# BROCHURE

EVNPECC4

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VIETNAM ELECTRICITY

POWER ENGINEERING CONSULTING JOINT STOCK COMPANY 4

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TRUST
BUILDING

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VIETNAM ELECTRICITY

POWER ENGINEERING CONSULTING JOINT STOCK COMPANY 4

# 01 Message from the chairman

Power Engineering Consulting Joint Stock Company 4 ("PECC4") is one of the leading Power Engineering Consulting Companies in the field of power projects construction consulting in Vietnam. PECC4 kindly provides to Clients the following services: construction consulting; bidding consulting; projects management consulting; planning consulting; survey, engineering consulting, construction supervision of power, civil, industrial, traffic, irrigation projects and technical infrastructure,…etc.

With more than 40 years of experience in the engineering consulting; With a workforce of highly professional, rich experienced, active, creative, well-trained in both domestically and abroad management executives, experts, engineers; With advanced technology and facilities, PECC4 ensures to provide a wide array of consulting services satisfying all Clients' requests. Once engaging with Power Engineering Consulting Joint Stock Company 4, you are confident about the quality of our consulting services and products.

The objectives of PECC4 are to comprehensively and sustainably develop the field of consulting services, concentratively expand the field of power projects investment, in order to bring the maximum profit to the Company, Clients and Shareholders.

The action motto of PECC4 is trust building to satisfy the Clients' confidence.

We sincerely thank and hope to receive support and cooperation from Clients.

CHAIRMAN

**LE CAO QUYEN**

**Trust**
Building

# 02 Key Milestones

HUÂN CHƯƠNG ĐỘC LẬP
HẠNG NHÌ - NĂM 2010

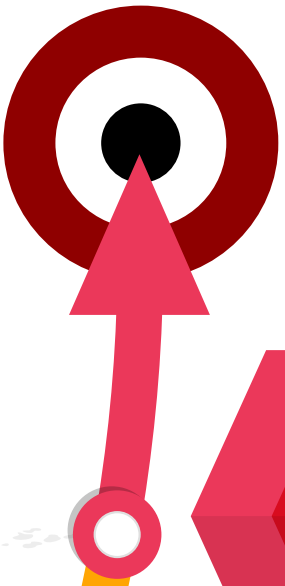
HUÂN CHƯƠNG ĐỘC LẬP
HẠNG BA - NĂM 2005

HUÂN CHƯƠNG LAO ĐỘNG
HẠNG NHẤT - NĂM 1995

**With the achievement of more than 45 years continuously completing responsibilities with excellent results, PECC4 was honored many awards by the State:**

- 01 Second Class Independence Order (2010)
- 01 Third Class Independence Order (2005)
- 01 First Class Labor Order (1995)
- 01 Second Class Labor Order
- 02 Third Class Labor Order

And many Certificate of merits, Emulation flags of the Government, the Ministry of Industry and Trade, People's Committee of Khanh Hoa Province, Vietnam Electricity and many orders, Prime Minister's Certificate of merits for subordinate units and excellent individuals of the Company.



4

After 45 years of building and developing, PECC4 has been growing exponentially in every aspect. PECC4 has carried out survey, engineering for hundreds of power plants and power network projects in the nationwide and neighboring countries such as Laos, Cambodia.

3

**1/8/2007**

In 2007, Power Engineering Consulting Company 4 was converted into Power Engineering Consulting Joint Stock Company 4 (PECC4), Vietnam Electricity holds the governing shares - was the first company among four power engineering consulting companies under EVN completing the transformation of a listed joint stock company on stock exchange market and officially having operated since 01/08/2007.

2

**3/6/1999**

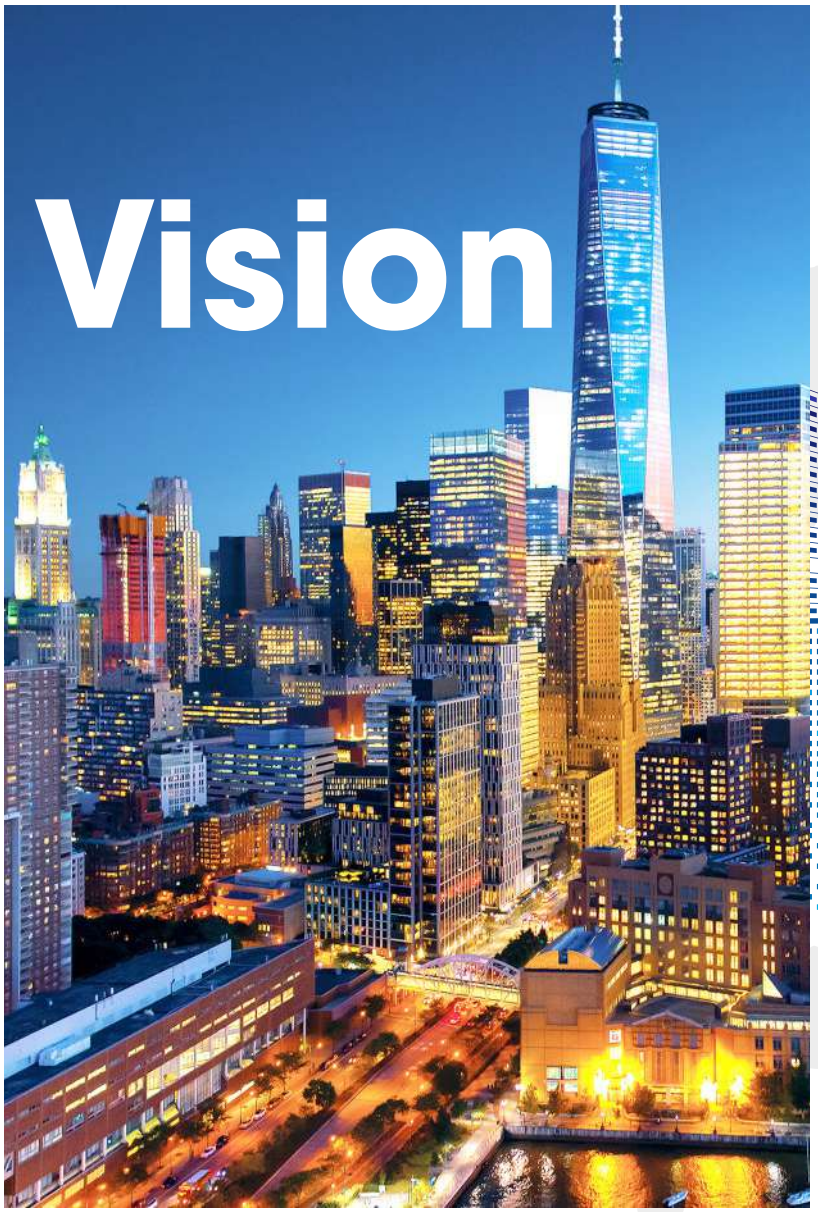
The Ministry of Industry decided to establish Power Engineering Consulting Company 4, a subsidiary of Vietnam Electricity.

**14/7/1976**

Power Engineering Consulting Joint Stock Company 4, formerly known as the Southern Power Planning and Designing Sub-Institute, was founded on 14/07/1976, was the first unit specializing in power network's survey and engineering in the Southern region after the Liberation Day.

03

# Vision



**We strive to brand EVNPECC4 as a strong energy consulting service provider in Vietnam and internationally.**

# Mission

For the sustainable development and national energy security; for the benefits of customers, employees and partners;

EVNPECC4, with creativity, expertise, and in-depth industry knowledge, always provide professional consulting service in energy sector with the most optimal and effective solutions.

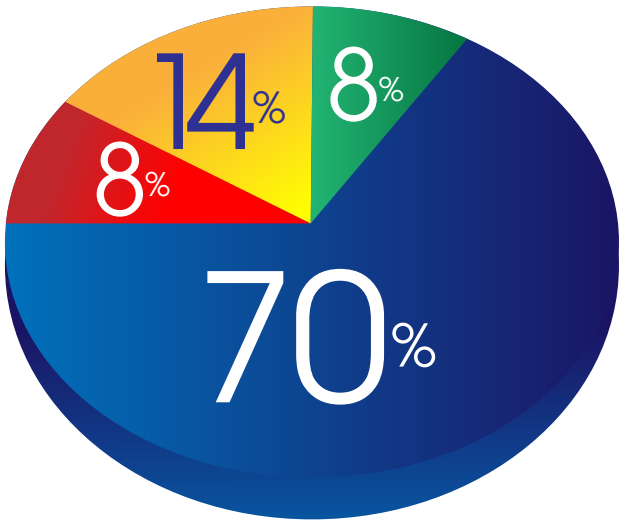
# Core values

In operation as well as in other social activities, all officers and employees of the Company commit to maintain and implement the following core values:

**1. Professionalism and Solidarity.**
**2. Integrity and Transparency.**
**3. Innovation and Creativity.**
**4. Cooperation and Sharing.**

# 04 Organizational Chart

# 05 Human Resources




- POSTGRADUATE
- BACHELOR
- PROFESSIONAL & TECHNICAL COLLEGE
- WORKERS

MORE THAN
**447**
**EMPLOYEES**

**346**
BACHELOR AND POSTGRADUATE

**35**
PROFESSIONAL & TECHNICAL COLLEGE

**66**
WORKERS

# 06 Operating fields

- Construction engineering survey and investigation
- Planning, pre-feasibility study, feasibility study and engineering of construction works
- EPC contracting services
- Environmental supervising and monitoring consultancy
- Construction supervision of power and civil works
- Inspection on quality of projects
- In-house and on-site Laboratory and experiments for construction works
- Construction projects management
- Repair, maintenance and renovation of thermal power plants
- Energy audit
- Investment

# 07 Quality management

- **In 2004, the Company was granted the Certificate of Quality Management System in accordance with ISO 9001:2000 by BVQI - United Kingdom (now is Bureau Veritas Certification)**
- **In 2007, the Company was regranted the 1st Certificate of Quality Management System and the 2nd Certificate of Quality Management System was regranted in 2010 and converted to ISO 9001:2008.**
- **In 2018, the Company was assessed and granted the Certificate of Quality Management System in accordance with ISO 9001:2015 by Bureau Veritas Certification.**
- **In 2019, the Company was assessed and granted the Certificate of Quality Management System in accordance with ISO 9001:2015 by NQA.**

The Company has built, maintained, and effectively applied a quality management system in accordance with ISO 9001, proving its ability to provide consulting services for projects in a stable manner, meeting clients' requirements and statutory regulations. To better meet customer satisfaction, the Company has implemented a process of continuous improvement, maintained and ensured the quality management system in accordance with the requirements of customers, the Vietnamese Law, international regulations and standards.

