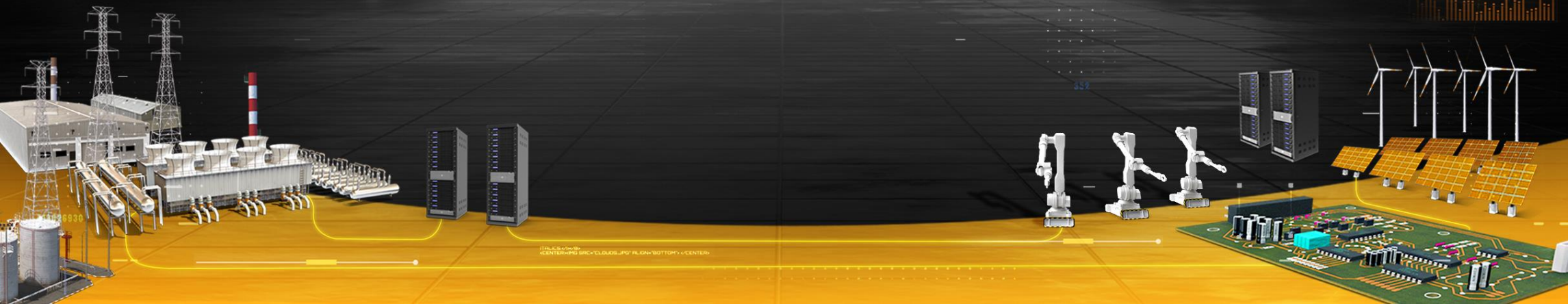


CLOUD
BASED IIoT

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

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

Jumping

Growth

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

- 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

- 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
270	403	332	444	428

Business field

Business field



OT
Operational Technology

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



IT
Information Technology

Big Data	PLM Digital Manufacturing 3D CAD 3D Visualization RTDB 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



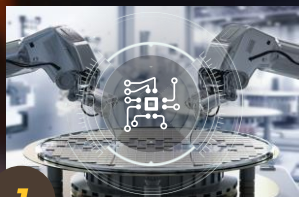
- 01 Semiconductor plant
- 02 Steel Plant
- 03 HVAC
- 04 Storage Battery for EV

