	SKHyunix Icheon P&T1 AHU additional Project	SKHyunix	
MERCK Anseong Plant	MERCK Yearly Maintenance	SKHyunix	
SKHyunix	SKHyunix Icheon Autonet Leak sensor additional	SKHyunix	
Hyundai Steel	2017 A Hot rolling Rolling WINCC Maintenance	SKHyunix	

2016

SKHyunix	SKHyunix Icheon Choking prevention Oxygen concentration Monitoring Construction Project	Hyundai Steel	Rebar Rolling decrepit Panel Revamping
SKHyunix	SKHyunix Icheon M14 GAS CO2 PURIFIER Control Project	SKHyunix	SKHyunix Icheon P&T1 Control Valve Replacement Project
SKHyunix	Cheongju SKHyunix W/T Automatic Control Project	SKHyunix	SKHyunix Icheon M10B OAC Inverter Monitoring System Project
THELEMA	Morocco Safi CHP supply Project	SKHyunix	SKHyunix Icheon M14 Control System Project
POSCO	SERVO DRIVE	SKHyunix	SKHyunix Icheon R3 HVAC additional Project
Moorimpaper	PM1 Wire Part DC Drive Revamping Work	Hyundai Steel	Hyundai Steel Pohang 80Ton Continuous Casting Machine STRAND PLC Revamping Project
SKHyunix	SKHyunix Wuxi Plant PGMS #3	Hyundai Steel	Hyundai Steel Pohang 120Ton Electricity furnace PLC Revamping Project
Korea Aluminium	Rolling Machine SIEMENS PLC and DRIVE Replacement Project	Hyundai Steel	A Hot Rolling Drive Revamping
SKHyunix	SKHyunix Icheon 2016 1Q PGMS Maintenance Project	SKHyunix	SKHyunix Icheon M10B Main Scrubber HMI System Improvement Project
Samsung Engineering	Timimoun (TFD) - HVAC Control System	SKHyunix	SKHyunix Icheon M14 PGMS NETWORK Connection and Removal Work
Woori Engineering	Sindoh Asan Plant Super Calender Motor, Drive Revamping	SKHyunix	SKHyunix Icheon 1Q PM
Hyundai Steel	Special steel Continuous Casting Machine Drive System	POSCO	POSCO SS VINA DESCALER
SKHyunix	SKHyunix Icheon M14 CCSS HMI additional Project	POSCO	POSCO Gwangyang Motor Project
SKHyunix	SKHyunix Icheon 2016 the first half M10 Gas Detector Monitoring	Lotte Chemical	Lotte Chemical MX PJ
SKHyunix	SKHyunix Icheon M14 Process Vacuum System Automatic Control Project	Korea District	Distribution Control Equipment Improvement Project
Hyundai Steel	PLC Revamping Work (Rebar Rolling Core Cooling water Control Valve Installation)	Heating Corp.	SKHyunix Icheon M10 PGMS 2Q Maintenance Project
Yeungnam University	SCE Training	SKHyunix	Lotteliquor Beer 2Plant PLC and Installation
College		Lotte liquor	Hyundai Steel Pohang 100 Ton Continuous Casting Machine spray PLC Revamping
Hyundai Steel	Middle sized Rolling Plant PLG Communication Improvement Project	Hyundai Steel	SKHyunix Icheon M10/M14 PGMS Cable Removal Project
POSCO	Pohang Electricity Steel Sheet 3APL INVERTER PANEL Procurement	SKHyunix	SKHyunix Icheon M14 Monitoring Automatic Control Project
Hyundai Steel	Continuous Casting Machine Local PLC Panel Replacement	SKHyunix	

SKHynix	SKHynix Icheon 2Q PM	SKHynix Icheon M14 CCSS 47BAY HOT SPM Equipment Extension
SKHynix	SKHynix Icheon R3 new Detector Monitoring Project	Hyundai Steel Dangjin Sintering Yard Pump I/O additionalProject
Samsung BIOLOGICS	Siemens PLC Demo system	SKhynix Cheongju M12 P VAC ControlProject
DA Information	DM Bio Yearly Maintenance	SKhynix Cheongju M12 Washing Room Emergency Ventilation MonitoringProject
SKHynix	SKhynix Icheon P&T1 Cooling tower Valve Replacement Project	SKhynix Icheon M10PGMS 4Q MaintenanceProject
SKHynix	SKhynix Icheon M10B CCSS supplypipe Leak Auto Shut-Down System Construction	SKhynix Icheon PGMS TGMS 4Q MaintenanceProject
POSCO	Gwangyang POSCO 1 Steel Making Inverter Procurement	Hyundai Steel DESCALER Test Equipment
DAEGA Powder System	LVSr Unloading Control System	Cheongju SK HYNIX Win cc migration Project