Certificate of Registration

nqa

This is to certify that the Quality Management System of

**POWER ENGINEERING CONSULTING JOINT STOCK COMPANY 4 (PECC4)**

Head office: 11 Hoang Hoa Tham St., Loc Tho ward, Nha Trang City, Khanh Hoa Province, Vietnam

applicable to

**Providing Design Consulting and Design services, Construction Supervision, Survey Consultancy, Environmental Consultancy for Power projects including Thermal power, Hydropower, New and Renewable Energy and Power Grid projects up to 500KV and Provide service for testing constructional materials, In-Lab and In-Situ testing on physical – mechanical properties of soils, rocks and concretes**

has been assessed and registered by NQA against the provisions of

**BS EN ISO 9001 : 2015**

This registration is subject to the company maintaining a quality management system, to the above standard, which will be monitored by NQA.

Managing Director

Certificate No: 118876
Issue Date: 18 September 2019
Reissued: 18 September 2022
Valid Until: 18 September 2025
EAC Code: 34

UKAS MANAGEMENT SYSTEMS 0015

IAF

VIETNAM ELECTRICITY
**POWER ENGINEERING CONSULTING JOINT STOCK COMPANY 4**

EVNPECC4 Trust building

nqa global assurance

# QUALITY POLICY

**Power Engineering Consulting Joint Stock Company 4** is committed to continuous improvement of "Customer-oriented" Quality Management System:

I. Creating products and services of consulting and EPC with the best quality, satisfying Clients' reasonable requirements;

II. Products and services of consulting and EPC are always guaranteed regarding technical, socio-economic, environmental aspects;

III. Fully complying with the provisions of law, risk management in planning products and services of consulting and EPC;

IV. Training & attracting high quality human resources;

V. Investing in equipment, software, and applying advanced technology to improve the product and service quality of consulting and EPC.

All employees of **Power Engineering Consulting Joint Stock Company 4** are responsible to understand thoroughly and implement properly the issued Quality Policy./.

*Khanh Hoa, 15th June 2020*

**GENERAL DIRECTOR**

*(Signed)*

**Le Cao Quyen**

# 08 Survey & investigation consulting capability

# Scope of works

## TOPOGRAPHY


- Surveying, planning, technical design - budgeting of surveying and mapping works.
- Inspecting the quality of measuring and mapping works.
- Measuring and establishing of cadastral maps in various scales.
- Building database of measuring and mapping.
- Monitoring of deformation.
- Surveying power grid projects with voltage levels up to 500kV.
- Surveying traffic, irrigation, hydropower... works
- Planning site clearance and resettlement.
- Supervising - surveying construction.

## GEOLOGY

- Geological and geotechnical surveying for engineering design construction works and re-engineering design for built works.
- Exploratory surveying natural building materials.
- Grouting, reinforcing the foundation of civil and industrial construction works.
- Supervising - surveying construction.

## LABORATORY

- Testing of soil-rock properties, work foundations, construction materials and inspecting quality of projects.
- Testing, analyzing, assessing of environmental criteria.

# Experience

- More than 20 power source projects with capacity from 30MW - 1200MW.
- Planimetric survey in various scales from 1/5000 to 1/2000 around 20,000 ha.
- Mapped topographical profiles of more than 2,000 km.
- Surveyed more than 2,000 km of transmission lines with voltage level from 22kV to 500kV.
- Established cadastral map (VLAP project) of more than 3,000 ha.
- Drilled by machine over 170,000 m.

| NO. | PROJECT NAME | CAPACITY | INVESTOR |
|---|---|---|---|
| **HYDROPOWER PROJECTS** | | | |
| 1 | Bac Ai Pumped-storage Hydropower | 1200 | Power Projects Management Board No.3 |
| 2 | Ban Uon (Trung Son) Hydropower | 260 | Trung Son Hydropower PMB |
| 3 | Dong Nai 6&6A Hydropower | 225 | Duc Long Gia Lai JSC |
| 4 | Nam Na Hydropower | 200 | Son La Hydropower PMB |
| 5 | Se Kong Hydropwer | 190 | EVN International JSC (EVNI) |
| 6 | Hoi Xuan Hydropower | 90 | Vietnam Electricity Construction Corporation |
| 7 | Buon Tua Srah Hydropower | 86 | Hydropower PMB No.5 |
| 8 | Srepok 4 Hydropower | 70 | Dai Hai Power Development and Investment JSC |
| 9 | Krong H'nang Hydropower | 65 | Song Ba Ha Power Development and Investment Company |
| 10 | Srepok 4A Hydropower | 64 | Buon Don Hydropower JSC |
| 11 | Co Bi Hydropower | 50 | Hydropower PMB No.2 |
| 12 | Song Tranh 3 Hydropower | 49 | Mien Trung JSC |
| 13 | La Ngau Hydropower | 46 | La Ngau Hydropower JSC |
| 14 | Nam Muc Hydropower | 44 | Nam Muc Hydropower JSC |
| 15 | Nho Que 2 Hydropower | 42 | Nho Que Power Development and Investment JSC |
| 16 | Nho Que 1 Hydropower | 32 | Northen Electricity Development and Investment JSC (NEDI 1) |
| 17 | Song Giang Hydropower | 30 | Song Giang Hydropower JSC |
| 18 | Tr'Hy Hydropower | 30 | Financial and Business Solutions JSC |
| 19 | Ea Krong Rou Hydropower | 28 | Mien Trung Power Investment and Development JSC |
| 20 | Thac Ca Hydropower | 22 | Underground Works Construction JSC |

| NO. | PROJECT NAME | CAPACITY | INVESTOR |
|---|---|---|---|
| 21 | Son Giang Hydropower | 10 | Son Giang Power JSC |
| 22 | Nam Pan Hydropower | 28 | Global Petrol Power JSC |

## 500kV TRANSMISSION LINE PROJECTS

| | | | |
|---|---|---|---|
| 1 | 500kV North – South Transmission Line Circuit 1 ( Da Nang - Buon Me Thuot) | 436 km | EVN |
| 2 | 500kV Pleiku – Phu Lam 1 Transmission Line ( Dong Nai - Phu Lam) | Survey | EVN |
| 3 | 500kV Pleiku – Dung Quat – Da Nang Transmission Line ( Pleiku – Dung Quat) | Survey | EVN |
| 4 | 500kV North – South Transmission Line Circuit 2 ( Ha Tinh – Nho Quan) | Working with PECC1 | EVN |
| 5 | 500kV Quang Ninh – Thuong Tin Transmission Line | 2x148.9 km | EVN |
| 6 | 500kV Quang Ninh – Mong Duong Transmission Line | 2x25.157 km | EVN |
| 7 | 500kV Transmission Line connecting Thang Long Thermal Power Plant | 2x5 km | EVN |
| 8 | 500kV Pleiku – My Phuoc – Cau Bong Transmission Line | 442 km | EVN |
| 9 | 500kV Quang Trach – Doc Soi Transmission Line | 500 km | EVN |
| 10 | 500kV Nam Dinh – Pho Noi Transmission Line | 124 km | EVN |
| 11 | 500kV Nam Dinh – Thanh Hoa Transmission Line | 76 km | EVN |
| 12 | 500kV Van Phong – Vinh Tan Transmission Line | 140 km | EVN |

## 500kV SUBSTATION PROJECTS

| | | | |
|---|---|---|---|
| 1 | 500kV DakNong Substation and Branch | 500/220/35kV Substation - 2x450MVA - NR 2x1730m | Southern Vietnam Power Projects Management Board |

| NO. | PROJECT NAME | CAPACITY | INVESTOR |
|---|---|---|---|
| 2 | 500kV Quang Ninh Substation | Substation 500/220/35kV -2x450MVA 220/110/22-1x125MVA | Northen Vietnam Power PMB |
| 3 | 500kV Thanh My Substation and Branch | Substation 500/200/35kV -2x450MVA – NR 500kV x 8.935km | Central Vietnam Power PMB |
| 4 | 500kV Pho Noi Substation and connecting branch | 220kV 2x0.916km 2x600MVA 4x0.6km + 4x5.2km | Northen Vietnam Power PMB |
| 5 | 500kV Pleiku Substation Capacity Upgrading | Transformer 500/220/35kV-450MVA Transformer 220/110/22kV-125MVA | Power Transmission Co. No.3 |
| 6 | 3rd transformer installation at 500kV Pleiku Substation | Transformer 500/220/35kV-450MVA | Power Transmission Co. No.3 |
| 7 | 2nd transformer installation at 500kV Quang Ninh Substation | 1x450 MVA | Power Transmission Co. No.1 |
| 8 | 500kV Pleiku 2 Substation | 2x450 MVA | Central Vietnam Power PMB |
| 9 | 500kV Lai Chau Substation | 2x450 MVA | Northen Vietnam Power PMB |
| **THERMAL POWER AND RENEWABLE ENERGY PROJECTS** | | | |
| 1 | Vung Ang 2 Coal - Fired Thermal Power Plant | 1320 | VAPCO |
| 2 | Vung Ang 1&2 Coal - Fired Thermal Power Plant (Survey for shared infrastructure) | 1320 | VAPCO |
| 3 | POSCO Steel Complex Coal - Fired Thermal Power Plant | 1100 | POSCO Korea |
| 4 | Cong Thanh Coal - Fired Thermal Power Plant | 600 | Cong Thanh Cement JSC |
| 5 | An Phong Wind Power Plant | 180 | Thuan Phong Energy Development JSC |
| 6 | Lien Nghia - Tran De Wind Power Plant | 100 | Lien Nghia JSC |
| 7 | Hai Ninh Wind Power Station | 25 | KOPEC Korea |
| 8 | EVN Phuong Mai Wind Power Plant | 20 | NRPB – EVN |
| 9 | Da Mi Floating Solar Farm | 47.5 | Da Nhim – Ham Thuan – Da Mi Hydropower JSC |
| 10 | Phuoc Thai Solar Farm | 200 | Hydropower PMB No.5 |
| 11 | Song Binh Solar Farm | 200 | Hydropower PMB No.5 |

| NO. | PROJECT NAME | CAPACITY | INVESTOR |
|---|---|---|---|
| 12 | Se San 4 Floating Solar Farm | 47 | Hydropower PMB No.1 |
| 13 | Phong Phu Solar Farm | 50 | Trina Solar Co., Ltd |
| 14 | Phuoc Huu Solar Farm | 50 | Nha Trang Bay Investment JSC |
| 15 | An Phong Wind Power Plant | 80 | Thuan Phong Energy Development JSC |

