



Pyunghwa Engineering Consultants

Leading 21st Century, Global Engineering Consultants



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01

An Overview of PEC

- 1. Company Overview**
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- 3. Business Area of PEC**



Company Overview

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Chairman's Message

PEC has been carrying out its responsibility for the infrastructure invested by the government and private sectors to create an abundant space for human beings through full spectrum of its engineering business solutions-planning, design, construction supervision and maintenance services in the field of construction engineering.

As a result of continuous efforts in developing overseas construction markets based on our accumulated expertise and rich experience, PEC is now the leader of **"Globalization"** of South Korean civil engineering technology by carrying out numerous civil engineering projects in more than 20 countries in the world.

It is our pleasure to proudly present the introduction of our Company.

With gratitude for the trust that you has shown towards PEC, we will devote ourselves to make a successful global engineering, which contributes fully to the society and to stay competitive internationally through a variety of services in the construction engineering filed.

Sincerely yours,

Jae-Won Kwon
Chairman/CEO, PEC

A stylized handwritten signature in black ink, appearing to read 'Jae-Won Kwon', is shown next to a black pen.



Profile of PEC

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Corporate Establishment

Founded in 1995

Chairman

Jae-won, Kwon

The Number of Employees

680 (M.S : 164, Ph.D : 37, P.E : 166)

Vision

Global Engineering Company, 2020 Global Top 100

ENR

210th in Top 225 International Design Firms 2016





Business Area of PEC

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● Transportation



ROAD &
HIGHWAY
TRANSPORTATION
& PLANNING



HIGH SPEED
RAILWAY
MRT/LRT



TUNNEL &
GEOTECHNICAL



PORT & MARINE
INFRASTRUCTURE
SAFETY

● Bridge & Structure



ROAD
BRIDGES



METROS
(ELEVATED &
UNDERGROUND)



SUPER LONG
SPAN BRIDGES



CABLE-STAYED
BRIDGES



● Water Sector



FLOOD
CONTROL



WATER USE



ENVIRONMENT



WATER
TREATMENT

● Human Settlement



URBAN
PLANNING



NEW CITY &
INDUSTRIAL
COMPLEX



SITE CIVIL
WORKS



LANDSCAPE
ARCHITECTURE

● Plant Engineering



POWER PLANT



ENVIRONMENTAL
PLANT



INDUSTRIAL
PLANT



RENEWABLE
ENERGY



Organization

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02

Core Business Sectors & Projects

- 1. Transportation**
- 2. Bridge & Structure**
- 3. Water Sector**
- 4. Human Settlement**
- 5. Plant Engineering**



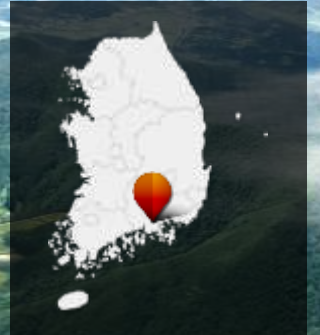


1. Transportation

- Roads & Highways, Traffic Engineering , ITS & BRT
- Railway, Mass Rapid Transit & Light Rail Transit
- Tunnel & Geotechnical Engineering
- Marine & Coastal Engineering



Road construction work between Samjang~Sanchung (National Road No. 59) 🇰🇷 **KOREA**



평촌교
L=50m

산청터널
L=2,998m

신촌교
L=21m

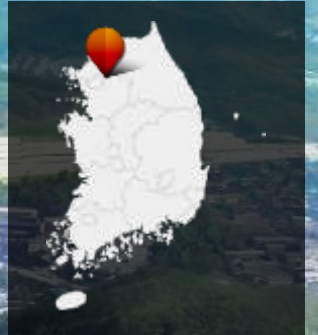
금서교
L=21m

- Cost : 93.7 billion won
- Period : 84 months
- Description of Project
 - L=6.0km(4 Lane)
 - Bridge : 3ea / 141m
 - Tunnel : 1ea / 2,998m
 - Intersection : 3ea

The Expressway Construction works between An-seong and Gu-ri (Section No. 10) 🇰🇷 **KOREA**



- Cost : 300.6 billion won
- Period : 30 months
- Description of Project
 - L=4.25km(6 Lane)
 - Bridge : 4ea / 1,245m
 - Tunnel : 2ea / 1,875m