Hyundai Steel	Hyundai Steel 1,2 Furnace Stave Replacement (IbaSystem)	Amplitude Modulation ESS (Movable)
Dongan Korea	Autech Carrier TFD PJT-Inverter	SKhynix Icheon #4 Boiler Room Monitoring Project
SKHynix	SKhynix Icheon Choking Hazard Place Oxygen Detector Installation Project	SKhynix Icheon M14 TGMS TROUBLE PROTOCOL Improvement Project
Intech FA	Daemyung GEC wind Power 3MW	Algeria Timimoun Site -Cable Gland
SKHynix	SKhynix Icheon M14 CCSS Discard Sulfuric Acid Drain Sub Extension CMS	Hyundai Steel Middle sized Rolling + CSET01 Panel Manufacturing
Hyundai Steel	1Cold Rolling PL TCM Revamping	Lotte Chemical- Central Research Institute Electricity Conversion SYSTEM(ESS)
Autech Carrier	CAFC PJT - Actuator	Hyundai Steel Incheon Middle sized Rolling Revamping
SKHynix	SKhynix Icheon 2016 M10 New Detector Monitoring Project	Cheongju SK hynix 3Plant M12 Middle Scrubber additional Project
SKHynix	SKhynix Icheon M10 PGMS Mixer Equipment additional Project	Project Design and I/O Check
Hanhwa Engineering &Construction	SCPP Biskra-Battery Room explosion Actuator	Posco Gwangyang 3 Cold Rolling decrepit Equipment Replacement
SKHynix	SKhynix Icheon M14 CCSS Cleaning Equipment CMS Control Project	SKhynix Icheon R3 PGMS C-BUNDLE additionalProject
SKHynix	SKhynix Icheon M14 CCSS CMP Equipment Chemical pipe Line Extension	Gwangyang 2-2 Continuous Casting Machine 2M/C Engineering, Commissioning
SKHynix	SKhynix Icheon M14 PGMS NETWORK ConnectionProject	M12 Sub Duct Wet Method Electricity Dust collector Installation Project
SKHynix	SKhynix Icheon M10 PGMS ConnectionProject	sk hynix Icheon h2 shutdown Project
Hyundai Steel	Middle sized CM STAND H-ROLL Motor Revamping Project	Gwangyang 2-2 Continuous Casting Machine Revamping
SKHynix	SKhynix Icheon 3Q PM Maintenance Project	& INVERTER PANEL Procurement
SKHynix	SKhynix Icheon 3Q M10 PGMS MaintenanceProject	SKhynix Cheongju M11 150CMM Middle Scrubber Program
SKHynix	SKhynix Icheon M14 H2O2 supply Equipment Extension CMS Work	Inverter Commissioning Support
SysconEngineering	S-OIL RESIDUE COMPLEX Project	#1 Cold Rolling 2CPL Line Drive Ramp Function Redundancy Work
Hyundai Steel	Continuous Casting Machine OSPanel Manufacturing	POSCO Gwangyang 2-2Inspection & Conditioning 2RTC Commissioning
SKHynix	SKhynix Icheon M14 PHASE-2 (Hynix Contract Project)	Thailand PoongsanPlant Commissioning Support
SKHynix	SKhynix Icheon M14 PHASE-2(SK Construction)	SKhynix Cheongju 3Campus Neutralize Treatment Scrubber Central Control Improvement
Hyundai Steel	Sintering Control Panel Installation	1Cold Rolling CPL Pay Off Ree, Tension Reel Motor tuning
Hyundai Steel	1Continuous Casting Machine Plant TCM Wireless System	SKhynix Icheon M10 TGMS OxygenDetector additionalProject
SKHynix	SKhynix Icheon M10 TGMS Network ImprovementProject	PLC, DRIVE Support
SKHynix	SKhynix Icheon P&T1 Building New DRYER Monitoring Project	Maaden PAP PJT-SV FEE
SKHynix	SKhynix Icheon M10 PGMS NETWORK Improvement Project	Biskra SCPP PJT-SV FEE
Hanhwa Engineering &Construction	Biskra SCPP_Damage Material	CAFC PJT-SV FEE
SKHynix	SKhynix M14 P-VAC Automatic ControlProject	Hyundai Steel Special steel Steel Making Commissioning
SKHynix	SKhynix Icheon PT1 EF VentilationImprovement	DM Bio BMS HVAC AUTO ON/OFF Control
SKHynix	SKhynix M14 4CWS4801 Chemical Extension CMS Work	SKhynix Cheongju M12 NPW ControlProject
Hyundai Steel	Sintering Gas Error Data Collecting and Analysis Equipment Installation	EquipmentLogic Improvement logic Revamping and additional
SKHynix	SKhynix Icheon M14 PHASE-1 CAPA UP	Hyundai Steel Middle sized Rolling selective Cooling System