# HYDRO

## CONSULTING

0

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# POWER

G CAPABILITY

9

# Experience

# Scope of works

- **Planning for hydropower development along river basin, planning for cascade hydropower along the river.**

- **Investigating and preparing environmental impact assessment reports, site clearance and resettlement plans for hydropower projects.**

- **Engineering hydropower projects in different stages and scales including: Investment report, investment project, technical design & total cost estimate, detailed design.**

- **Preparing proposal request and evaluating tender documents for procurement and construction bid package of hydropower projects.**

- **Engineering project appraisal in different stage.**

**PECC4 has provided consulting services for more than 40 projects with total installed capacity of 18,600 MW.**

## DOMESTIC PROJECTS

- Planning: 4 projects, total capacity of 14,600MW
- Investment report: 30 projects, total capacity of 2,500MW
- Technical design: 11 projects, total capacity of 720MW
- Detailed design: 9 projects, total capacity of 400MW
- Appraisal: 15 projects, total capacity of 1,400MW

## PROJECTS ABROAD

- National hydropower planning for Laos of 13,100MW
- Prepared investment project of Se Kong Hydropower (Cambodia) with capacity of 190MW

# Typical projects

## BAC AI PUMPED-STORAGE HYDROPOWER

**Installed capacity NIm:** 1,200 MW
**Main dam height:** 81 m (CFRD)
**Project classification:** Special class
**Scope of works:**
- Survey, investment report
- Survey, feasibility study
- Environmental impacts assessment
- Survey, technical design, bidding documents

## BUON TUA SRAH HYDROPOWER

**Installed capacity:** 86 MW
**Main dam height:** 83 m (ECRD)
**Project classification:** Class I
**Scope of works:**
- Survey, feasibility study (FS)
- Technical and detailed design
- Bidding documents
- Environmental impacts assessment
- Checking of construction elevation-coordinate control grids
- Foundation pit geological description of downstream and upstream coffer dams
- Geological description of foundation pits
- Survey, assessment of downstream landslide
- Dam safety evaluation

## TRUNG SON HYDROPOWER

**Installed capacity:** 260 MW
**Main dam height:** 83 m (RCC)
**Project classification:** Class I
**Scope of works:**
- Survey, pre-feasibility study (Pre-FS)
- Survey, feasibility study (FS), environmental impacts assessment (EIA)
- Survey, technical design, bidding document and bids evaluation
- Experiment and designing of RCC aggregate
- Geological description of foundation pits
- Setting out reservoir boundary landmarks
- Survey, calculation of dam failure scenarios and preparation of emergency preparedness plan
- Monitoring of dam displacement
- Work safety assessment via monitored data

| PROJECT NAME | LOCATION | PERIOD | SCALE (MW) | INVESTOR | STAGES | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | PFS | I | FS | TD | DD |
| **SURVEY, ENGINEERING** | | | **3,920** | | | | | | |
| **Bac Ai PSH** | Ninh Thuan | 2006-Now | 1,200 | Power PMB No.3 | ✔ | ✔ | ✔ | ☐ | ☐ |
| **Trung Son** | Thanh Hoa | 2004-2005 | 260 | Trung Son Hydropower PMB | ✔ | ✔ | ✔ | ✔ | ✔ |
| **Dong Nai 6&6A** | Gia Lai | | 225 | Duc Long Gia Lai JSC | ☐ | ✔ | ✔ | ☐ | ☐ |
| **Nam Na** | Lai Chau | | 200 | Son La Hydropower PMB | ☐ | ✔ | ☐ | ☐ | ☐ |
| **Se Kong** | Cambodia | | 190 | EVN International JSC (EVNI) | ☐ | ✔ | ✔ | ☐ | ☐ |
| **Hoi Xuan** | Thanh Hoa | 2006-2012 | 90 | Vietnam Electricity Construction Corporation | ☐ | ✔ | ✔ | ☐ | ☐ |
| **Buon Tua Srah** | Dak Lak + Dak Nong | 2001-2008 | 86 | Hydropower PMB No.5 | ✔ | ✔ | ✔ | ✔ | ✔ |
| **Phu Tan 2** | Dong Nai | 2006-2007 | 81 | Nhan Luat Power JSC | ☐ | ☐ | ✔ | ☐ | ☐ |
| **Srepok 4** | Dak Lak | 2004-2005 | 70 | Dai Hai Power Development and Investment JSC | ☐ | ✔ | ✔ | ✔ | ✔ |
| **Krong H'nang** | Dak Lak + Phu Yen | 2001-2007 | 65 | Song Ba Power Development & Investment JSC | ☐ | ✔ | ✔ | ✔ | ✔ |
| **Srepok 4A** | Dak Lak | 2009-2014 | 64 | Buon Don Hydropower JSC | ☐ | ✔ | ✔ | ✔ | ✔ |
| **Song Tranh 3** | Quang Nam | 2007-2008 | 49 | Mien Trung JSC | ☐ | ✔ | ✔ | ☐ | ☐ |
| **La Ngau** | Binh Thuan | 2007-2009 | 46 | La Ngau Hydropower JSC | ☐ | ✔ | ✔ | ✔ | ✔ |
| **Nam Muc** | Dien Bien | 2006-2007 | 44 | Nam Muc Hydropower JSC | ☐ | ✔ | ✔ | ☐ | ☐ |
| **Nho Que 2** | Ha Giang | 2006-2007 | 42 | Nho Que Power Development & Investment JSC | ☐ | ✔ | ✔ | ✔ | ✔ |
| **Nho Que 1** | Ha Giang | 2006-2009 | 32 | Northen Electricity Development & Investment JSC (NEDI 1) | ☐ | ✔ | ✔ | ✔ | ☐ |
| **Song Giang** | Khanh Hoa | 2005 | 30 | Song Giang Hydropower JSC | ☐ | ✔ | ✔ | ☐ | ☐ |
| **Tr' Hy** | Quang Nam | 2007-2008 | 30 | Financial and Business Solutions JSC | ☐ | ✔ | ✔ | ☐ | ☐ |
| **Ea Krong Rou** | Khanh Hoa | 2002-2003 | 28 | Mien Trung Power Investment & Development JSC | ☐ | ✔ | ✔ | ☐ | ☐ |

| PROJECT NAME | LOCATION | PERIOD | SCALE (MW) | INVESTOR | STAGES | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | PFS | I | FS | TD | DD |
| **Tra Xom** | Binh Đinh | 2006-2007 | 18 | Tra Xom Hydropower JSC | ☐ | ☐ | ✔ | ☐ | ☐ |
| **Nam Mo** | Nghe An | 2004-2006 | 17 | Ban Ve Hydropower JSC | ☐ | ☐ | ✔ | ☐ | ☐ |
| **Da Krong 1** | Quang Tri | 2004-2006 | 12 | Mien Trung Power Development JSC | ☐ | ✔ | ✔ | ☐ | ☐ |
| **Po E** | Quang Ngai | 2006-2007 | 12 | Po E Hydropower JSC | ☐ | ☐ | ✔ | ☐ | ☐ |
| **APPRAISAL** | | | **1,888** | | | | | | |
| **Lower Se San 2** | Cambodia | 2008 | 400 | EVN International JSC (EVNI) | ✔ | ☐ | ✔ | ☐ | ☐ |
| **Srepok 3** | Dak Nong + Dak Lak | 2006-2007 | 220 | Hydropower PMB No.5 | ☐ | ☐ | ✔ | ☐ | ☐ |
| **Dak Mi** | Quang Nam | 2006-2007 | 190 | Sok Phu Mieng Hydropower PMB | ☐ | ☐ | ☐ | ✔ | ☐ |
| **An Khe** | Gia Lai + Binh Đinh | 2005-2006 | 173 | Hydropower PMB No.3 | ☐ | ☐ | ✔ | ☐ | ☐ |
| **A Luoi** | Thua Thien - Hue | 2006-2007 | 170 | Mien Trung Power Development JSC | ☐ | ☐ | ☐ | ✔ | ☐ |
| **Song Bung 4** | Quang Nam | 2008 | 164 | Song Bung 4 Hydropower PMB | ☐ | ☐ | ☐ | ✔ | ☐ |
| **Nho Que 3** | Ha Giang | 2006-2007 | 110 | Nho Que 3 Hydropower JSC | ☐ | ☐ | ✔ | ☐ | ☐ |
| **Lower Se San 1 / Se San 5** | Cambodia | 2008 | 96 | EVN International JSC (EVNI) | ✔ | ☐ | ✔ | ☐ | ☐ |
| **Da M'bri** | Lam Đong | 2007 | 75 | Southern Hydropower JSC | ☐ | ☐ | ☐ | ✔ | ☐ |
| **Dong Nai 2** | Lam Dong | | 70 | Trung Nam Hydropower JSC | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Van Chan** | Yen Bai | | 57 | Van Chan HydropowerJSC | ☐ | ☐ | ☐ | ✔ | ☐ |
| **Ngoi Hut 2** | Yen Bai | | 49 | Truong Thanh Co., Ltd | ☐ | ☐ | ✔ | ☐ | ☐ |
| **Da Dâng 2** | Lam Đong | 2006 | 34 | Southern HydropowerJSC | ☐ | ☐ | ☐ | ✔ | ☐ |
| **Hoa Phu** | Dak Nong + Dak Lak | | 29 | Tam Long Hydropower JSC | ☐ | ☐ | ☐ | ✔ | ☐ |
| **Ho 4** | Yen Bai | 2006 | 18 | Northen Electricity Development & Investment JSC No.3 | ☐ | ☐ | ☐ | ✔ | ☐ |
| **Vinh Son 3** | Binh Đinh | | 12 | Vinh Son JSC | ☐ | ☐ | ☐ | ✔ | ☐ |

