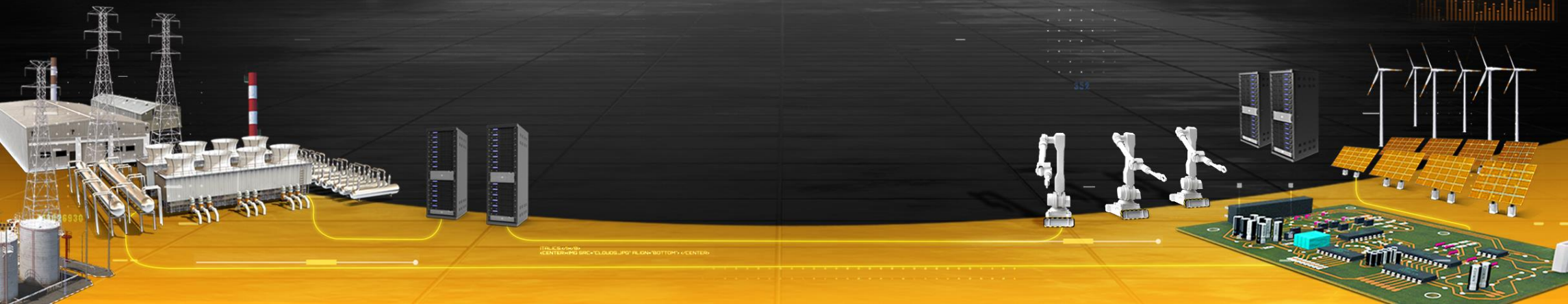


CLOUD  
BASED IIoT

# ISAAC

## ENGINEERING



Welcome to

# ISAAC Engineering

## For Digital Transformation

### Company

ISAAC  
Engineering

### President

C.S.KIM  
B.S.KIM

### Tax ID

113-86-10021

### Web page

[www.isaac-eng.com](http://www.isaac-eng.com)

### Subsidiary

**ISAAC** E&I

**ISAAC** PDS

### Location

Gunpo(HQ)

1  
Hwaseong

2  
Icheon

3  
Cheongju

4  
Gwangyang

Overseas  
China Wixi

### Business

System  
Engineering

Electric  
parts

Control  
Measuring  
Equipment

Computer  
Programming

Electricity &  
Control  
System  
Construction

System  
Integration  
Management

System  
Software  
Development  
& Supply

Control  
Panel  
Manufacturing



For Innovation

# Organization

Organization for  
optimized solution for Digital Transformation



Success Story

# ISAAC's Success Story



## Foundation

- 2007 01 Established
- 2008 11 Established manufacturing plant
- 08 Siemens Solution Partner contract
- 11 Established R&D center
- 2009 02 Capital increase
- 2011 04 ISO 9001
- 2012 01 Acquired Electric construction Business Certification

## Growth

- 2014 01 Established ISAAC E&I
- 2017 06 Main-Biz
- 11 Smart Factory Business Start
- 2018 05 Moved to new building in Gunpo
- 05 Opened Big Data AI R&D center
- 10 ISO 14001
- 11 Established ISAAC PDS
- 2019 07 Capital increase

## Jumping

- 2019 07 Partner agreement with Software AG
- 11 Partner agreement with Osisoft(AVEVA)
- 2020 06 Distributor contract with Carrier Korea System
- 08 Partner agreement with Hawe Korea
- 08 MOU with KEPCO KEPRI
- 09 Partner agreement with Siement Large Drive
- 12 MOU with IGI Korea
- 2021 04 Listed on the KOSDAQ market
- 2022 01 Partner agreement with NOZOMI

## Revenue

(Unit :B KRW)

| 2017 | 2018 | 2019 | 2020 | 2021 |
|------|------|------|------|------|
| 27.0 | 40.3 | 33.2 | 44.4 | 42.8 |