SKHynix	SKhynix Icheon M10C & M14 WET EP Project	Hyundai Steel RebarPlant Commissioning
SKHynix	SKhynix Icheon M10CM14 Middle Scrubber E P System Apply Control Project	Water treatment PLC and heat source DCS RevampingProject
SKHynix	SKhynix Icheon PT1 decrepit Control Valve Replacement Project	Hyundai Steel 2Plant Commissioning Support
Hyundai Steel	SKhynix Icheon M14 P-2 Single VACUUM ControlProject	LSM Existing Drive Backup and Interlocking Test
SKHynix	Special steel Big-sized Rolling RollingEquipment Optimum Stabilizing	WIRE FEEDER Revamping
SKHynix	SKhynix Icheon P&T1 4F Emergency Ventilation System Construction	2CPL WELDER CARRIAGE SERVO MOTOR Replacement Commissioning
SKHynix	SKhynix Icheon M10C CCSS CombinationMonitoringProject	GS CAD base Quantity calculation System Development, Function Development
SKHynix	SKhynix Icheon P&T1 O2 MonitoringProject	PLANT 3D CAD Data Visualization Pilot Test, Visualization Performance Improvement / Data Interface
SKHynix	SKhynix Icheon M10C LEAK AUTO SHUTDOWN Project	SE2SP3D 3D Symbol Modeler for Equipment Development, eVFM - Block Mounting Interference Checking System Development
SKHynix	SKhynix Icheon Combination PGMS Auto Shutdown Improvement	BOM System Construction
SKHynix	SKhynix Icheon M10B & M10F CCSS Combination Monitoring System Construction	Development of Samsung Semiconductor VIST Development(SDS)
Moorimpaper	Moorimpaper iba Installation and Commissioning	
Woojin	AUTO-Gwangyang 1Steel Making Converter LANCE driving part Replacement	
SKHynix	SKhynix Wuxi O2Detector Monitoring Project	
SKHynix	SKhynix Icheon M14 PH-2 WWT Waste water ControlProject	
SKHynix	SKhynix Icheon M14 4CWS3101 Equipment BOE1400 pipe ExtensionAction HMI Update	

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Hyundai Steel	Power Block Repair	Hyundai Steel	Profibus Connector & B5
Hyundai AutoEver	HS-Press Regular - IBA SYSTEM	MyungshinElectricity	ibaFOB-4iD
Autech Carrier	Iraq GTU PROJECT	Autech Carrier	BULK MATERIAL-7
IDH	HYUNDAI HYSOC SCRAP CHOPPER Extension	Hyundai Steel	PGL SPM SERVO SYSTEM Modernize
Mecha Tech	Samsung SDS Vietnam	Korea District	Woodchip Renewable Energy Facility Turbine Control Program Improvement Project
Taeyang EMC	DI-A FAB INVERTER Automatic ControlProject	Heating Corp.	
SamsungEngineering	Saudi Maden Site Supervisor Support	SK Hynix Icheon	Center Emergency Room 1st Scrubber Monitoring Installation Project
SK Hynix Icheon	M10A Sub Duct Monitoring Construction System Project	Hyundai Steel	Power supply Equipment
Syscon Engineering	M14 Gas Cabinet S7-1500	POSCOICT	Gwangyang 3CGL Drive Panel(SIEMENS SINAMICS) Procurement
Korea Minting and Security Printing Corp.	Paper machine AC Drive Facility (Repair)	Daehan Engineering	Incheon Hyundai Steel Middle sized Rolling PLC 63 Revamping
Mecha Tech	WinCC OA API training	SK Hynix Icheon	P&T 1 ControlSystem ImprovementProject_#2_System Project (DDC PACKAGE)
Hyundai Steel	Middle sizedRolling Operation Room MMI Improvement_Project	Hyundai Steel	IBABM-DP
SK Hynix Cheongju	Cheongju 1&3 Campus Scr.Real Time Monitoring additionalProject	Lotte Chemical	Hybrid ESS 25kW PCS Development R&D
SK Hynix Icheon	M10A-X FAB DB Server Improvement Project	Hyundai Steel	CHot rolling #3 SPM Drive Desk
Hyundai Steel	IBA System - IBABM-DP	SK Hynix Icheon	Center Emergency Room O2Monitoring Project
SK Hynix Icheon	R3 decrepit HMI System Revamping	MyungshinElectricity	ibaFOB-4-O-Rackline
Daehwa	IncheonHyundai Steel Middle sizedPlant 2 Electricity Room PLC Revamping Work	Nakamura	Exd. CABLE GLAND and etc.