| PROJECT NAME | LOCATION | PERIOD | SCALE (MW) | INVESTOR | STAGES | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | PFS | I | FS | TD | DD |
| **Lower Song Pha** | Ninh Thuan | | 11 | Da Nhim - Ham Thuan - Da Mi Company | ☐ | ☐ | ✔ | ☐ | ☐ |
| **Tien Thuan** | Binh Dinh | | 10 | Tien Thuan JSC | ☐ | ☐ | ☐ | ✔ | ☐ |
| **Moc Chau PSH** | Son La | | 1,200 | Hydropower PMB No. 1 | ☐ | ☐ | ✔ | ☐ | ☐ |
| **PLANNING** | | | **13,576** | | | | | | |
| **Laos hydropower potential exploitation planning and Vietnam- Laos-Cambodia inter-connection grid planning** | Vietnam Laos Cambodia | 2014 | 13,022 | EVN | | | | | |
| **Srepok downstream cascade hydropower planning** | Cambodia | 2005 | 480 | EVN | | | | | |
| **Phu Yen provincial small-scale hydro-power planning** | Phu Yen | | - | Phu Yen DOIT | | | | | |
| **Quang Tri provincial small-scale hydro-power planning** | Quang Tri | 2005-2012 | 74 | Quang Tri DOIT | | | | | |
| **SUPERVISION** | | | **917** | | | | | | |
| **Srepok 3 Hydropower** | Dak Nong & Dak Lak | 2005-2009 | 220 | Hydropower PMB No.5 | | | | | |
| **Song Ba Ha Hydropower** | Phu Yen | 2004-2008 | 220 | Hydropower PMB No.7 | | | | | |
| **AnKhe - KaNak Hydropower** | Gia Lai & Binh Dinh | 2006-2009 | 173 | Hydropower PMB No.7 | | | | | |
| **Song Bung 4 Hydropower** | Quang Nam | 2009-2013 | 164 | Song Bung 4 Hydropower PMB | | | | | |
| **Srepok 4 Hydropower** | Dak Lak | 2005-2009 | 70 | Dai Hai Power Development and Invesment JSC | | | | | |
| **Dong Nai 2 Hydropower** | Lam Dong | | 70 | Trung Nam Hydropower JSC | | | | | |
| **Reservoir C (Upgrading capacity of Vinh Son HPP)** | Binh Dinh | 2003-2006 | - | Vinh Son - Song Hinh Hydropower Plant | | | | | |

EVNPECC4

VIETNAM ELECTRICITY
POWER ENGINEERING CONSULTING JOINT STOCK COMPANY 4

# TRUST
# Building

# RENEWABLE ENERGY

## CONSULTING CAPACITY

## 10

BROCHURE

RENEWABLE ENERGY CONSULTNING CAPABILITY

# Experience

# Scope of works

- Planning for renewable energy projects: solar projects (solar farm, floating, rooftop); wind farms (onshore and offshore).

- Preparing investment potential assessment, investment proposal, pre-FS for solar and wind farms.

- Preparing FS, technical design, detailed design, bidding documents, author's supervision, construction site supervision for solar and wind power projects.

Carried out supplementation planning of more than 30 solar power plants with installed capacity ranging from 20 to 200 MWp into provincial and national power development plans. Total installed capacity of the projects is over 1.500 MWp. Meanwhile, PECC4 completed feasibility study (FS) for 5 projects with capacity of over 250MWp.

# Typical projects

## TRUNG NAM WIND POWER PLANT

**Total capacity:** 151.95 MW
**Project classification:** Class I
**Scope of works:**
- Review of basic design
- Survey for engineering design
- Technical design, detailed design

## BINH DAI WIND POWER PLANT

**Total capacity:** 30 MW
**Booster station:** 110/35kV
**Transmission line:** 110kV
**Project classification:** Class II
**Scope of works:**
- Feasibility study (FS)
- Master plan supplementation report

## EA NAM WIND POWER PLANT

**Total capacity:** 400 MW
**Project classification:** Class II
**Scope of works:**
- Survey for technical design
- Technical design, detailed design

## LIEN LAP WIND POWER PLANT

**Total capacity:** 48 MW
**Project classification:** Class I
**Scope of works:**
- Technical design, detailed design
- Bidding document of main equipment package

## DA MI FLOATING SOLAR FARM

**Installed capacity: 47.5 MWp**
**110kV substation**
**110kV transmission line**
**Scope of works:**
- Master supplementation plan report
- Investment proposal report
- Survey for FS
- Bidding documents for main package
- Technical design for power plant

## PHUOC THAI SOLAR FARM

**Installed capacity: 200 MWp**
**220kV substation**
**220kV transmission line**
**Scope of works:**
- Survey, project proposal report
- Pre-FS
- Survey for FS
- FS, EPC bidding document
- Supported project management board during construction phase

## TRUNG NAM - THUAN NAM SOLAR FARM

**Installed capacity: 560 MWp**
**500kV booster substation**
**500kV transmission line**
**Scope of works:**
- master supplementation plan report
- Survey, feasibility study
- Survey, technical design, detailed design
- Procurement and construction bidding documents

## WIND FARM

| PROJECT NAME | LOCATION | PERIOD | SCALE (MW) | INVESTOR | STAGES | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | M | SP | FS | TD | DD |
| **Trung Nam** | Ninh Thuan | 2017-2020 | 151.94 | Trung Nam Wind Power JSC | ☐ | ✔ | ✔ | ✔ | ✔ |
| **Lien Lap** | Quang Tri | 2019-2020 | 48 | Phong Lieu Wind Power JSC | ☐ | ☐ | ☐ | ✔ | ✔ |
| **Phong Nguyen** | Quang Tri | 2020 | 48 | Power Construction JSC 1 (PCC1) | ☐ | ☐ | ☐ | ✔ | ☐ |
| **Phong Huy** | Quang Tri | 2020 | 48 | Power Construction JSC 1 (PCC1) | ☐ | ☐ | ☐ | ✔ | ☐ |
| **Phong Lieu** | Quang Tri | 2020 | 48 | Power Construction JSC 1 (PCC1) | ☐ | ☐ | ☐ | ✔ | ✔ |
| **Wind farm No.5** | Ninh Thuan | 2020 | 48 | B&T Wind Farm JSC | ☐ | ☐ | ✔ | ☐ | ☐ |
| **Nhon Hoi 1** | Binh Dinh | 2019-2020 | 30 | Fico Investment JSC | ☐ | ☐ | ✔ | ✔ | ✔ |
| **Nhon Hoi 2** | Binh Dinh | 2019-2020 | 30 | Fico Investment JSC | ☐ | ☐ | ✔ | ✔ | ✔ |
| **Binh Dai 2 (Offshore)** | Ben Tre | 2019-2020 | 49 | Ben Tre Renewable Energy JSC | ☐ | ✔ | ✔ | ✔ | ✔ |
| **Binh Dai 3** | Ben Tre | 2019-2020 | 49 | Ben Tre Renewable Energy JSC | ☐ | ✔ | ✔ | ✔ | ✔ |
| **Binh Dai 4-8** | Ben Tre | 2019-2020 | 182 | Ben Tre Renewable Energy JSC | ☐ | ✔ | ☐ | ☐ | ☐ |
| **Ea Nam** | Dak Lak | 2020-2021 | 400 | Trung Nam Wind Power JSC - Dak Lak | ☐ | ☐ | ☐ | ✔ | ✔ |
| **IA Pet – Dak Doa** | Gia Lai | 2019-2020 | 200 | Technology Resources Energy Gia Lai JSC | ☐ | ✔ | ☐ | ☐ | ☐ |
| **Phuoc Dinh (Offshore)** | Ninh Thuan | 2019-2020 | 200 | Phuoc Minh Renewable Energy JSC | ☐ | ✔ | ☐ | ☐ | ☐ |
| **BIM** | Ninh Thuan | 2019-2020 | 320 | BIM Wind Power JSC | ✔ | ✔ | ✔ | ☐ | ☐ |
| **EVN – Phuong Mai** | Binh Dinh | 2010 | 19.8 | Phuong Mai Wind Power JSC | ☐ | ☐ | ✔ | ☐ | ☐ |

| PROJECT NAME | LOCATION | PERIOD | SCALE (MW) | INVESTOR | STAGES | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | M | SP | FS | TD | DD |
| **An Phong – Ninh Thuan** | Ninh Thuan | 2010 | 180 | Thuan Phong Energy Development JSC | ☐ | ☐ | ✔ | ☐ | ☐ |
| **Lien Nghia – Tran De** | Soc Trang | 2010 | 30 | Lien Nghia Investment JSC | ☐ | ✔ | ☐ | ☐ | ☐ |
| **IMPSA Ninh Thuan** | Ninh Thuan | 2012 | 90 | Wind Power Energia S/A (WPE) | ☐ | ✔ | ☐ | ☐ | ☐ |
| **Ben Tre provincial wind power planning** | Ben Tre | 2015 | | Ben Tre DOIT | ✔ | ✔ | ☐ | ☐ | ☐ |
| **Soc Trang provincial wind power planning** | Soc Trang | 2014 | | Soc Trang DOIT | ✔ | ✔ | ☐ | ☐ | ☐ |
| **Tra Vinh provincial wind power planning** | Tra Vinh | 2014 | | Tra Vinh DOIT | ✔ | ✔ | ☐ | ☐ | ☐ |
| **Central coastal provinces wind power planning** | | 2009 | | EVN | ✔ | ✔ | ☐ | ☐ | ☐ |