Business field

# Business field



**OT**  
Operational Technology

|       |              |                                               |
|-------|--------------|-----------------------------------------------|
| PLC   | Motor, Drive | Plant Electrical Instrumentation, Engineering |
| DCS   |              |                                               |
| SCADA | Sensors      | Manufacturing                                 |



**IT**  
Information Technology

|                 |                                                                                   |
|-----------------|-----------------------------------------------------------------------------------|
| Big Data        | PLM<br>Digital Manufacturing<br>3D CAD<br>3D Visualization<br>RTDB<br>OT Security |
| Cloud Based IoT |                                                                                   |
| Digital Twin    |                                                                                   |
|                 |                                                                                   |

Business field

# Business Field

Supply of reliable **smart factory solutions** based on industry-specific process know-how and advanced engineering capabilities.

## Automation



## Smart Energy



## Digital Factory



## IoT Platform



- 01 Semiconductor plant
- 02 Steel Plant
- 03 HVAC
- 04 Storage Battery for EV

- 01 PDS
- 02 Energy Storage System

- 01 PLM
- 02 3D CAD
- 03 Digital Twin
- 04 Digital Manufacturing
- 05 3D Visualization
- 06 RTDB

- 01 IoT Platform
- 02 AI Analytic Platform
- 03 OT Security



# Automation



1

Semiconductor



2

Steel



3

HVAC



4

Storage Battery



Automation

# Semiconductor Plant

Supply of **Control system** to important facilities  
for semiconductor processing such as **HVAC, GAS and UPW**

## » Scope of supply

### HVAC Solution

- Redundant system
- Stabilized automatic process

### PGMS/ TGMS

- Numerous data monitoring
- Flexible monitoring for equipment replacement

### Bulk Gas Control Solution

Shutdown System for H2, N2 supply

## » Technology

### System

- Real-time monitoring
- Automatic update
- DB connection to integrated monitoring equipment

### Benefits

- Fast and accurate design
- Improvement of user friendly
- Flexibility of system
- Cost reduction

Reference



HVAC, BULK GAS, PGMS, TGMS, CCSS, UPW

Main solution

PLC

HMI

Network

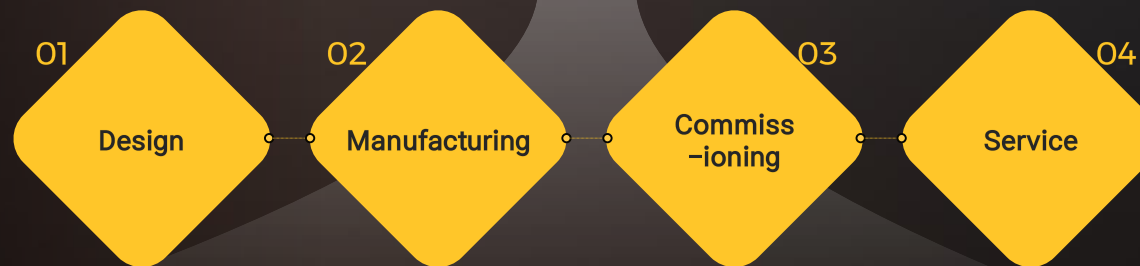
Automation

# Steel Plant

Supply of **Control system** to Sinter machine, Steel making plant, Continuous casting machine, Hot rolling mill, Rolling mill and Cold rolling mill

“ Increase efficiency and productivity ”