Yeong Il Engineering	Continuous Casting Machine Combination Operation Room OP PANEL	Electric MFG	
SK Hynix Icheon	TGMS Manufacture Technical Auto Pager Construction Project	Hyundai Steel	ibaBM-Upgrade-DP-with-8DPS
Hyundai Steel	IBA System - IBABM-DP	Hyundai	M14 TGMS

Hyundai Rotem	Hyundai Steel Measuring Device Automation System	Nakamura Electric MFG	Exd. CABLE GLAND and etc.
SK Hynix Icheon	M10B Emergency Ventilation Capa-Up Control Project_System	SK Hynix Icheon	M10 Gas Room explosion Detector Applying Improvement Project
SK Hynix Icheon	LNG LEAK Monitoring Improvement Project_System	Hyundai AutoEver	Hyundai Steel 2Cold Rolling IBA Q-PANEL InstallationProject
Hyundai Steel	ibaBM-Ugrade-DP-with-8DPS	Hyundai AutoEver	Hyundai Steel Pohang 80ton discharging PLC Revamping Project
Dongil Tech	Small Rolling Electric work	SK Hynix	Icheon Hynix M14 Top Shed
Hyundai Steel	IBAPADU-8	SK Hynix	Icheon Hynix M14 Top Shed
CSI	HVAC CONTROL SYSTEM Instruments	Nawoo	Cheongju Hynix 3Campus Cooling tower Sump Level Sensor ReplacementProject
Syscon Engineering	WinCC OA License		M14 1F Emergency Ventilation
SK Hynix	M14 CMS Project (Hynix Icheon M14 PJT CCSS & Waste Liquid Recovery Project)	Hyundai Instrumentation	
MyungshinElectricity	ibaFOB-4-O-Rackline	Hyundai AutoEver	ibaCOM-SW
Hyundai Steel	ibaBM-DP	Nawoo	P&T1 Hybrid Tester Action Utility Construction Project
Hyundai AutoEver	Hyundai Steel Pohang 80ton Continuous Casting Machine PLC Revamping Project	Hyundai Steel	Power supply Equipment
	ibaFOB-4i-D		
MyungshinElectricity	Automatic Control PANEL & DEVICES	POSCOICT	Pohang 2Plate Mill Mass Production Construction Drive System Procurement
Autech Carrier	Client Rack		Hyundai Steel A Hot rolling PLC PROGRAM
SK Hynix Icheon	2 Plate Mill Heating furnace Charging&discharging Door openControl Revamping	Hyundai Steel	Hyundai Steel Dangjin WinCC Plate Mill Training
Hyundai Steel	TGMS Technical MES Pop-Up Construction Project	SK Hynix Icheon	M14 TGMS Monitoring Construction Project
SK Hynix Icheon	M10 TGMS Combination Composition Project	Yeong Il Engineering	C Hot rolling Revamping LOP Manufacturing
Hyundai Steel	Cooling Fan Motor	SK Hynix Icheon	2015 4Q PGMS Maintenance Project
International	PM3 HB&FORMER Replacement_DRIVER SIEMENS ENGINEER FEE	Korea District Heating	TurbineControl Simulator Workstation ProcurementInstallation
Electricity	(Moorimpaper)	SK Hynix Icheon	M10F CCSS pipe Leak Auto Shut-Down ConstructionProject
CSI	HVAC CONTROL SYSTEM	Hyundai Steel	Hyundai Steel Dangjin WinCC Plate Mill Training
Hyundai Steel	2Plate MillPlant L1 HMI Server, Client and Eng. PC Image back up Project	Hyundai Steel	Hyundai Steel 2 Plate Mill Plant Revamping
Hyundai Steel	2Cold Rolling IBA Multi Client Installation and Commissioning	KyungilEngineering	Dongkuk Bar Mill 4STAND INVERTER
SK Hynix Icheon	P&T1 Refrigerator Room Emergency Exhaust Installation ControlProject_SYSTEM	SK Hynix Icheon	ETOS 300 DX-OFR
	C/R H2 Detector, pipe pressure Monitoring	Hyundai Steel	IBABM-DPM-S
	and Automatic Shut-off System Connection Project	Hyundai AutoEver	Hyundai Steel 2 Plate Mill Accelerated cooling Equipment Diagnosis
	B5+ProfibusConnector		Application Environment Construction Project
Hyundai Steel	TBS Combination Automatioin Flatfom Extension (HPU #3,4,5) Apply Project	SK Hynix Icheon	Wincc OA Redundancy License
Kyungwon	Algeria PAU Controller	SK Hynix Icheon	M10A GAS Explosion Replacement ControllImprovement Project
TNS ENG	Hyundai Steel Suncheon UTILITY DCS SYSTEM Communication	SK Hynix Icheon	Wincc OA Client License
Hyundai AutoEver	RevampingProject	SK Hynix Icheon	Wincc OA Web Client License
		NEXGEN	Incheon GasProject Technical Support