Bujeon-Masan Double Track Railway (Lot No. 4,5) 🇰🇷 **KOREA**



- Client : Korea Rail Network Authority
- Period : Jul. 2014 ~ Aug. 2020(Ongoing)
- Outline :
 - Length : 13.5km , Earthwork : 4.6km,
 - Station : 1EA , Bridge : 3.0km(14EA)
 - Tunnel : 5.9km(2EA)
- Cost : US\$ 5,683,128

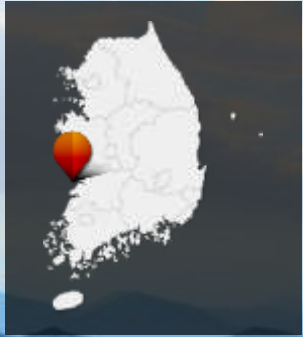


2. Bridge & Structure

- Road Bridges
- Metros (Elevated & Underground)
- Super Long Span Bridges
- Cable-Stayed Bridges



Dandeung Bridge 🇰🇷 *Gunsan, KOREA*



- Suspension Bridge with single pylon
- D-shaped concrete pylon
- Main span length is 400m
- Basic and Detailed Design

Masirah Causeway *Oman*



- Project : Feasibility Study (2015~2017)
- Client : MOTC, Oman
- Total bridge extension 21.0km,
1 pylon cable-stayed bridge (200 + 300 = 500m)

1915 Canakkale Bridge **TURKEY**



- Length : The world's longest suspension bridge 2,023m (currently 1,991m Akashi Kaikyo Japan)
- Service: Feasibility Study & Basic Design (2016~2017)
- Cost : 3.5 trillion won



3rd Bosphorus Bridge **TURKEY**



Asia

Black Sea

Europe



- First Cable-Suspension Hybrid Bridge
- Main span length is 1,408m
- Hybrid girder (main span : Steel, side span : Concrete)
- Concrete Pylon (H=320m)
- Construction Engineering Service

Sungai Kebun Bridge **BRUNEI**



- Concrete Cable Stayed Bridge
- Single-cell concrete box girder with internal bracing
- Single concrete Pylon : Symbolizing the Floating Mosque
- Main span length is 300m
- Basic and Detailed Design & Construction Engineering

The Other Bridges

01 Green Field Ganga Bridge  **INDIA**



02 Dangi Bridge  **TAIWAN**



03 Padma Bridge  **BANGLADESH**



04 PMB Bridge PMC  **BRUNEI**





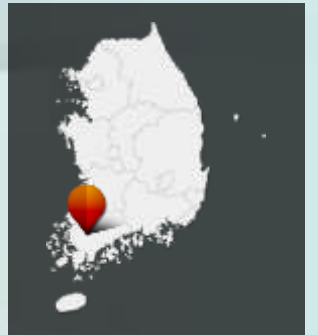
3. Water Sector

- **Water Supply, Wastewater & Sanitation**
- **Water Resources Development, Irrigation & Drainage**
- **River Improvement, Flood Control & Disaster Mitigation**



Yeongsan River Restoration Project Section 2

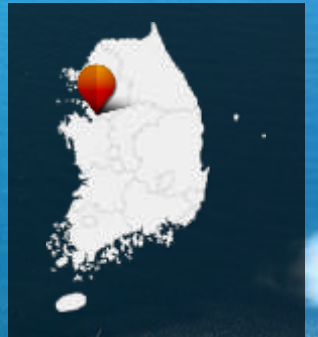
 **Naju, KOREA**



- Natural River Improvement : 12.29km
- Multi-Functional Weir : Movable Weir(L=184m)
- Water Gate(L=36.5m, H=7.13m)

Drainage Sluice Gate Expansion of Asan-Bay Seawall

 ***Pyeongtaek, KOREA***



- Purpose of Project : Flood prevention of Ansung stream adjacent area
- Drainage sluice gate construction
- Bridge expansion construction

Dongbok Raw Water Conveyance Tunnel Construction

 **Hwasun, KOREA**



- Basic Design
- Scope of Works
 - Raw Water Transmission Tunnel :
L=12.124km, D=2.1m
 - Intake Tower & Access Bridge
 - Influent Channel: L=297m, B=4~15m
 - Raw Water Transmission Pipe: L=60m

Conveyance Capacity

83,000m³/day

Water Conveyance Tunnel

Dia.2,000~2,100mm, Length.12.1km



4. Human Settlement

- **Urban/Regional Planning & Urban Civil Works Design**
- **Private Funded Development, Tourism & Leisure Projects**
- **Defense & Security Installation Projects**
- **Landscape Architecture & Aesthetics**