Technology, Know-how and accumulated steel projects



Automation + Control system + Drive technology + Industrial software

Reference

HYUNDAI  
STEEL

POSCO

DX 동국제강

S&AH

KG 동부제철

Main solution

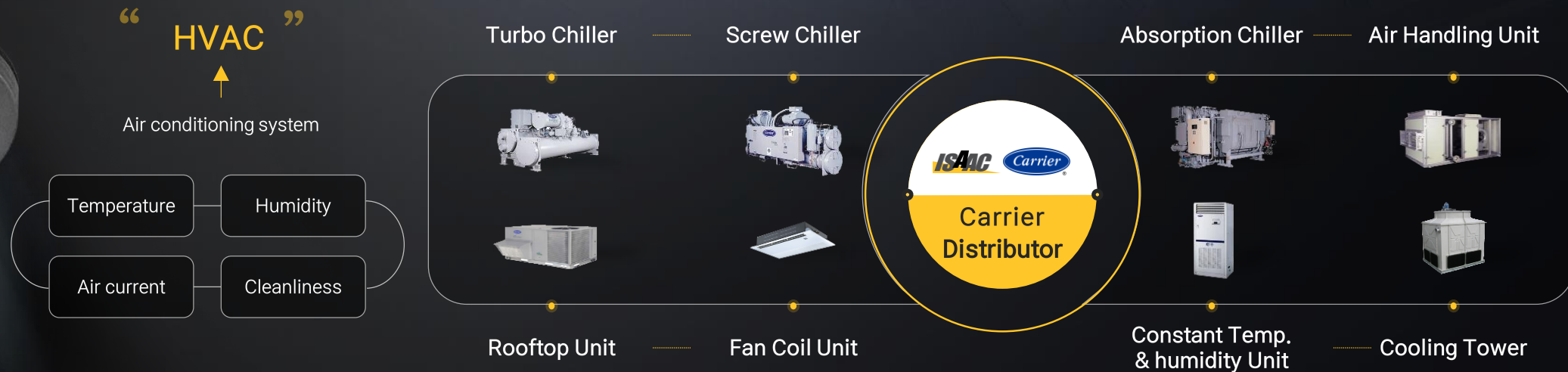
|       |       |          |       |
|-------|-------|----------|-------|
| DCS   | PLC   | HMI      | SCADA |
| Motor | Drive | Analyzer |       |



산업자동화

# HVAC

Supply of **Refrigeration, Equipment and Control system**  
in field of commercial building(Office, Hotel, Hospital) and  
Industry(Oil & Gas, Refinery, Petrochemical, and Power plant)



Reference



Main solution

HVAC Equipment

PLC

INSTRUMENT

HMI

SCADA

Automation

# Storage battery

Supply of **Control system applied European Standards (PackML)** to Storage battery manufacturing facilities and utility for Evs

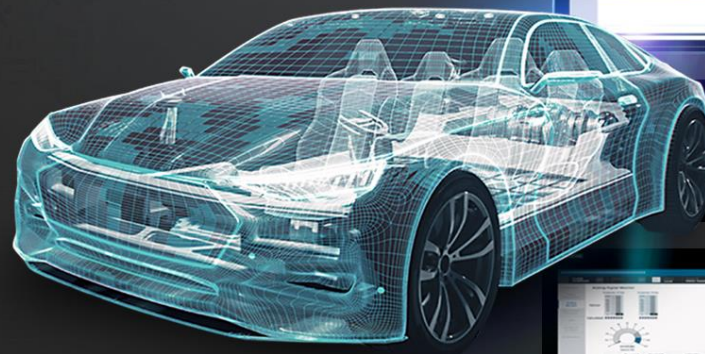
01 Electrode

02 Assembly

03 Formation

04 Logistic

05 Others



## Scope of supply

- PLC, Motor, Servo & Drive
- PLC, Drive control program development
- ePLAN P8 instrument design and Panel manufacturing
- Equipment Set-up
- Site Commissioning

## Solution

- SIEMENS Technology & Fail Safe CPU for Motion Control (S7-1500TF) with TIA Portal
- SIEMENS Servo Motor & Drive (S210), Induction Motor & Drive (G120)
- SIEMENS HMI (TP & IPC)