## SOLAR FARM

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Trung Nam – Thuan Nam** | Ninh Thuan | 2019-2020 | 560 | Phuoc Minh Solar Power JSC | ☐ | ✔ | ✔ | ✔ | ✔ |
| **Solar Park 1,2** | Long An | 2019-2020 | 50 | Solar Energy LA & Long An Solar Park Corporation | ☐ | ☐ | ☐ | ✔ | ☐ |
| **Solar Park 3, 4** | Long An | 2019-2020 | 50 | Solar Energy LA & Long An Solar Park Corporation | ☐ | ☐ | ☐ | ✔ | ✔ |
| **Tra O Lagoon** | Binh Dinh | 2020 | 50 | Vietnam Renewable Energy JSC | ☐ | ✔ | ☐ | ✔ | ✔ |
| **Da Mi** | Binh Thuan | 2016-2019 | 47.5 | Ham Thuan - Da Mi Hydropower JSC | ☐ | ✔ | ✔ | ✔ | ☐ |
| **Song Binh** | Ninh Thuan | 2016-2018 | | Hydropower PMB No.5 | ☐ | ✔ | ✔ | ☐ | ☐ |

| PROJECT NAME | LOCATION | PERIOD | SCALE (MW) | INVESTOR | STAGES | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | M | SP | FS | TD | DD |
| **AMI Khanh Hoa** | Khanh Hoa | 2017 | 50 | AMI Energy Khanh Hoa JSC | ☐ | ✔ | ✔ | ☐ | ✔ |
| **Phuoc Thai** | Ninh Thuan | 2016-2020 | 200 | Hydropower PMB No.5 | ☐ | ✔ | ✔ | ☐ | ☐ |
| **Se San 4** | Kom Tum | 2017-2019 | 49 | Hydropower PMB No.1 | ☐ | ✔ | ✔ | ☐ | ☐ |
| **Chu Ngoc** | Gia Lai | 2019 | 40 | Licogi 16 JSC | ☐ | ✔ | ✔ | ☐ | ✔ |
| **Nhon Hai** | Ninh Thuan | 2017-2019 | 35 | Licogi 16 JSC | ☐ | ✔ | ✔ | ☐ | ☐ |
| **Phuoc Huu** | Ninh Thuan | 2019 | 50 | Nha Trang Bay Investment & Construction JSC | ☐ | ✔ | ✔ | ☐ | ☐ |
| **Ninh Phuoc 6.1, 6.2** | Ninh Thuan | 2019 | 7+50 | Ninh Thuan Agriculture & Renewable Energy JSC | ☐ | ✔ | ✔ | ☐ | ☐ |
| **BIM 2, 3** | Ninh Thuan | 2019 | 250+50 | BIM Group | ☐ | ✔ | ☐ | ☐ | ☐ |
| **Phong Phu** | Binh Thuan | 2019 | 42 | Trina Solar Co., Ltd | ☐ | ☐ | ☐ | ✔ | ✔ |
| **Vinh Hao 6** | Binh Thuan | 2019 | 49 | FECON JSC | ☐ | ☐ | ✔ | ✔ | ☐ |
| **My Son – Hoan Loc Viet** | Ninh Thuan | 2018-2019 | 49 | My Son - Hoan Loc Viet Solar Power JSC | ☐ | ✔ | ✔ | ✔ | ☐ |
| **Thac Mo** | Binh Phuoc | 2017-2019 | 49 | Thac Mo Hydropower JSC | ☐ | ✔ | ✔ | ☐ | ☐ |
| **CMX** | Ninh Thuan | 2018 | 168 | CMX Re Sunseap VN Solar Power JSC | ☐ | ✔ | ☐ | ☐ | ☐ |
| **Van Ninh** | Khanh Hoa | 2018 | 200 | Hanwha, KN Cam Ranh Co., Ltd | ☐ | ✔ | ☐ | ☐ | ☐ |
| **Song Luy 1** | Binh Thuan | 2019 | 47.5 | Binh Thuan Solar Power Investment JSC | ☐ | ✔ | ✔ | ✔ | ☐ |
| **Ninh Thuan provincial solar power potential planning** | Ninh Thuan | 2018 | | | ☐ | ✔ | ☐ | ☐ | ☐ |

# Thermal power

## CONSULTING CAPACITY

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# Scope of works

- Thermal power engineering consulting: site selection, detailed planning for thermal power center. Prepare, appraise, evaluate investment report, basic design, technical design, detailed design for different systems of thermal power plants.

- Engineering appraisal, bidding documents, requirement documents for new energy projects.

- Site supervision and project management consulting.

- Operation & Maintenance (O&M) consulting for thermal power plants.

# Experience

**Carried out supplementation planning, pre-FS, FS for coal-fired, LNG, biomass thermal power plants with installed capacity ranging from 20 MWp to 5,400 MWp.**

# Typical projects

## VINH TAN THERMAL POWER COMPLEX

**Capacity:** 5,400 MW
**Project classification:** Class I
**Scope of works:**
- Rivesed planning
- Survey, infrastructure design (power, road, operating building)
- Appraised FS of Vinh Tan Thermal Power Plant (TTP)
- EPC contract management of Vinh Tan 4 TTP extension

## CA NA LNG THERMAL POWER PLANT

**Capacity:** 1,500 MW
**Scope of works:**
- Survey, site selection report
- Master supplementation plan report
- Pre-FS
- Environmental impacts assessment

## VAN PHONG KHANH HOA LNG THERMAL POWER PLANT

**Capacity:** 3,000 MW
**Scope of works:**
- Survey, site selection report
- Master supplementation plan report
- Pre-FS
- Environmental impacts assessment


# CONG THANH COAL-FIRED THERMAL POWER PLANT

**Capacity:** 600 MW
**Project classification:** Class I
**Scope of works:**
- Survey, investment project planning
- Survey, feasibility study, environmental impacts assessment
- EPC bidding documents evaluation

| PROJECT NAME | LOCATION | SCALE (MW) | INVESTOR |
|---|---|---|---|
| **ENGINEERING** | | | |
| **Vung Ang 1&2 TPP** | Ha Tinh | 1320 | VAPCO |
| **Vung Ang 3 TPP** | Ha Tinh | 1320 | MOIT |
| **Posco Steel Complex TPP** | Khanh Hoa | 1100 | Posco Korea |
| **Cong Thanh TPP** | Thanh Hoa | 600 | Cong Thanh Cement JSC |
| **Ca Na LNG TPP** | Ninh Thuan | 1500 | Gulf (Thailand) |
| **Van Phong LNG TPP** | Khanh Hoa | 3000 | |
| **APPRAISAL** | | | |
| **Vinh Tan Thermal Power Complex** | | 1200 | Thermal Power PMB 3 |
| **Vinh Tan 2 TPP** | | 1200 | Vinh Tan Thermal Power PMB |
| **Duyen Hai 3 TPP** | | 1200 | Thermal Power PMB 3 |
| **PLANNING** | | | |
| **Detailed Planning Binh Dinh Thermal Power Complex** | Binh Dinh | 5200 | Sai Gon Investment Group |
| **Detailed Planning Cam Ranh Thermal Power Complex** | Khanh Hoa | 3600 | Thermal Power PMB 3 |

| PROJECT NAME | LOCATION | SCALE (MW) | INVESTOR |
|---|---|---|---|
| **Detailed planning Song Hau Thermal Power Complex** | Hau Giang | 5200 | EDF France & Long Phu Song Hau Petro-Power PMB |
| **Construction site revised planning of Vung Ang 3 Thermal Power Complex** | Ha Tinh | 2460 | Energy Department |
| **Soc Trang provincial wind power planning for the 2012-2020 period, vision to 2030** | Soc Trang | 1470 | Soc Trang DOIT |
| **Ben Tre provincial wind power planning for the 2012-2020 period, vision to 2030** | Ben Tre | 2000 | Ben Tre DOIT |

# TRANSMISSION LINE

## CONSULTING CAPABILITY

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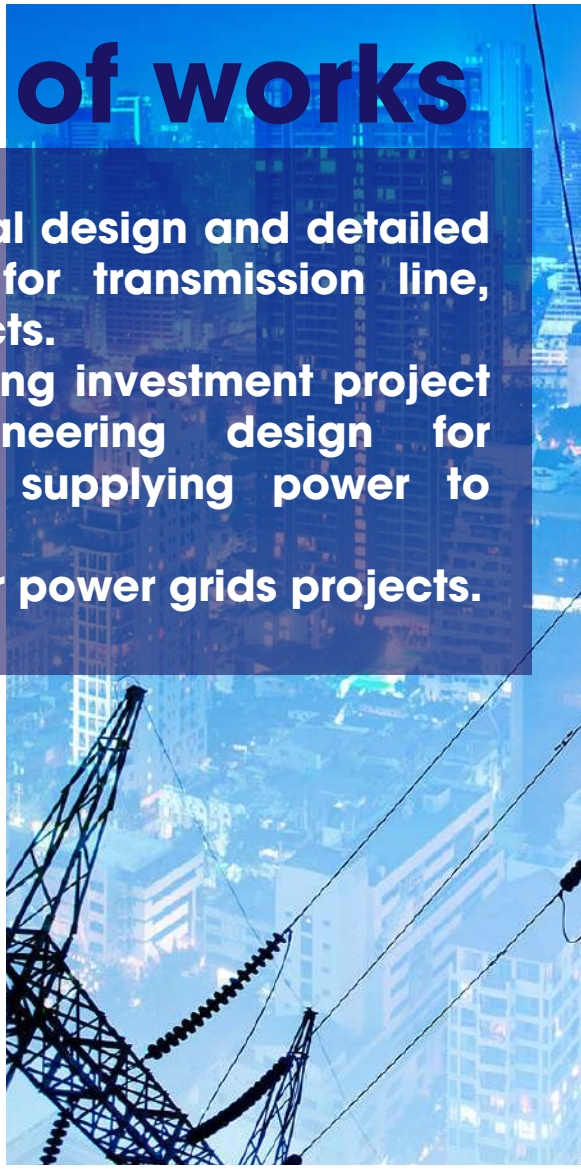
BROCHURE

TRANSMISSION LINE CONSULTNING CAPABILITY

# Scope of works

- Planning, technical design and detailed design, appraisal for transmission line, underground projects.
- Pre-FS, FS, preparing investment project report and engineering design for submarine cables supplying power to islands.
- Site supervision for power grids projects.