Overseas Urban Planning_Project

Hai Phong New town Development



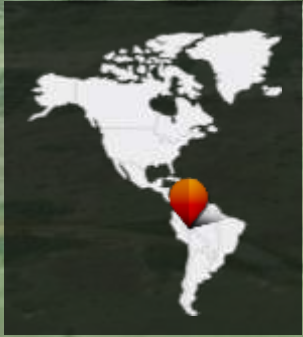
Vietnam



- Area : 1,695ha
- Period: : 2007 - 2010
- Population 123,000 People

Site Civil Works Design_Overseas

Santa Cruz New City Development **Bolivia**



- Area : 5,778ha
- Period : 2016 - 2018
- Client : GEL
(Grupo Empresarial Lafuente)
- New city development introduced Smart City

Landscape Architecture Design

Hongcheon Arboretum Construction Project **KOREA**



- Area : 19 ha
- Period : 2011 - 2013
- 12 Theme park(Zeus garden, Hera garden, Nectar garden etc.)
- Visitor center, Green House etc.

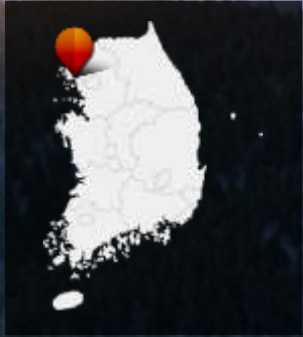


Landscape Resort Design

Ganghwa family Resort



Incheon, KOREA



- Area : 65ha
- Period : 2016 - 2017
- Ski Resort, Condominium, Community Center, Luge Course, etc.



5. Plant Engineering

- **New/Renewable Energy & Waste Heat to Power Generation Plants**
- **Organic/Combustible Waste Gasification Plants**
- **Automated Waste Collection System**
- **Solid Waste & Wastewater Treatment Plant Facilities**