- 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

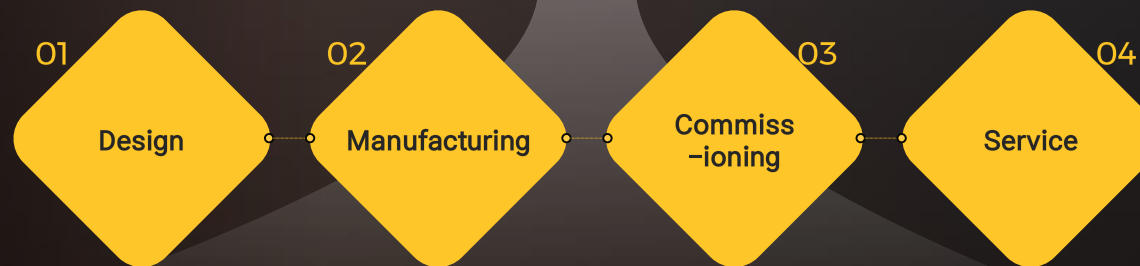
Automation

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

Motor

PLC

Drive

HMI

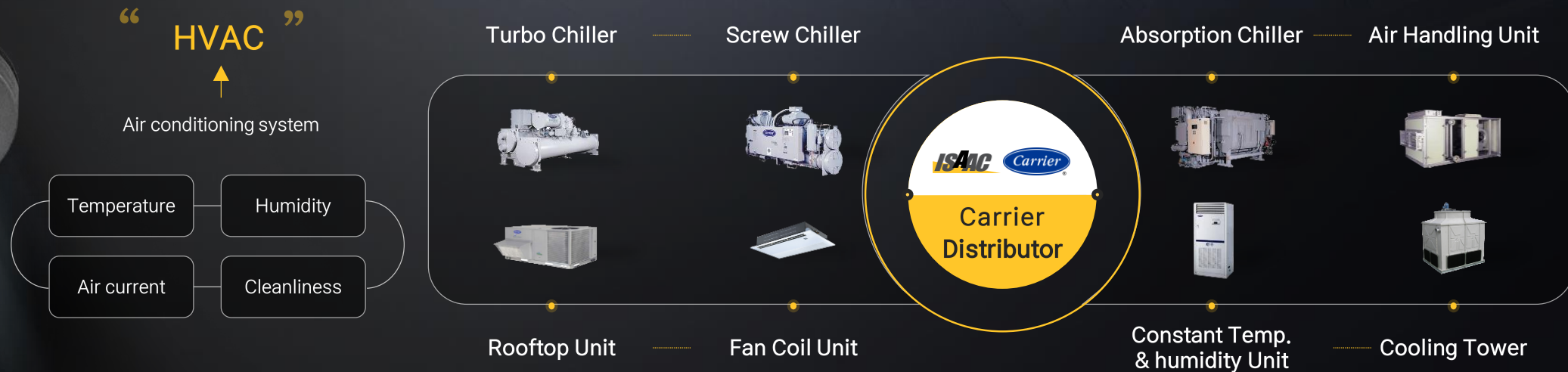
SCADA

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

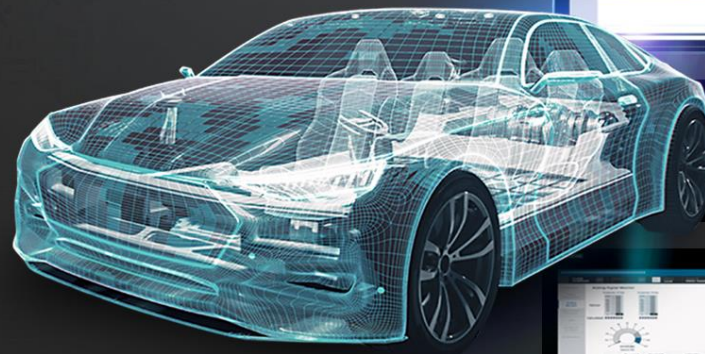
01 Electrode

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



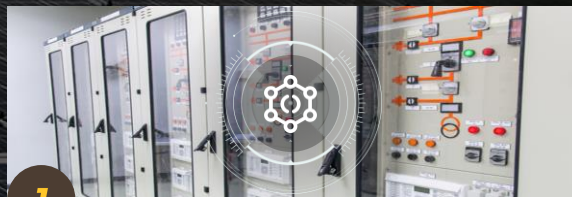
America Georgia Phase 2 UMS

Main Solution

PLC
Drive

HMI
SERVO

Smart Energy



1