Reference



Battery manufacturer



America Georgia Phase 2 UMS

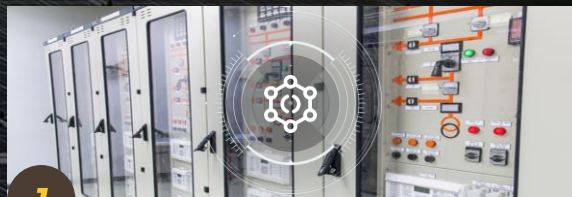
Main Solution

PLC  
Drive

HMI  
SERVO



# Smart Energy



1

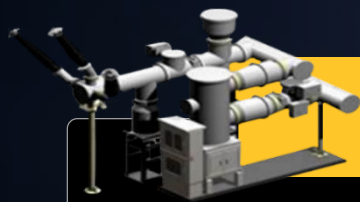
PDS



2

ESS

## High voltage electrical equipment Prevention Diagnostic Solution



### GIS preventive Diagnostic solution

#### Sensor

- Background noise
- GIS externally mounted UHF
- SF6 Gas monitoring

#### Solution

- Partial discharge diagnosis
- CB condition diagnosis
- Contact breaker contact condition diagnosis
- Arc condition diagnosis
- Gas analysis diagnosis



### Transformer prevention diagnostic solution

#### Sensor

- Window type UHF
- Drain valve type UHF
- HFCT      • AE
- Ground current
- Photoacoustic spectrum diagnosis device
- Gas chromatogram diagnosis device

#### Solution

- Partial discharge diagnosis
- Ground current diagnosis
- Gas analysis diagnosis
- Bushing condition diagnosis



### Panel/Cable prevention diagnostic solution

#### Sensor

- HFCT
- TEV
- AE
- Thermal imaging camera

#### Solution

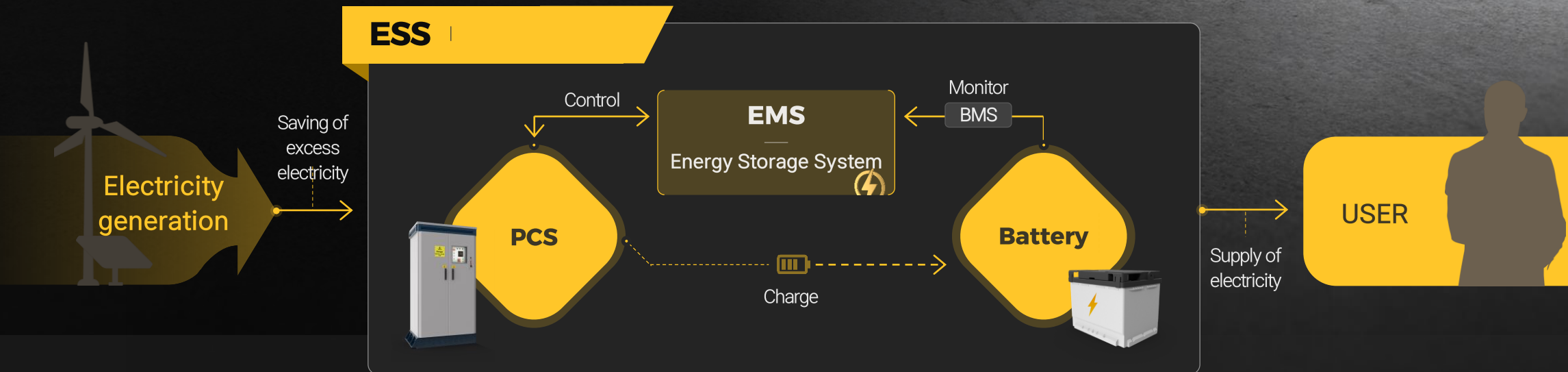
- Cable partial diagnosis
- Partial discharge diagnosis
- Temperature condition analysis diagnosis



Smart Energy

# Energy Storage System

Saving of excess electricity in batteries  
and supply of the saved Energy when necessary