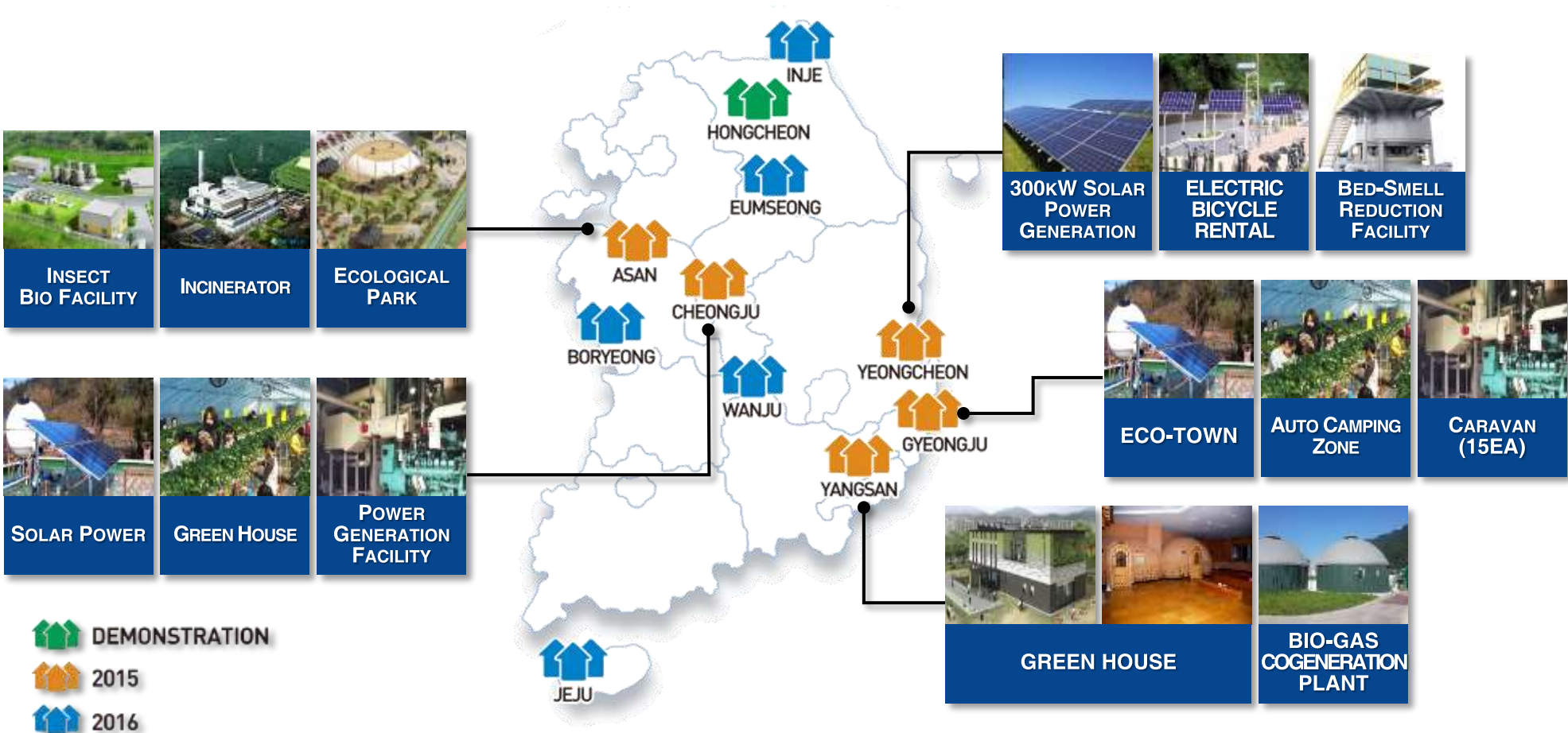
Kangchun SRF-Fired Power Generation

 **Yeoju, KOREA**



- Project Area : 8,066m²
- Capacity : Steam 61ton/hr(BMCR)
- Generation : 9.9MW
- Water Cooled Stoker Type x 1 unit
- ※ SRF ; Solid Refuse Fuel

ECO-FRIENDLY ENERGY TOWN **KOREA**



Hongcheon livestock wastewater Biogas Plant Project



KOREA



- Project Area : 3,575m²
- Project Type : Anaerobic Digestion
- Livestock Manure : 80ton/d
- Organic Waste : 20ton/d
- Output of Bio-Gas : 3,500Nm³/d

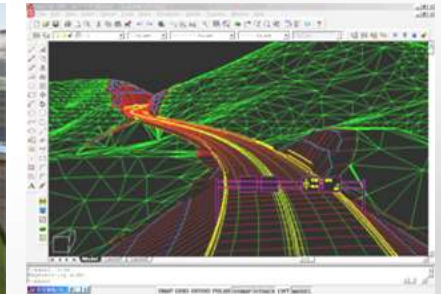
R&D Participation

- Development of an intellectual and optimal program for road design
- Road design technology Pro-environmental and intellectual
- Development of core technology for SMART Highway
- Carbon neutral mode road design development
- Testbed design for long span bridge
- Development of flood avoidance technology for the next generation



Development Of design programs

- RD 2000 (RD SMARTpro)
 - Road and rail design program
- ei-ROAD
 - Pro-environmental and intellectual road design program



Development of new technologies & Value Eng.

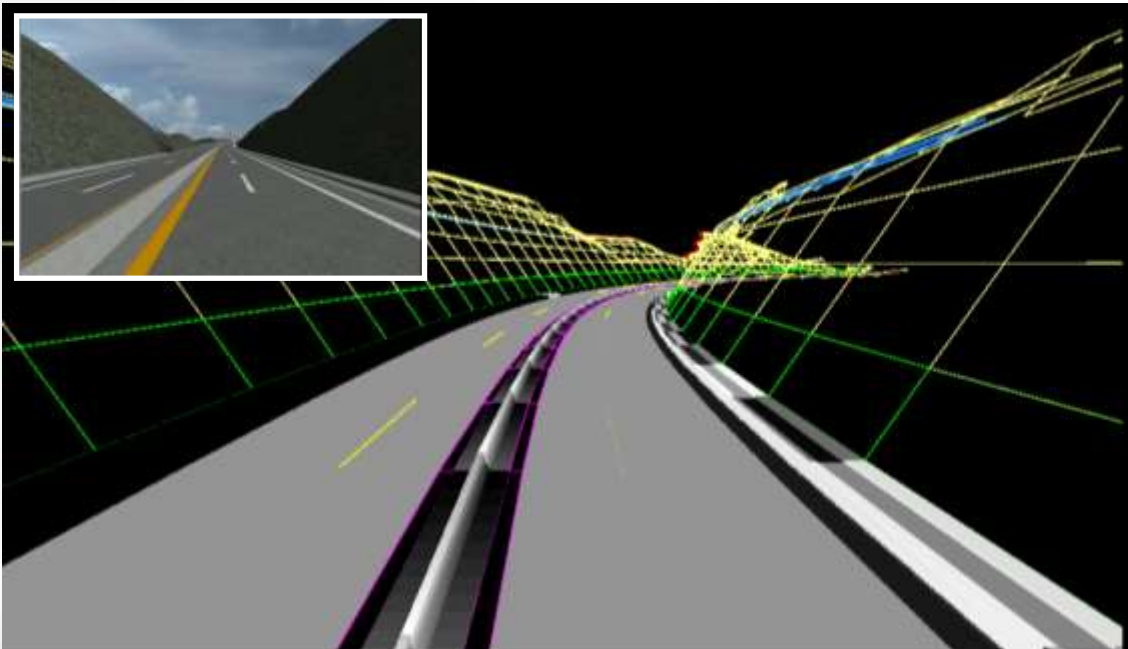
- High intensity and low weight wedge method
- Review of design economic feasibility of roads, harbors, rivers, environmental facilities, etc.