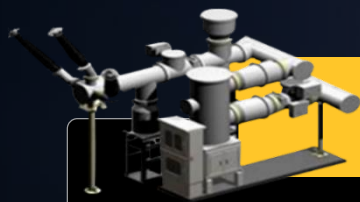
PDS



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

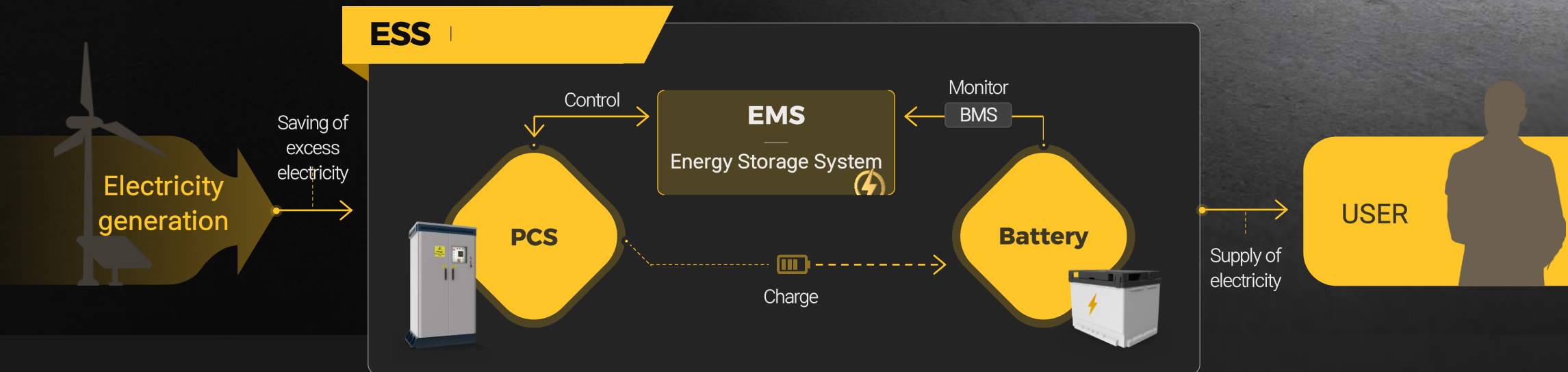
Solution

- 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



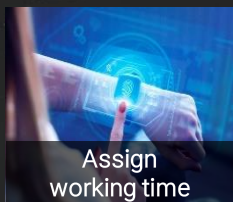
Production process design



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

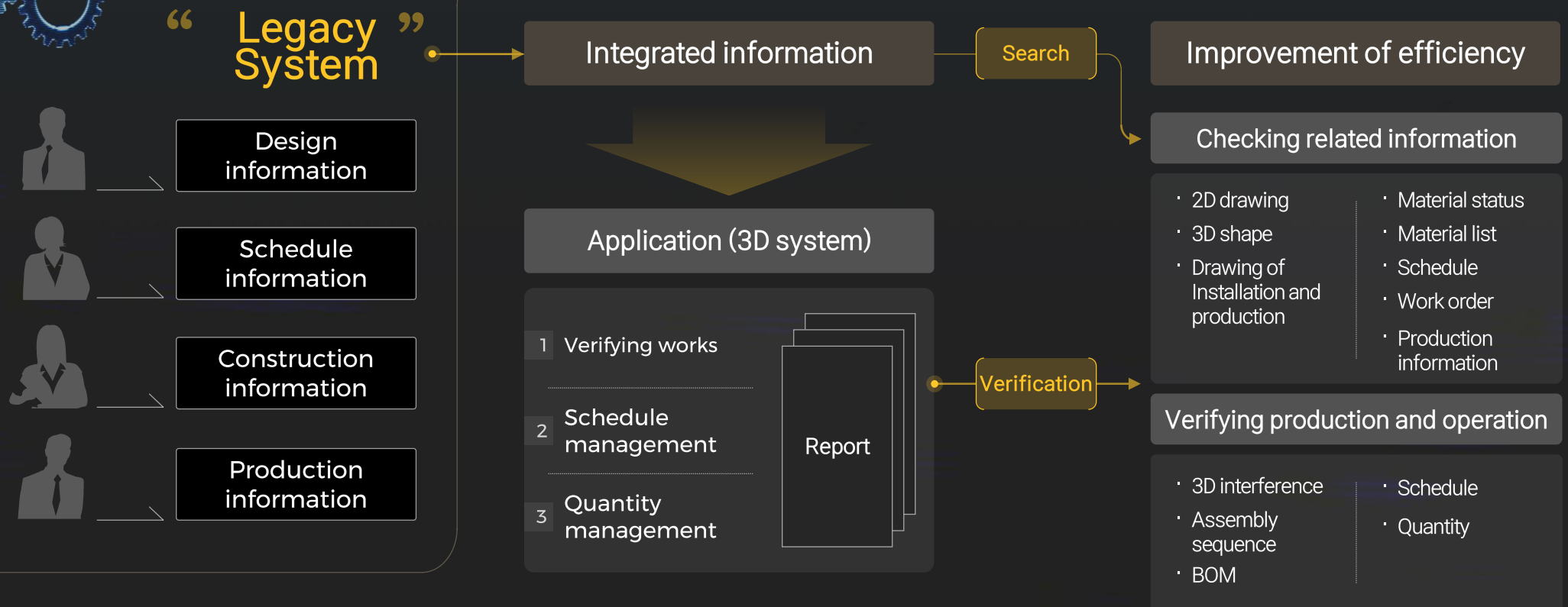
07 Increase of maintenance efficiency

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

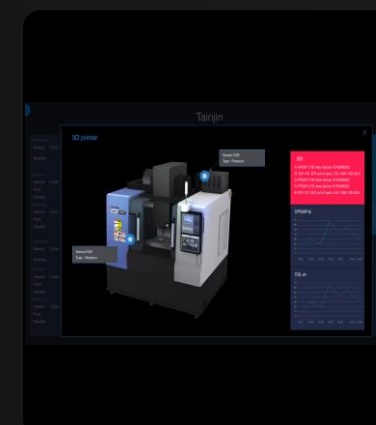
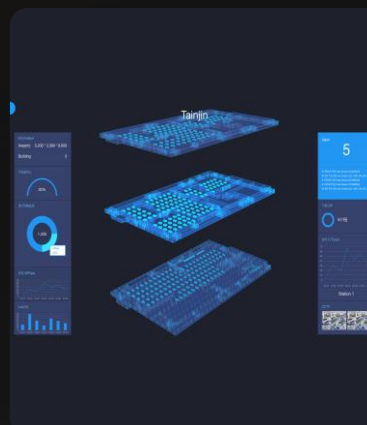
2 | Visibility