# Digital Factory

- 1 PLM
- 2 3D CAD
- 3 Digital Manufacturing
- 4 3D Visualization
- 5 RTDB



1



## 2



3



4



5



Digital Factory

# PLM

With Teamcenter solution,  
supply of Product Life cycle Management

## Technical Document

- Product information input/output
- Integrated document management

## Product structure

- Various version of product
- Effective categorization

## Integrated Design

- Development status monitoring
- Integrated management based on standardized system



## Workflow

- Schedule, Management, Process
- By person in charge
- Efficient Scheduling and management

## BOM

- Design Data, Product structure history
- Integrated management with BOM module

## Product Quality

- Issue and requirement management
- Quality management

## Benefits

01

### Business

- Increase profits
- Expand market share
- Shorten time to Market

02

### Product Development

- Quality development
- Shorten development time

03

### Efficiency

- Information management
- Improve efficiency

디지털팩토리

# 3D CAD

With NX Open API customization,  
Improvement of design quality and product development speed

## Customization with NX

### Design Standardization



- Model standardization
- Shape standardization
- Design standardization
- Specification standardization
- Parts/element library construction

### Design Modularization



- Standard shape automation
- Assembled parts automatic placement
- Customized program

### Drawing Automation



#### Design Automation

- 3D model automatic production/edit
- Automatic update
- Design model simulation

#### Drawing Automation

- 2D drawing automatic production
- 3D PMI production
- Document & Drawing connection
- Print and distribution

### Application System



- PLM/ERP connection
- Integrated system according to each product

## NX Open API Customization

### Benefits

01 Minimize production errors

02 Shorten designing time

Avoid human errors

Data management



디지털팩토리

# Digital Manufacturing

With Tecnomatix,

Simulation and commissioning in digital environment

## Digital Manufacturing



Verification of products



Layout Planning



Quality management



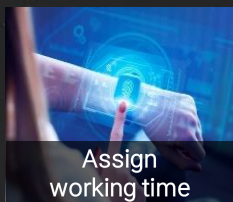
Production process design



Operator analysis



Factory logistics



Assign working time



PLC & Robotics



Production management

...

Manufacturing  
Process Modeling

Simulation and analysis  
of the system

Visualization  
of the model

## Benefits

01 Time · Cost  
Saving

02 Sustainable  
profitability

03 Improvement of  
Assembly quality

04 Improvement  
of productivity

05 Logistic · Space  
Utilization

06 Improvement  
of work  
environment

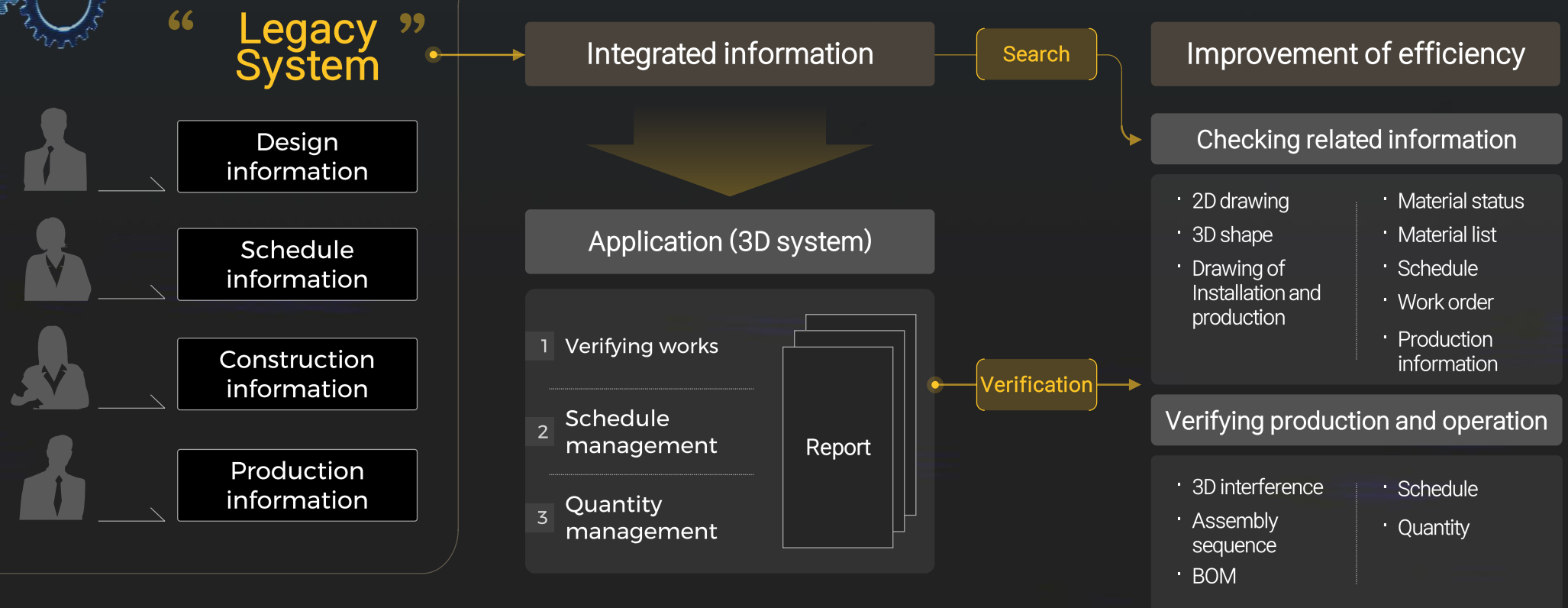
07 Increase of  
maintenance  
efficiency