Development of state-of-the-art green and low carbon design and growth technology

Development of Design Program

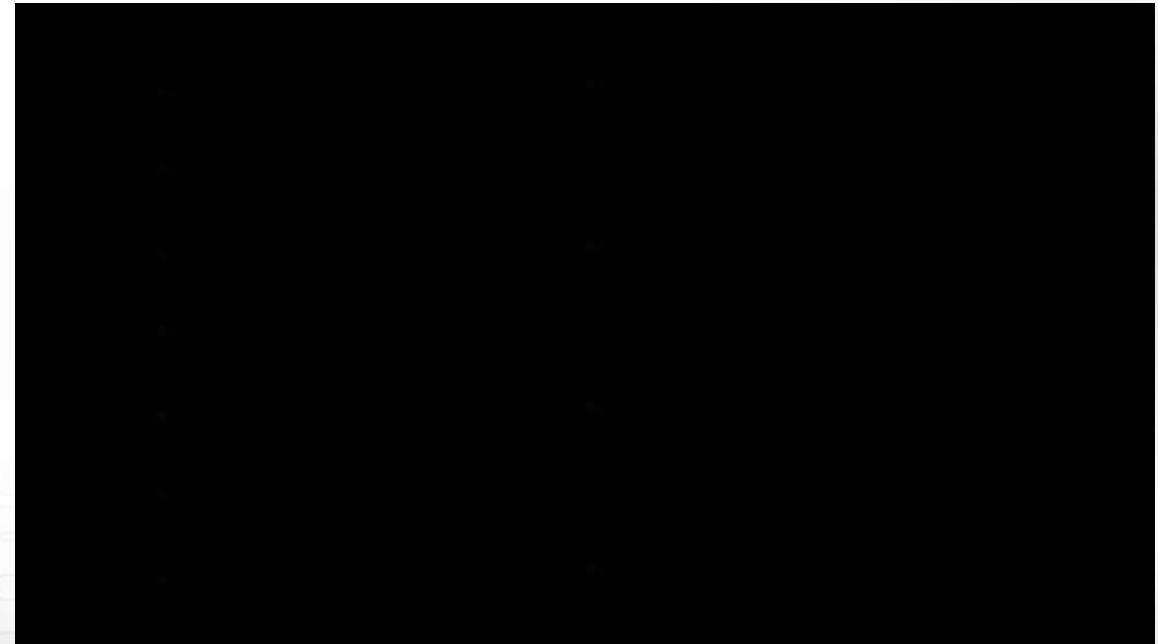
01 RD 2000(RD SMARTpro)

- Road and rail design program
- Operating on AutoCAD platform, RD-2000 featured hassle free horizontal/vertical alignments planning, design, quantity take-off and cost estimation as well as 3-D simulation.