# Experience

**PECC4 has completed more than 200 transmission line projects with different voltage levels 500/220/110kV all over Vietnam with total length of 500kV and 220kV transmission lines over 2300km and 2400km respectively.**

# Typical projects

## 500kV QUANG TRACH - DOC SOI TRANSMISSION LINE

**Project classification:** Special class
**Voltage level:** 500kV
**Number of circuits:** 2
**Length:** 500km
**Scope of works:**
- Master plan supplementation report
- Survey, feasibility study
- Environmental impacts assessment
- Survey, technical design - total cost estimate, detailed design, bidding documents
- Measuring cadastral maps for compensation and site clearance

## 500kV PLEIKU - MY PHUOC - CAU BONG TRANSMISSION LINE

**Project classification:** Special class
**Voltage level:** 500kV, from VT8202-VT8403: combination of 500kV and 110kV
**Number of circuits:** 2, from VT8202-VT8403: combination of 4 circuits
**Length:** 450km
**Scope of works:**
- Master supplementation plan report
- Survey, feasibility study
- Environmental impacts assessment; specific report for capital mobilization
- Survey, technical design - total cost estimate, detailed design, bidding documents
- Measuring cadastral maps for compensation and site clearance

## 220kV HAI HA - CAM PHA TRANSMISSION LINE

**Voltage level:** 220kV
**Number of circuits:** 2
**Length:** 80km
**Scope of works:**
- Survey, feasibility study
- Environmental impacts assessment
- Survey, technical design - total cost estimate, detailed design
- Detailed planning for construction

## 220kV QUANG NGAI - QUY NHON TRANSMISSION LINE

**Voltage level:** 220kV
**Number of circuits:** 2
**Length:** 140km
**Scope of works:**
- Survey, feasibility study
- Survey, technical design - total cost estimate, detailed design
- Environmental impacts assessment
- Specific report for capital mobilization

## 220kV NHA TRANG - THAP CHAM TRANSMISSION LINE

**Voltage level:** 220kV
**Number of circuits:** 2
**Length:** 80km
**Scope of works:**
- Survey, feasibility study
- Environmental impacts assessment
- Survey, technical design - total cost estimate, detailed design

## SUPPLYING POWER FROM NATIONAL POWER SYSTEM TO LY SON ISLAND DISTRICT

**Voltage level:** 22kV
Newly constructing 26km - medium voltage submarine cable route
Newly constructing 13.5km - medium voltage 22kV overhead transmission line
**Scope of works:**
- Study for submarine cable route selection
- Survey for submarine cable route, mainland and island grids
- Feasibility study
- Environmental impacts assessment


## SUPPLYING POWER FROM NATIONAL POWER TO CU LAO CHAM ISLAND, QUANG NAM PROVINCE VIA SUBMARINE CABLE

**Voltage level:** 22kV
Newly constructing 17.4km - medium voltage submarine cable route
Newly constructing 20km - medium voltage 22kV overhead transmission line
**Scope of works:**
- Study for submarine cable route selection
- Survey for submarine cable route, mainland and island grids
- Feasibility study
- Environmental impacts assessment

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# TRUST BUILDING

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| PROJECT NAME | SCALE | INVESTOR | STAGES | | | | |
|---|---|---|---|---|---|---|---|
| | | | PFS | I | FS | TD | DD |
| 500kV North–South Transmission Line Circuit 1 (Da Nang - Buon Me Thuot) | 436 km | EVN | ☐ | ✔ | ☐ | ✔ | ✔ |
| 500kV Pleiku–Phu Lam Transmission Line (Dong Nai - Phu Lam) | Survey | EVN | ☐ | ✔ | ☐ | ☐ | ☐ |
| 500kV Pleiku–Dung Quat–Da Nang Transmission Line (Pleiku–Dung Quat) | Survey | EVN | ☐ | ✔ | ☐ | ☐ | ☐ |
| 500kV North–South Transmission Line Circuit 2 (Ha Tinh–Nho Quan) | Working with PECC1 | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 500kV Quang Ninh–Thuong Tin Transmission Line | 2 x 148.9 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 500kV Quang Ninh–Mong Duong Transmission Line | 2 x 25.157 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 500kV Transmission Line connecting Thang Long Thermal Power Plant | 2 x 5 km | EVN | ☐ | ✔ | ✔ | ☐ | ☐ |
| 500kV Ban Sok–Pleiku Transmission Line | 2 x 110 km | EVN | ☐ | ✔ | ✔ | ☐ | ☐ |
| 500kV Pleiku–My Phuoc–Cau Bong Transmission Line | 442 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 500kV Pleiku–Phu Lam Transmission Line (Dong Nai - Phu Lam) | | EVN | ☐ | ✔ | ☐ | ☐ | ☐ |
| 220kV Dong Hoi - Hue Transmission Line | 173 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Pleiku - KrongBuk Transmission Line | 170 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Ban La - Vinh Transmission Line | 2 x 167 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV KrongBuk - Nha Trang Transmission Line | 2 x 148 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Quang Ngai - Quy Nhon Transmission Line | 2 x 147 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Phan Thiet - Phu My 2 Transmission Line and extension of 220kV feeders | 2 x 144 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Tuy Hoa - Nha Trang Transmission Line | 2 x 135 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Da Nhim - Nha Trang Transmission Line | 1 x 113 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Da Nang - Doc Soi Transmission Line | 2 x 106 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |

| PROJECT NAME | SCALE | INVESTOR | STAGES | | | | |
|---|---|---|---|---|---|---|---|
| | | | PFS | I | FS | TD | DD |
| 220kV Quy Nhon - Tuy Hoa Transmission Line | 2 x 92.5 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV XeKanMan 3 - Thanh My Transmission Line | 1 x 92.3 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Vinh Tan - Phan Thiet Transmission Line | 2 x 92 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Hoa Khanh - Hue Transmission Line | 2 x 82 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV A Vuong 1 - Hoa Khanh Transmission Line | 2 x 79 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Tuyen Quang - Thai Nguyen Transmission Line | 2 x 77 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Upper Kon Tum - Quang Ngai Transmission Line | 2 x76 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Buon Tua Srah - Dak Nong Transmission Line | 1 x 66 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV transmission line connecting Trung Son HPP with national power system | 2 x 65 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Vinh Tan - Thap Cham Transmission Line | 2 x 64 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Buon Kuop - KrongBuk Transmission Line | 2 x 59 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Doc Soi - Quang Ngai Transmission Line | 2 x 59 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV An Khe - Quy Nhon Transmission Line | 2 x 52 km | EVN | ☐ | ☐ | ✔ | ☐ | ☐ |
| 220kV Buon Kuop - Buon Tua Srah Transmission Line | 1 x 46 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| 220kV Son Ha - Doc Soi Transmission Line | 2 x 46 km | EVN | ☐ | ✔ | ✔ | ☐ | ☐ |
| 220kV Lower Song Ba - Tuy Hoa Transmission Line | 2 x 35.5 km | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| Power grid connecting DakMi 4 Hydropower plant | 2 x 60 km | IDICO | ☐ | ✔ | ✔ | ✔ | ✔ |

# SUBSTATION

## CONSULTING CAPABILITY

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BROCHURE

# Scope of works

- Territorial, provincial, municipal power development plans.
- Engineering consulting for power grid and substation projects with voltage up to 500kV in different phases: investment report, feasibility study, technical design, detailed design, total cost estimate, budgeting, preparing and evaluating bidding documents.
- Cooperated with foreign consultants in engineering substation projects.
- Author's supervision for substation projects.
- Site supervision for domestic and abroad projects.
- Substation engineering appraisal.
- Participated in construction processes development and research on related issues.

# Experience

- **500kV Substation: Lai Chau, Pleiku 2, Dak Nong, Thuan Nam, Quang Ninh, Thanh My, Pho Noi, Vinh Tan.**
- **220kV Substation: Thai Thuy, Phu My, Thap Cham, Nha Trang, Song Tranh 2, Son Ha, Krong Buk...**
- **And more than 100 110kV substation projects throughout Vietnam.**

# Typical projects

## 500kV LAI CHAU SUBSTATION

**Project classification:** Special class
**Voltage level:** 500kV
**Scope of works:**
- Survey, feasibility study
- Environmental impacts assessment
- Survey, technical design - total cost estimate, detailed design

## 500kV PLEIKU 2 SUBSTATION

**Project classification:** Special class
**Voltage level:** 500kV
**Scope of works:**
- Survey, feasibility study
- Environmental impacts assessment
- Survey, technical design - total cost estimate, detailed design, bidding documents

## 500kV DAK NONG 2 SUBSTATION AND BRANCH

**Project classification:** Special class
**Voltage level:** 500kV
**Scope of works:**
- Survey, feasibility study
- Environmental impacts assessment
- Survey, technical design - total cost estimate, detailed design


# 500kV THUAN NAM SUBSTATION

**Voltage level:** 500/220/35kV
**Capacity:** 3 transformers 500/220/35kV - 900MVA (installed 2 transformers in advance)
Fault current limiter for 500kV power grid
**Scope of works:**
- Survey, feasibility study
- Environmental impacts assessment
- Survey, technical design - total cost estimate, detailed design

# Typical projects

## 220kV THAI THUY SUBSTATION

**Project classification:** Class I
**Voltage level:** 220kV
**Scope of works:**
- Survey, feasibility study
- Environmental impacts assessment
- Survey, technical design, detailed design

## 220kV PHU MY SUBSTATION

**Project classification:** Class I
**Voltage level:** 220kV
**Scope of works:**
- Survey, feasibility study
- Environmental impacts assessment
- Survey, technical design - total cost estimate, detailed design


## 220kV THAP CHAM SUBSTATION

**Project classification:** Class I
**Voltage level:** 220kV
**Scope of works:**
- Survey, feasibility study
- Environmental impacts assessment
- Survey, technical design - total cost estimate, detailed design