08 Construction of  
information Hub

디지털팩토리

# 3D Visualization

Integrated information of Legacy System  
and provision of **3D Visualization system** for engineers





디지털팩토리

# Digital Twin

With OnTwins, supply of web-based integrated control monitoring solution



## Digital Twin Control Monitoring

### Digital Twin Platform

1 | Transparency

Connection of  
field data  
in real time

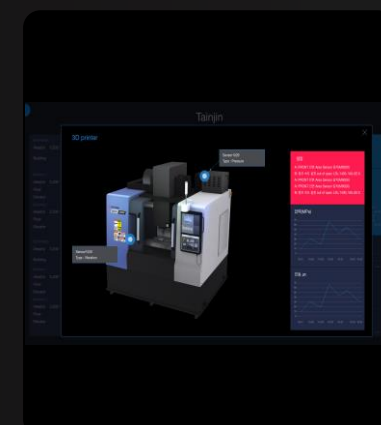
2 | Visibility

Intuitive  
understanding of  
situations

3 | Reliability

Real-time  
monitoring of  
key KPI

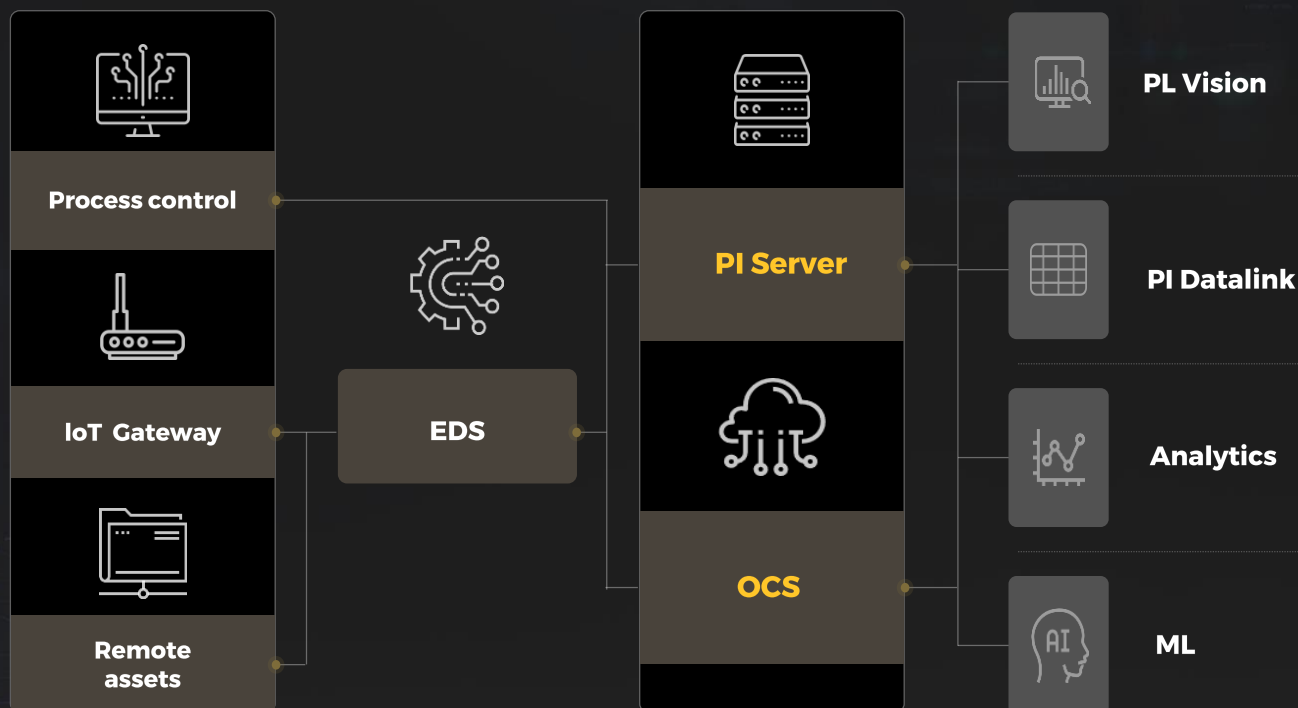
Fast decision-  
making system



# 디지털팩토리 RTDB

With PI System solution,  
collection, saving and management of plant information data in real time

## RTDB System







# IoT Platform

1

IoT Platform

2

AI Analytic Platform

3

OT Security

IoT Platform

# IoT Platform

With Ultivis solution,  
management of business risk, increase of productivity and decrease of operating cost



Device connection · Management · Control · Prediction · analysis

1

## Data acquisition



Sensor device

2

## Real time monitoring

Production

Safety

Quality

Energy

Asset

3

## Data analysis

Smart dashboard

Data analysis

System diagnosis

4

## AI

Deep learning

Machine learning