02 ei - ROAD

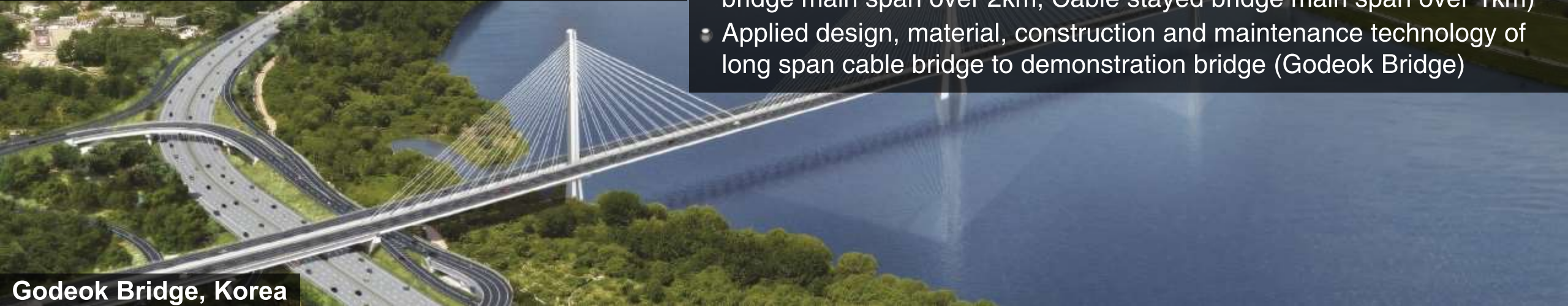
- Pro-environmental and intellectual road
- The nation's first Pro-environmental intelligent optimal design system development in a field of road
- Searching efficient optimum route based on Pro-environmental road design handbook



Super Long-Span Bridge Project



- Duration : 2008 ~ 2015
- Developed the world's first dedicated limit state design for reliability-based cable bridges
- Developed of Aerodynamic Girders and stabilization system (Suspension bridge main span over 2km, Cable stayed bridge main span over 1km)
- Applied design, material, construction and maintenance technology of long span cable bridge to demonstration bridge (Godeok Bridge)



Godeok Bridge, Korea



2nd Namhae Bridge, Korea



Turkey 3rd Bosphorus Bridge

Development of Cooperative Automated Driving Highway System KOREA



Infrastructure Tech. R&D



- Client / Duration : KAIA* / 2015 ~ 2017
- Scope of Works :
 - Development of Road Geometry Design
 - Guidelines for Supporting Cooperative Automated Driving
 - Interchange Spacing / Interchange Type / Design Criteria of Ramp

※ KAIA; Korea Agency for Infrastructure Technology Advancement

03

Global Activities





Global Activities

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Sample Overseas Projects (On-Hand)

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Region	Projects	
Asia Pacific	India	Bihar New Ganga Bridge: D/D
	Indonesia	Indonesian palm oil production and the biomass power plant: D/D
	Myanmar	Eindu to Kawrareik Road Improvement Project: C/S
		Maubin–Pyapon Road Rehabilitation Project: C/S
	Bangladesh	Padma Multipurpose Bridge Project: C/S
	Laos	Laos Champasak connection between national roads: F/S
	Brunei	PMB Bridge, Road & Utilities Development: PMC
		Bridge Link across Sungai Brunei: Design Build
	Sri Lanka	ADB – Northern Roads Connectivity Project: C/S
		Hatton–Nuwara Eliya Road Improvement Project: C/S
		North Central and North Western Provinces, PIC-02: C/S
	Cambodia	Rural Roads Improvement Project– II : D/D & C/S
		TA-8784: Second Road Asset Management Project: C/S
		Dauntri Dam Development Project: D/D
	Vietnam	Lo Te – Rach Soi Highway Construction Project: D/D & C/S
		Vam Cong Cable–Stayed Bridge: D/D, P/S & C/S
		Haiphong Urban Transport Project: C/S
	Taiwan	Dangiang Bridge Project: D/D



Sample Overseas Projects (On-Hand)

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Region	Projects	
Middle East	Kuwait	Kuwait Causeway Link Main Bridge: Design Build
	Oman	Causeway between Shanna and Masirah Island: F/S
	Iran	road construction market research and investigation of policy support method : F/S
East Europe / CIS	Azerbaijan	World Bank – Baku–Shamakhi Highway Project: C/S
	Georgia	Update of Feasibility Studies for E-60 Highway Section: D/D
	Turkey	Third Bosphorus Crossing Bridge: T/D & Construction Design
		Canakkale Bridge Project: F/S
Africa/ Americas	Ghana	Wa City Water Supply Project: F/S & T/K Design
	Uganda	Second Nile (Jinja) Cable–Stayed Bridge Project: C/S
	Peru	Road Construction of Periurbana: F/S
		Huacho Wastewater Treatment Plant Project: F/S
	Chile	Chacao Bridge Project: C/S
	Paraguay	Ñemby Sewage treatment Plant Project: F/S
	Bolivia	Santa Cruz New City (A: 5,778ha) : D/D



Vision

GLOBAL ENGINEERING COMPANY

2020 GLOBAL TOP 100

2020 INT'L REVENUE \$ 100 MILLION



Thank you