Hyundai Steel	Hyundai Incheon RebarRolling Heating furnace IBA System InstallationProject	DAEVAC	Icheon Hynix M10A ElectricityPanel additional Work
Hyundai Steel	(Plate Mill)(15) 1Plate Mill Heating furnace Charging&discharging Door open Control Revamping(Electronics CAM Installation)	DDELEC	PLC Panel Manufacturing and Commissioning
			(Hyundai Steel hydrogen Plant Energy PLC)
Hyundai Steel	2 Plate Mill Plant Equipment WinCC Scr. additional Work		M10B/C CCSS Combination Monitoring HMI System Construction
Hyundai Steel	Middle sized CM OFFLINE Roll Assembly Monitoring	SK Hynix Icheon	Hyundai Steel Dangjin Drive S120 Training
Hyundai Steel	CHot rolling QMS System Program Improvement	Hyundai Steel	VH-MILL#2 Drive Inspection and Temperature Error Inspection
Hyundai Steel	PROFIBUS Troubleshooting Toolkit Ultra Plus	SeAH Besteel	HMI Program
SK Hynix Icheon	2015년 2Q PGMS Maintenance Project	SsangyongC&B	PGS Multiviewer System
Hyundai Steel	A Hot Rolling Inspection & Conditioning Line Installation Project	SK Hynix Icheon	M10 TGMS Ambient additional Project
MyungshinElectricity	ibaCom-L2B-8-8	SK Hynix Icheon	BISKRA SCPP PROJECT (FIRE PUMP ROOM)
PAC	Hyundai Steel Special steel Quality ibaDatCoordinator	CSI	Suncheon Hyundai Steel N2 Plant Existing Program Analysis and Revamping
Hyundai Steel	Hyundai Steel Plasticity 4S/K Rotary Hopper Dynamic Installation	Hana Plant	SeAH CSS Special steel Small Rolling Descaling Sys' New Electricity
SK Hynix Icheon	M14 GAS Operations center Monitoring Improvement Project	Fluid Serve	Control System
Hyundai Steel	IBA Request S7 & IBA RACKLINE SERVER		Icheon F2 Combination Monitoring System Construction Project
KI System	#3 SPM Revamping Technical Service	SK Hynix Icheon	PCS CONTROL PANEL & ENGINEERING
Hyundai	Hynix Cheongju3Plant SIDE FAB Automatic Control	Hyundai AutoEver	Hyundai Steel Dangjin AHot rolling Continuous Casting Machine Mold Level improvement Work
Instrumentation			M12 Refrigerator Performance factor(COP) Calculation and Monitoring
Hyundai Steel	Hyundai Steel (A)Soaking Pit Combustion pneumatic Control Improvement Project		Composition Project
		SK Hynix Cheongju	ibaFOB-4i-D
Hynudai Rotem	Hyundai Steel #1 SPM ControlSystem Revamping Automation System supply Contract		Power Conditioning System (Intech FA #1)
		Myungshin Electricity	IBABM-DP
SK Hynix Icheon	GMS Network Connection Work_FACILITY	Intech FA	SK Hynix R3 Coolant Waste Heat OAC System Project
SK Hynix Icheon	TE&HU DATA Connect Server_NS OPC Type	Hyundai Steel	(Automatic Control2_PLC&HMI System)
Hyundai Steel	120 Ton Continuous Casting Machine #2 DRIVE Revamping and Redundancy Improvementn Project	SK hyeng	Hyundai Steel 2Plate Mill Heating furnace Inverter Improvement PLC & HMI Revamping
			Hyundai Steel Plate Mill PCS7 Training
Hwaseong S & E	Continuous Casting Machine Intermediate R/T INV' Panel Revamping Work	EST	M14 CCSS Leak Signal HMI additionalProject
Hyundai Steel	ibaPDA-V6-Unlimited		M14 TGMS Monitoring Project_#3
MyungshinElectricity	IBA-Request S7	Hyundai Steel	PR Factory Revamping Project_Combination(W03 Building)
Hyundai AutoEver	HS-2Plate Mill UST Extension-L1, L2 PGM Control and HMI(PLC)	SK Hynix Icheon	Vibration Signal CollectingModule
Neopis	PLC Card additional and Commissioning	SK Hynix Icheon	Panel and RACK (Intech FA)
KI System	iba PDA Replacement	KEPCO NF	Morocco Safi CHP supplyProject
Korea District	2015 Heat source Distribution Control Equipment Regular Inspection	DongAn Electric Korea	IcheonHynix M14 GasOperations center Sensor additionalProject
Heating Corp. Project	Revamping	THELEMA	
Hyundai	M14 CombinationOperations center System Construction Project	Hyundai Instrumentation	
Instrumentation		SK Hynix Icheon	M10A LO2 Vaporizer Monitoring Project
SUNJIN control	Hynix Cheongju3Plant CAPA-UP	SK Hynix	Hynix Cheongju M9 Line