Automatic Machine  
learning



IoT Platform

# AI Analytic Platform

With Ultivis Solution,  
easily monitoring, analysis and prediction by field engineers

“ Benefits ”

## AI Solution



### 01 Monitoring

Abnormal pattern  
recognition

Real time  
monitoring

Notification  
before abnormal  
situation



### 02 Analysis

Historian  
data indexing

Abnormal pattern  
recognition

Filtering  
Similarity search



### 03 Prediction

Model Free  
Prediction mode

Abnormal  
process  
prediction

Early warning  
before abnormal  
situation

Improvement of  
Work efficiency

Improvement of  
Productivity

Reduction of  
Operating cost

Decrease of  
Downtime

OT Security

# OT Security

Detection of cyber threat and abnormal symptoms via network visualization and monitoring in OT and IoT environment

## OT Security Solution

SaaS

**Vantage**

Software as a Service (SaaS)

On-Promise  
SW

**Central Management Console**

Appliance

**Guardian**



**Subscriptions**



Asset Intelligence



Threat Intelligence



**Add-Ons**



Smart Polling



Remote Collector

**Nozomi Networks  
Analytics**

## Points

01



OT network visualization

02



Recognition of Protocol

03



Hybrid threat detection

04



Detection of abnormal  
symptoms(AI & ML)