Intuitive
understanding of
situations

3 | Reliability

Real-time
monitoring of
key KPI

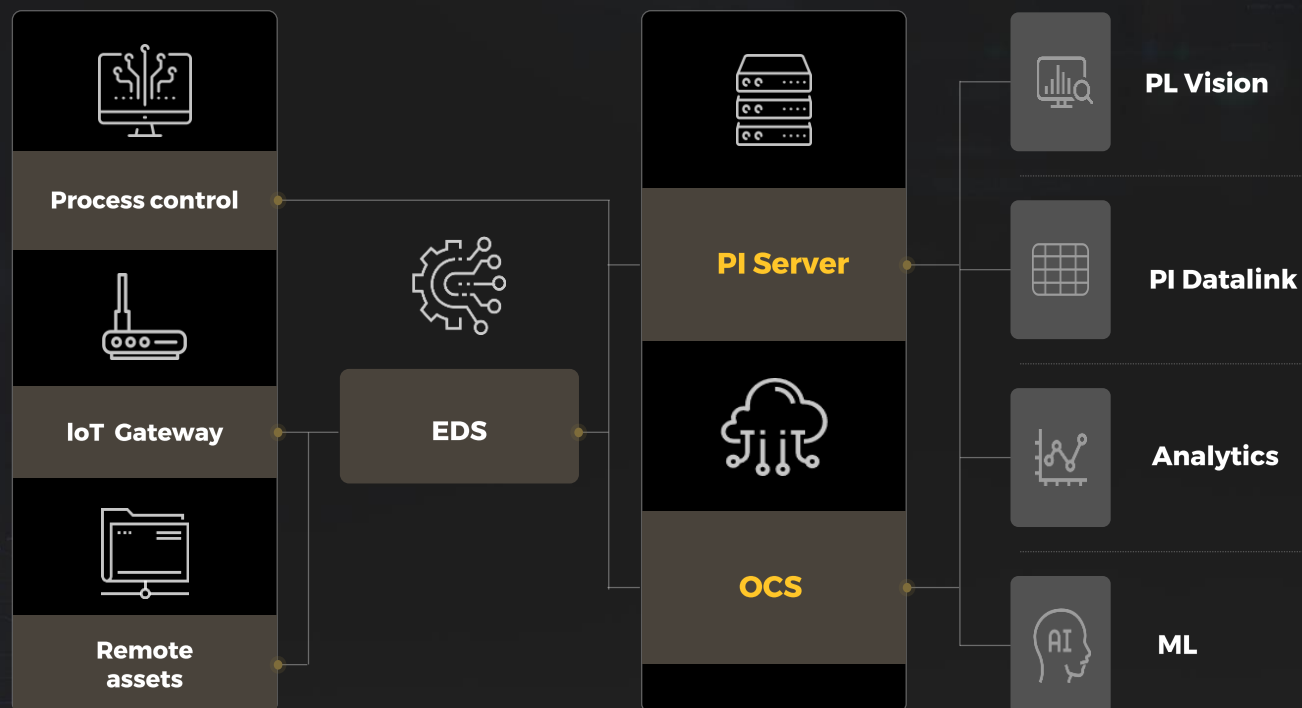
Fast decision-
making system



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

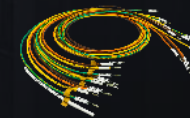
Excel-based electrical
& pneumatic engineering
drawing automation

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

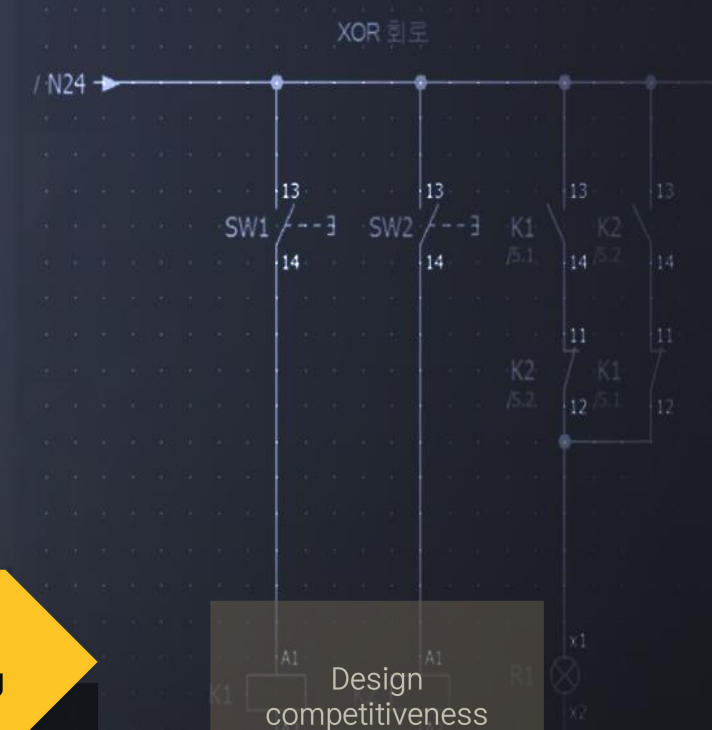
Design
competitiveness

**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

• **Location(HQ):** 15, Gunpocheomdansaneop 1-ro, Gunpo-si, Gyeonggi-do, 15881, S.Korea
• **TEL:** +82-31-361-0800 • **FAX:** +82-31-361-0808 • **Web page:** www.isaac-eng.com