SK Hynix Icheon	Center Emergency Room Emergency Ventilation and Trench Leak Sensor Monitoring Construction	Hyundai Steel	ProfiHub A5
	Static Pressure Room Monitoring Installation Project	Nawoo	HMI Program
		SK Hynix Cheongju	Cheongju 1&3Campus Scr. Real Time Monitoring additionalProject
Daehan Gas		Hyundai	CheongjuHynix Temperature Bottom-up Control and M11 Control Project
Engineering		Instrumentation	
Yeong Il Engineering	Continuous Casting Machine OS-5 ROOM Project	KEPCO NF	Vibration Signal Collecting Module
Train Korea	T285 Azerbaizan-SOCAR U&A	Heung Yong Industrial	PLC Programming and Commissioning
Hyundai Rotem	Saudi Maden S/V	SUNJIN control	Cheongju Flowmeter Installation Project
SK C&C	Hynix Wuxi Project	Mobiis	WinCC OA Training
Sunghyun ENG	Special steel HYD. SYSTEM CONFIG.DESIGN	Samsung Heavy Industries	Framework base Combination Application, BOM Structure Management and Edit, NX ApplicationFunction Developmentand NX API Connection Development
SK Hynix Icheon	M14 PGS AUTO SHUTDOWN USER INTERFACE Construction		PLM, 3D Viewing Data, TC Interface
SK Hynix Icheon	M10A Local Controller Communication Monitoring Construction		
Hyojin Precision	LOP REMOTE PANEL Manufacturing		
SAMIL DATA System	WinCC OA Dongle		
Nawoo	M14 M10A Bridge ConstructionProject		
Korea District	Network Switch HUB ProcurementInstallation	Hyundai Samho	
Heating Corp. Project		Heavy Industries	
Korea Minting and	PM #2 Touch Screen Replacement	Hyundai Heavy Industries	Load Interface Check System, Optimized JT, 3D base9I PE/Load Welding Work Plan System
Security Printing		Hyundai Heavy Industries	BUS Bar Utility System Development, Numbering System Development, Electricity Electronics System Product BOM System Construction
Corporation			
DAEVAC	IcheonHynix M10A ElectricityPanel		
Taeyang EMC	SK Hynix Icheon M14 HVAC Office additional Panel		

Hyundai AutoEver Daehwa Shinil F.A.S Hyundai AutoEver Nakamura Electric MFG Doowon EFC AZ-EM Autech Carrier Vaste Farm Solution DB C & I MOA Technical Kolon Water & Energy Asiapaper Mirae Paper Hyundai Steel Hyundai Instrumentation Kyungil Hyundai Steel Hyundai Steel Hyundai Steel Hyundai Steel	Hyundai Steel 1Plate Mill Turnover-ElectricityDesign and PLC Panel Hyundai/Dangjin Plate Mill Simulator Manufacturing IBA SYSTEM : Request S7 Hyundai Steel Incheon Middle sizedRollingPlant CS PLC RevampingProject Exd. CABLE GLAND and etc. Hyundai Steel Dangjin Plate MillPlant DESCALER PUMP REMOTE I/O PANEL Maintenance Contract Vietnam O-MON Power Plant HVAC PANEL Hanhwa&C-Superlite Unwinder Work KGC Line PLC Parts Hyundai Steel Pohang Continuous Casting Machine PLC Supply S7 RED CONNECTOR Movable Centrifugal dehydrator PLC CPU Procurement PLC & Drive Programming / Engineering Drive Commissioning 2014 Rolling Plant Cooling water System Revamping Electricity Work Hynix Icheon Storage Automatic Control SeAH Besteel Commissioning AHot rolling MaintenanceTraining AHot rolling Equalizer TemperatureSystem and Encoder InstallationProject High-pressureInverter 2014 Big Sized Heating furnace In-Out Door Position Control System Revamping Work PM#6 Test SWITCH HUB IBA SYSTEM - ibaCOM-L2B-8-8 4Hot rolling Inspection & Conditioning Commissioning PM1 DC Drive System decrepit Replacement Work IBABM-DPM-S Hyundai Steel Plate MillPlant IBA SYSTEM IBA SYSTEM WinCC OA Basic Training Indonesia sintering Commissioning Hynix Icheon Autonet Automatic ControlProject Hynix Icheon PKG HMI Migration IBABM-DPM-S H2 EMERGENCY SHUT DOWN SYSTEM Construction System CP1623 Drive Inspection IBA SYSTEM - ibaFOB-4i-D Hyundai Steel Maintenance Training Middle sized BD, CB COMMON CONVERTER Revamping PGS CombinationMonitoring_Automatic Control System Project Ethernet Switch SK Hynix