## SUBSTATION

| PROJECT NAME | SCALE | INVESTOR | STAGES PFS | I | FS | TD | DD |
|---|---|---|---|---|---|---|---|
| **500kV Dak Nong Substation and Branch** | Transformers 500/220/35kV-2x450MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **500kV Quang Ninh Substation** | Transformers 500/220/35kV-2x450MVA, 220/110/22-1x125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **500kV Thanh My Substation and Branch** | Transformers 500/220/35kV-2x450MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **500kV Pho Noi Substation and Connecting Transmission Line** | Transformers 2x600MVA 4x0.6km+4x5.2km | EVN | ☐ | ✔ | ✔ | ☐ | ☐ |
| **500kV Pleiku Substation Capacity Upgrading** | Transformers 500/220/35kV -450MVA Transformers 220/110/22kV-125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **500kV Thuan Nam Substation** | Transformers 500/220/35kV –900 MVA | Trung Nam | ☐ | ✔ | ✔ | ✔ | ✔ |
| **220kV Do Luong Substation and Branch** | Transformers 220/110/22kV-2x125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **220kV Son Ha Substation** | Transformers 220/110kV 2x125MVA | EVN | ☐ | ✔ | ✔ | | |
| **220kV KrongBuk Substation** | Transformers 220/110/22kV-2x63MVA | EVN | ☐ | ☐ | ✔ | ✔ | ✔ |
| **220kV Quy Nhon Substation** | Transformers 220kV-125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **220kV Tuy Hoa Substation** | Transformers 220/110kV-125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **220kV Nha Trang Substation** | Transformers 220kV-2 x 125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **220kV Tam Ky Substation and Branch** | Transformers 220/110kV-125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **220kV Dong Ha Substation and Branch** | Transformers 220/110kV-125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **220kV Thap Cham Substation and Connecting Transmission Line** | Transformers 220/110kV-125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **220kV Song Tranh 2 Substation** | Transformers 2x125MVA | EVN | ☐ | ✔ | ✔ | ☐ | ☐ |
| **220kV Ngu Hanh Son Substation and 220kV Da Nang - District 3 Transmission Line** | Transformers 220/110kV-125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **220kV Tuyen Quang Substation** | Transformers 220/110/22kV-125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **220kV Thanh My Substation** | Transformers 220/110kV 1x125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **220kV Hoa Khanh Substation** | Transformers 220/110/10kV -2x125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **220kV Doc Soi Substation** | Transformers 220/110/10.5kV -2x63MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |
| **220kV Dung Quat Substation** | Transformers 220/110kV -125MVA | EVN | ☐ | ✔ | ✔ | ✔ | ✔ |

POWER ENGINEERING CONSULTING JOINT STOCK COMPANY 4

BROCHURE

# SITE SUPERVISION

## CONSULTING CAPABILITY

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# Scope of works

- **Construction and equipment installation supervision consulting for many hydropower, thermal power, power grid projects.**
- **Operation and project management consulting.**

# Experience

**Carried out construction and installation supervision consulting for many projects meeting technical requirements and achieving high quality, typically:**

- **Site supervision for hydropower projects**

Song Bung 4 HPP, Srepok 3 HPP, Dong Nai 2 HPP, Srepok 4 HPP, Srepok 4A HPP, An Khe - KaNak HPP.

- **Site supervision for solar farms:**

48MW Phuoc Huu - Ninh Thuan Solar Farm, 48MW Phan Lam 2 – Binh Thuan Solar Farm, 48MW Hong Phong 5.2 - Binh Thuan Solar Farm.

- **Site supervision for wind farms:**

48MW Huong Linh - Quang Tri Wind Farm, 120MW Thuan Bac - Ninh Thuan Wind Farm, 108MW Hung Hai - Gia Lai Wind Farm.

- **Site supervision for power grid projects:**

500kV transmission line and 500kV Trung Nam - Thuan Nam substation; 500kV transmission line and 500kV Xuan Thien - Ea Sup substation; 500kV My Tho - Duc Hoa transmission line: 500kV Thang Long - Quang Ninh thermal power transmission line and branch; 500kV transmission line connecting Nghi Son thermal power plant to national power system; 500kV Nho Quan - Phu Ly - Thuong Tin transmission line; 220kV Hai Duong - Pho Noi transmission line; 220kV Thai Binh - Tien Hai - Truc Ninh transmission line; 500KV Western Hanoi substation; 500kV Viet Tri substation and 500-220kV connecting transmission lines; Shielding wires replacement of 500kV North-South transmission line - Circuit 1; and many other projects.

# Typical projects

**PECC4 has carried out site supervision for many projects, typically:**

- Song Bung 4 HPP, Srepok 3 HPP, Dong Nai HPP, Srepok 4 HPP, An Khe - Kanak HPP.

- Vinh Tan Power Complex's Infrastructure.

- Site supervision for Vinh Tan 4 extension and Vinh Tan 2 TPPs.

- Site supervision for Trung Nam, Ea Sup, Phan Lam, Hong Phong 5.2 Solar farms.

- Site supervision for Hung Hai Gia Lai, Huong Tan Wind farms.

Construction supervision consulting for 500kV My Tho - Duc Hoa transmission line, 500kV Western Hanoi substation, 500kV Viet Tri substation, 500kV transmission line connecting Nghi Son 2 to national power system, second shielding wire replacement of 500kV North-South transmission line - circuit 1...

**Additionally, PECC4 has carried out author's supervision for more than 150 power projects, in which many projects have been completed, commissioned and safely operated.**


EVN

# EPC

## CAPABILITY

## 15

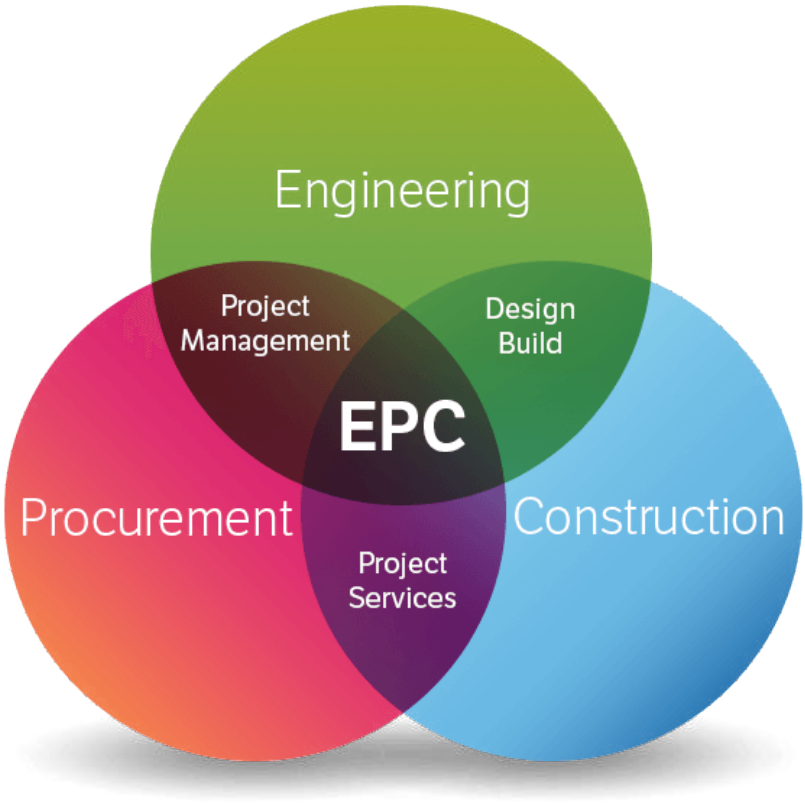
BROCHURE

# EPC CAPABILITY

**With the objective of being an EPC contractor for domestic and regional energy projects, PECC4 has gradually gained prestige in engineering consulting for power projects as well as EPC project management.**

**PECC4 has a workforce of more than 50 officers and engineers in executing EPC projects who have bachelor and postgraduate degrees in different majors: Electrical Power System, Electronics, Automation, Information Technology, Construction, Supervision... In the past years, the Company has carried out many researches on applying scientific and technological advancements and mastered in utilizing specialized engineering calculation software which enable the Company to totally satisfy strict requirements of engineering consulting and project management consulting. PECC4 carried out EPC projects with the following criteria:**

- **Ensure the quality and technical standards.**
- **Ensure project timeline.**
- **Ensure operational reliability and efficiency.**
- **Optimal results for investors and society.**




STRENGTHS

## ENGINEERING

PECC4 has a workforce of rich experienced engineers who constantly update on advanced technologies and propose feasible engineering solutions bringing high efficiency for clients and each project.

## PROCUREMENT AND CONSTRUCTION

Working professionally via clear standards for suppliers and subcontractors; checking and supervising closely procurement and construction processes. PECC4 manages well the quantity, quality and progress of projects.

## EPC PROJECT MANAGEMENT

With the proper and scientific management motto, in accordance with the requirements, regulations and standards of each project. In addition, PECC4 has a workforce of highly professional and rich experienced engineers who have overall understanding to build project management processes and capabilities to solve different problems arising in the reality.

| NO. | PROJECT NAME | CAPACITY | INVESTOR |
|---|---|---|---|
| 1 | Xuan Thien Ea Sup Solar power plan custer | 780 | Xuan Thien Dak Lak Co., Ltd |
| 2 | Dong Hai 1 Wind farm | 50 | Bac Phuong JSC |
| 3 | Lanh Ra Lake Solar farm (50MWp) | 50 | Ninh Thuan Energy Industry JSC |
| 4 | Song Bieu Lake Solar farm (100MWp) | 100 | Ninh Thuan Energy Industry JSC |
| 5 | Song Trau Lake T&T 2 Solar farm (100MWp) | 100 | Ninh Thuan Energy Investment And Development Co., Ltd |
| 6 | Cam Hung Solar farm (29MWp) | 29 | GA Power Solar Park Cam Xuyen Co., Ltd |
| 7 | Hong Liem 3 Solar farm | 50 | Hawee Production and Trading JSC |
| 8 | Blu 1 - Chu Pun Wind farm 153 MW | 153 | Duc Long Gia Lai JSC |
| 9 | Duc Long 1 Solar farm | | Duc Long Gia Lai JSC |
| 10 | 500kV Substation - Gia Lai | | Duc Long Gia Lai JSC |
| 11 | Ia Pech 1 - Ia Grai Wind farm 150MW | 150 | Tay Nguyen Clean Energy Investment & Development JSC |
| 12 | Hoa Binh 5 Wind farm | 80 | Hacom Bac Lieu Energy JSC |
| 13 | Thien Tan 1.4 Solar farm | 100 | NSN Construction and Engineering JSC |
| 14 | Cho Long Wind farm (155MW) | 155 | Cho Long Wind Power JSC |
| 15 | Yang Trung Wind farm (145MW) | 145 | Yang Trung Wind Power JSC |
| 16 | Hanbaram Wind farm | 115.6 | HANBARAM Wind Power JSC |
| 17 | Thien Tan 3.1 Solar farm | 50 | Thien Tan Solar Ninh Thuan JSC |
| 18 | Cao Ngoc Solar farm | | Viet Thanh VnC JSC |
| 19 | Tran De Solar farm | | Tran De Wind Power Limited |
| 20 | Song Hau Wind farm | | Song Hau Wind Power Limited |
| 21 | Hung Hai Gia Lai Wind farm | | Gia Lai Investment & Development JSC |
| 22 | IA PET DAK DOA Wind farm | 100 | Powerchina |
| 23 | Iapet Dak Doa 1&2 Wind farm | | Power Construction JSC No.1 |

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POWER ENGINEERING CONSULTING JOINT STOCK COMPANY 4

# Trust Building

# 16 RESEARCH & DEVELOPMENT CENTER

BROCHURE

# Introduction to Research and Development Center

**PECC4, with 45 years of experience in surveying, power system engineering consulting, has been a pioneer in researching in order to solve practical matters such as planning, power system analysis and calculations, electromagnetic transient phenomena on the power grid study, electricity quality of power system... We have been researching and developing new products meeting the development requirements of the power system as well as satisfying practical needs of clients in the present and future.**

Departing from current requirements, together with the strong development of Science and Technology in the era. With a competent workforce which was selectively recruited from engineering consulting centers; information technology department; quality management, research & development department, technology research and market development board, we established the PECC4 Research and Development Center (PECC4 R&D Center) with more than 25 core experts, who are highly qualified and experienced in power projects engineering consulting. We have also cooperated with experts from leading universities, institutes in Vietnam and overseas. We focus on researching and developing products meeting practical needs, clients' requirements, and promise to bring about new high-quality products.