05



Comparison of  
network changes

06



Flexible Query

07



Efficiency of  
maintenance traffic

08



Automated weak point  
assessment



# Smart Manufacturing



1

Design



2

Manufacturing

Smart Manufacturing

# Design

With ePLAN solutions,  
improvement of design, Process and Manufacturing

Standardization of electrical  
design and document automation

3D modeling  
virtualization

Design  
automation  
(Modularization)

ePLAN  
smart wiring

Higher quality than  
international standards

Electrical design  
automation program

**ePLAN**  
electric P8

EPLAN  
Electric P8

- Macro
- Creation of standard Engineering data and circuit diagram

Interference check &  
Automatic length and path  
calculation

**ePLAN**  
pro panel

EPLAN Pro-Panel

- 3D Control cabinet layout
- Virtual prototyping in form of 3D assembly

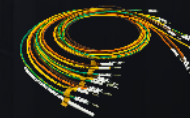
Excel-based electrical  
& pneumatic engineering  
drawing automation

**ePLAN**  
engineering  
configuration One

EPLAN engineering  
configuration One

- Connection of configuration process
- Automatic creation of engineering documents
- Automatic integration of engineering process

Panel wiring design  
visualization program



EPLAN  
Smart Wiring

- Visualization of all steps of panel wiring
- Process interworking from design to manufacturing

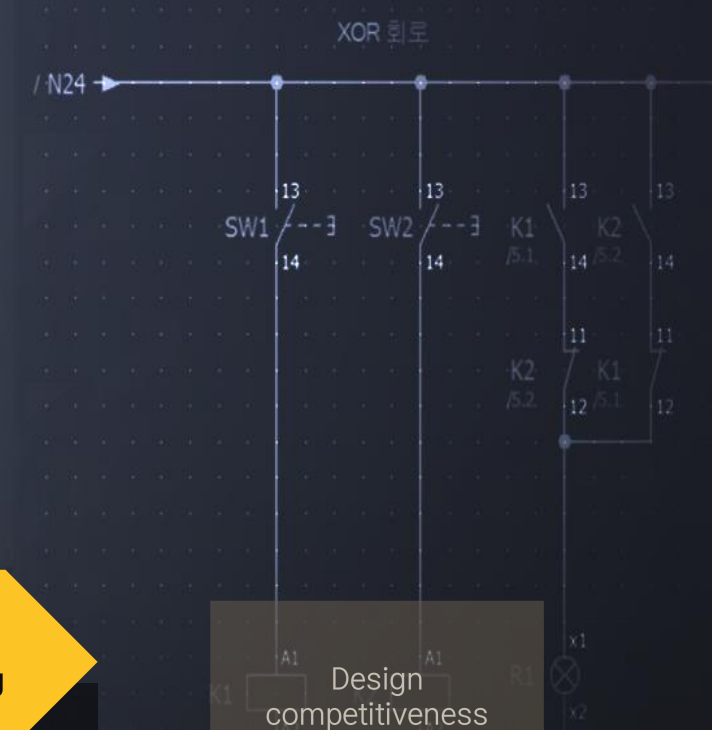
Design  
competitiveness

**Higher quality than  
international standards**

EPLAN DT Platform



- Automatic wire harness
- Saving of lead time
- Improvement of design and production process





Smart Manufacturing

# Manufacturing

Mass production in a short time,  
and **stable quality control system**

## Capability

- Human assets with rich experience of accumulated projects
- Circuit diagram of PLC, power supply and communication
- BOM Management
- ERP system for Material procurement
- Simulation of instrument arrangement
- Compliance with a delivery date

## Productivity

- Mass production in a short time
- Block-type and parallel-module production line
- Automatic facilities to save production time
- Time saving with simultaneous and multiple process

01  
Competitive  
production cost

02  
Reduction of  
production cost

Improvement  
of cost and  
quality

04  
Stable quality  
control system

03  
Consistent  
product quality

Reference



SK Hynix M Projects

posco



ISAAC ENGINEERING

THANK  
YOU

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