Waste water TANK LEAK SENSOR Monitoring Construction Project (PLC, HMI) Hyundai Steel C Hot rolling #1,2 SPM Technical Service 2014 AHot rolling EDGER AUX DRIVE Revamping (Project) 2014 Pump Motor #3 MCC Revamping(Project) 2Plate Mill IBA Record System Extension Improvement Hyundai Steel IncheonPlant 90ton Continuous Casting Machine PLC UPGRADE WinaCC OA Training ibaCom L2B-8-8 TBS Combination Platform Construction Project POSCO Gwangyang 4Hot rollingSteel Making tilting drive Mirae Paper #3 Spare Inverter Cheongju Plant Main Scrubber Central Control Construction (PLC) SWITCH HUB Cheongju Hynix H2 SHUTDOWN Billet Scarfing Line Investment Project 1HCL Coater Control System Revamping M12 CMP Urgency Exhaust DAMPER Shifting Project DI-C Technical LAB Construction Project_Process Gas Project Cheongju PR Storage Revamping Project(Automatic Control 2) Plate Mill IBA Q Panel Installation Project M10A SUB-DUCT Cheongju Hynix AHU Control Project ElectronicsFlowmeter PKG Building HMI MIGRATION Second Project PM#6 Drive Program Change Cheongju 3 Plant M12 LINE Automatic Control Project Hyundai Steel Special steel Continuous Casting Machine Main Equipment PLC Control System 2014 (SEE4-5.6) Steel Making Continuous Casting Machine Revamping Cheongju Plant Poisonous TANK LEAK Monitoring Project 2014 Heat source distribution Control Equipment Regular Inspection Revamping Facility_EquipmentProject (PKG DDC Replacement Project) HVAC CONTROL SYSTEM Instruments 3Plant Main Scr Inverter Communication MonitoringProject M11 Exhaust Sub Duct Monitoring Construction SIWAREX M Weighing module Doosan Heavy Industries Wetting Rate Test Pilot 1SK Combustion Air Flowmeter and Automatic Damper Installation Dangjin 2Cold Rolling CGL/CVGL FCE MOTOR DRIVE TOOLInstallation	SK Hynix Icheon SK Hynix Icheon SK Hynix Cheongju S1S SK Hynix Cheongju Hyundai Steel Korea District Heating Corp. Hyundai AutoEver Hyundai Steel SK Hynix Icheon DAE HEUNG Industry SsangyongC&B Hyundai Steel Hyundai AutoEver Nakamura Electric MFG Hyundai Rotem Hyundai Rotem Samjung Pulp Hyundai Steel SK Hynix Cheongju SEIWO Engineering SK Hynix Cheongju SK Hynix Icheon SK Hynix Cheongju SK Hynix Icheon SW Plant POSCOICT AZ-EM MooRim Paper Intech FA Hyundai Steel Gumo Environment Development Samjung Pulp SeAH Besteel Hyundai Rotem SsangyongC&B SK Hynix Icheon SK Hynix Icheon TNS Eng Hyundai Steel SeAH Besteel SAC SK Hynix Cheongju Hyundai Steel ECO Energen Yeong Il Engineering Hyundai Instrumentation SK Telecom Hyundai Steel Lotte Chemical SK Hynix Icheon Green Air Hyundai Steel SK Hynix Icheon SK Hynix Icheon Hyundai Rotem Hyundai Steel SK Hynix Cheongju Digiworks Hyundai Steel Nawoo Nawoo HanhwaConstruction SUNJIN control Shinni SEFA Tech Asiapaper SKC Hyundai Heavy Industries Samsung Heavy Industries Samsung Heavy Industries DAEWOO SHIPBUILDING & MARINE ENGINEERING	Plenum Bulk Gas Pressure and Moisture Concentration Monitoring Construction Investment (H2 #2) CPU_GM3-CPUA CPU 414-4H Dangjin Water treatment Panel Manufacturing Cheongju 1 Plant PLC Communication Status Monitoring Project Drive Parts Gwanggyo Steam Turbine(ST) Control System Simulator Procurement Installation Hyundai Steel HS-AHot rollingPlant Electric work Main PLC Communication Line Change Project DI-A Main Scrubber PLC ReplacementProject Middle sized Plant TURNER ASS'Y PM#6 Dust Removal System PLC Engineering Work 2014 Big sized Rolling, Post process Line IBA System Installation IncheonHyundai Steel Middle sizedRolling CM V-ROLL Motor Revamping Exd. CABLE GLAND and etc. Korea Midland Power Coal Treatment Equipment Hyundai Steel #2 SPM ControlSystem Revamping SIEMENS Training 700-972-7BB12 / BUS Connector LED LCD Monitor & RADMIN Hynudai Steel - Dust Dissipation