# MAJOR FIELDS

- Research on electromagnetic transient phenomena on the power grid:
- **Development of new HVDC/FACTS technology applications to power transmission**
- Research on calculating the impacts of Renewable energy sources on the power system, stabilizing the power grids connecting renewable energy power plants by energy storage systems
- **Research on power system calculations, Development of products from provincial, regional, national power system planning calculations**

insulation coordination calculations, research on lightning overvoltage transients, research on ferromagnetic resonance phenomenon in electrical networks

- **Development of Smart grid technology applications**


- 3D design and application of BIM technology in engineering consulting

OF RESEARCH AND DEVELOPMENT CENTER

- **Application of Digital transformation in design & operations consultancy**

# Typical products and experience of Research and Development Center

## 2012

Plan researching and calculating to allocate the capacity of power sources for the whole Southern Central region

## 2015

- Calculating the connection planning of Ninh Thuan 1 & 2 nuclear power plants to the National Power System (2015 - 2016)
- Researching on anti-resonance solutions under synchronization and improving the transmission capacity of the North-Central power grid (2015)
- TOV: Proposing solutions to 220 kV surge arrester damage phenomenon of AT2 transformer at 220kV Thai Nguyen substation (2015)

## 2010

Proposing Vietnam Electricity (EVN) to early invest and construct the Pleiku - My Phuoc - Cau Bong 500kV transmission line project to transmit electrical power to the Southern region (which was not mentioned in National Power Development Planning VII)

## 2014

- Researching on Lightning Overvoltage Transients (2014)
- Calculating the possible maximum length of 500 kV Tower earth conductor system to ensure the best lightning dissipation capability and avoid back flashover that cause power trips

## 2016

Proposing to Vietnam Electricity (EVN) the necessity to build a 500kV transmission line (circuit 3) in Quang Trach - Doc Soi - Pleiku 2 to transmit electrical power to the Southern region (which was not mentioned in National Power Development Planning VII)

***Promising many new products with higher quality to accompany domestic and foreign customers.***

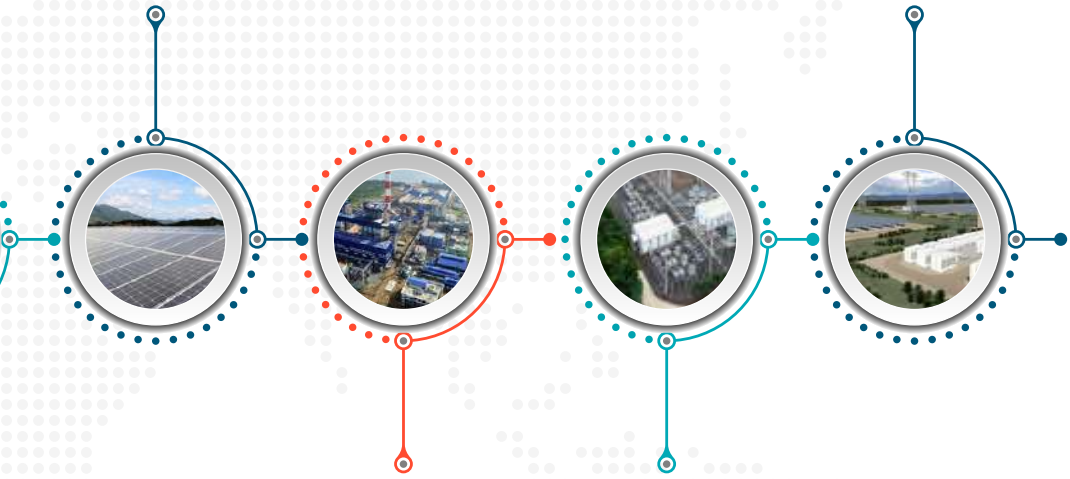
**We have associated and participated in many projects, proposals, scientific researches, technology and science conferences in order to contribute new high-quality products for the development of domestic and regional electricity industries, remarkable projects as below:**

## 2017

Preparing the Solar Power Development Planning Scheme in Ninh Thuan province for 2017 - 2020, with a vision to 2030

## 2021

- Researching and assessing the occurrence of sub-synchronous resonance caused by the power grid impacts to Vung Ang 1 Thermal Power Plant in the period up to 2030
- Researching on BESS for the demands of renewable energy capacity allocation



## 2019

- Calculating and modifying the connection planning of the Southern Central Power Plant Cluster connecting to the National Power System (2019 - 2020)
- Calculating the back flashover rate (BFR) caused by lightning strike on power transmission line system (2019)
- Simulating, calculating, analyzing and proposing solutions to the overvoltage phenomenon if there is a transient fault on the Son La-Hiep Hoa and Thanh My- Pleiku 2 500kV transmission line (2019)
- Calculating the optimal capacity of series capacitors for the 500 kV power system and the effect of low frequency resonance on power plants when Circuit 3 is put into operation (2019 - 2020)
- Calculating the overall solution of installing shunt capacitor and shunt reactor systems on the grid to reduce the time of synchronous compensation mode for hydropower plants (2019 - 2020)
- Researching on SSR phenomenon at Song Hau 1 Thermal Power Plant Project (2019)

## 2020

- Offering solutions for the overall construction of power infrastructure system to allocate capacity of renewable energy projects in Ben Tre and KonTum provinces.
- Researching on SSR phenomenon at Vung Ang 1 Thermal Power Plant Project (2020)
- Researching and calculating SVC installation solutions to meet the requirements of Circular 30/2019/TT-BCT for wind power plants (Binh Dai 1, 2, 3 power plants)

# UNIONS & SOCIETY

# 17

# Unions & Society

**Corporate culture is based on "Customer-oriented" and "Trust building" business philosophies and based on the foundations of Communist Party of Vietnam, socio-political organizations: Vietnam General Federation of Labour, Ho Chi Minh Communist Youth Union, Vietnam Women's Union. (In accordance with Clause 2 - Article 9 of the 2013 Constitution, the Communist Party of Vietnam is not a socio-political organization).**

The Company's Party Committee is under Nha Trang Municipal Party Committee which has more than 70 Party members. The Company's Party Committee plays a critical role in operating the Company, policy steering, building up workforce, structure organization and internal solidarity.

The Company's Labor Union is under Vietnam Electricity's Labor Union with more than 400 union members, which is an organization representing for the labors, a reliable source of support for all employees. Labor Union, together with the Company, ensure job security, take care of employees' material and mental life, protect legitimate rights and benefits of the employees, create harmonious, stable, progressive atmosphere within the Company.

The Company's Youth Union with more than 200 members accounts for 50% of the Company's employees, which is the core workforce in the Company's operation as well as social activities. Youth Union is also the right hand, backup force for Communist Party of Vietnam; training the next generation for the mission of building and developing the Company.


TUẦN LỄ HỒNG EVN LẦN THỨ VI
Lan tỏa yêu thương


ỦNG HỘ
ỦNG HỘ


KHỎE ĐỂ XÂY DỰNG VÀ BẢO VỆ TỔ QUỐC
HỘI THAO
KỶ NIỆM 44 NĂM NGÀY THÀNH LẬP CÔNG TY
(14/7/1976 - 14/7/2020)
Vikoda
EPC

**Communist Party, Labor Union, Youth Union play an important role in building and developing the Company, which are the foundation contributing to corporate culture, enhancing the employees' material and mental life, building up trust, creating wholehearted commitment to the Company. Also, these organizations take the lead in giving advice, proposals on cultural, sport events; social activities: gratitude, hunger eradication and poverty reduction, charity, humanitarianism... which make a considerable contribution to the development of the community and the society.**

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POWER ENGINEERING CONSULTING JOINT STOCK COMPANY 4

# BROCHURE



**Power Engineering Consulting Joint Stock Company 4**
Address: 11 Hoang Hoa Tham Street - Nha Trang City - Khanh Hoa Province
Tel: +84-258-3563999 | Fax: +84-258-3563888
Email: tv4@pecc4.vn
Website: www.pecc4.vn

**Northern Affiliate:**
Address: Lot 3 - TT4 - Lane 183 - Hoang Van Thai Street - Khuong Trung Ward
Thanh Xuan District - Ha Noi City
Tel: +84-24-22183870 | Fax: +84-24-62855759
Email: cnpb@pecc4.vn

**Southern Affiliate:**
Address: 46/9 Tran Quy Khoach - Tan Dinh Ward - District 1 - Ho Chi Minh City
Tel: +84-24-35268347 | Fax: +84-24-35267790
Email: cnpn@pecc4.vn

**Thermal Power Engineering Center:**
Address: Lot 3 - TT4 - Lane 183 - Hoang Van Thai Street - Khuong Trung Ward
Thanh Xuan District - Ha Noi City
Tel: +84-24-22183870 | Fax: +84-24-62855759
Email: tv4ttktnd@pecc4.vn