PLC PANEL Manufacturing 1Plant #1 Scr. Real Time Monitoring additional Project DI-A PGS Communication Rack Shifting Project 3Plant Scr. Real Time Monitoring additional Project DI-FAB Gas Leak Shutdown System Construction Project (TGMS Project) #2 SPM OIL CIRCULATION Installation Electric work 3 Plate Mill Regular SIEMENS DRIVE Commissioning SIWAREX M Weighing module Encoder & Cooling Fan 24MW ESS FR Setting Combination Control System Construction Hyundai Steel Pohang 2 Plant four Crank Shear Hyundai Steel Dangjin Plant Steel MakingPlant Ground Bunker Dust collector PCL Improvement Work Drive Cliq Cable INTOUCH 2014 RT 60,000 TAG WITHOUT I/O Hyundai Steel Special steel Inspection & Conditioning Equipment Automation System PM#6 Reel Part Revamping DIA Remote Access HMI New Project PKG Gas decrepit LS PLC Replacement Project_System (PKG) Algeria PAU Controller Hyundai Steel Plate Mill Connector Replacement and Diagnosis Heating furnace #1,2 Cooling Water HMI Screen configuration IBA SYSTEM Cheongju Scrubber HMI Improvement Control Project (M12 HMI) Siemens Drive (SINAMICS S120) M11 Smell MIBBLR SCR' Installation Project Hyundai Steel Continuous Casting Machine 2# MOLD OS panel Manufacturing 3Plant AHU ElectricityControlImprovementProject 2014 B2B SK Hynix Cloud FEMS Interlocking Automatic Control and Combination control System Profibus Repeater & Connector R&D Center Zn-Br CFB 25KW PCS Procurement FACILITY_FACILITY_GMS Network Connection Work Oxygen Plant AS Service Siemens Training PLC+Drive FACILITY_FACILITY_GMS Network Connection Work EQUIPSET-UP_FAB_Equipment SET UP Hyundai Steel 3 Shaft furnace ControlEquipment IBABM-DPM-S Cheongju 3Campus HMI Improvement Control Project Siemens PLC Technical Support IBABM-DPM-S SK Hynix Plenum Lek preparation for accidentMonitoring Leak Sensor additional Installation SK Hynix 3Plant Waste water IPA dischargingSystem Commissioning Yanbu Training Center Project Cheongju 3Campus Waste liquid room Monitoring Site Program CONTROLLER PLC Inspection AC DRIVE INVERTER Replacement Network analyzer Repair PLM, 3D Viewing Data, TC Interface GS CAD Data JT Conversion, System Embedded Viewer (ActiveX) (SEBOM) Standalone Viewer (SEVAS), System Integration(with Legacy System) Framework base Combination Application, BOM Structure Management and Edit, NX API Connection Development, DM (Block Arrangement)
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Big Data Business Profile

Education Profile

2018.03	SK Group - Big Data and AI Academy Year 3
2017.11	KT - Artificial Intelligence Academy
2017.10	LG CNS - Big Data Architecture
2017.07	Korea Electric Power Corporation (KEPCO) - Hadoop and Deep Learning
2017.06	SK Group - Big Data Academy Year 2
2017.05	POSCO ICT - Big Data Development
2017.04	Gangwon Center for Creative Economy and Innovation - Bigtory Education
2017.02	Korea Institute of Science and Technology Information - SPARK Development Workshop
2016.12	NAVER - Big Data Analysis
2016.11	Gyeonggi-do Big Data & Free Information Center (BigFi) - Big Data Administrator
2016.07 ~ Present	Official Cloudera Certification Training
2016.06	SK Group Big Data Academy Pilot Project
2016.05	Gyeonggi Content Agency (BDA / BDC Certification)
2015.08	SBC (Small Business Corporation) Big Data Concepts

Project Profile

2018.02	Integrated Management System for Big Data Analysis of Streaming and Batch Data - Plug N' Tap
2017.12	Customer Sentimental Analysis for Hyundai America (POC)
2017.05	Development of database server and management tools for Big Data Analysis
2017.01	MIDAS (Medical Image Diagnosis Assistant Service) POC
2016.09	MS Azure Education Content and Hands-on Lab Development



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