



GLC Holdings

Company Overview

Jul 2022

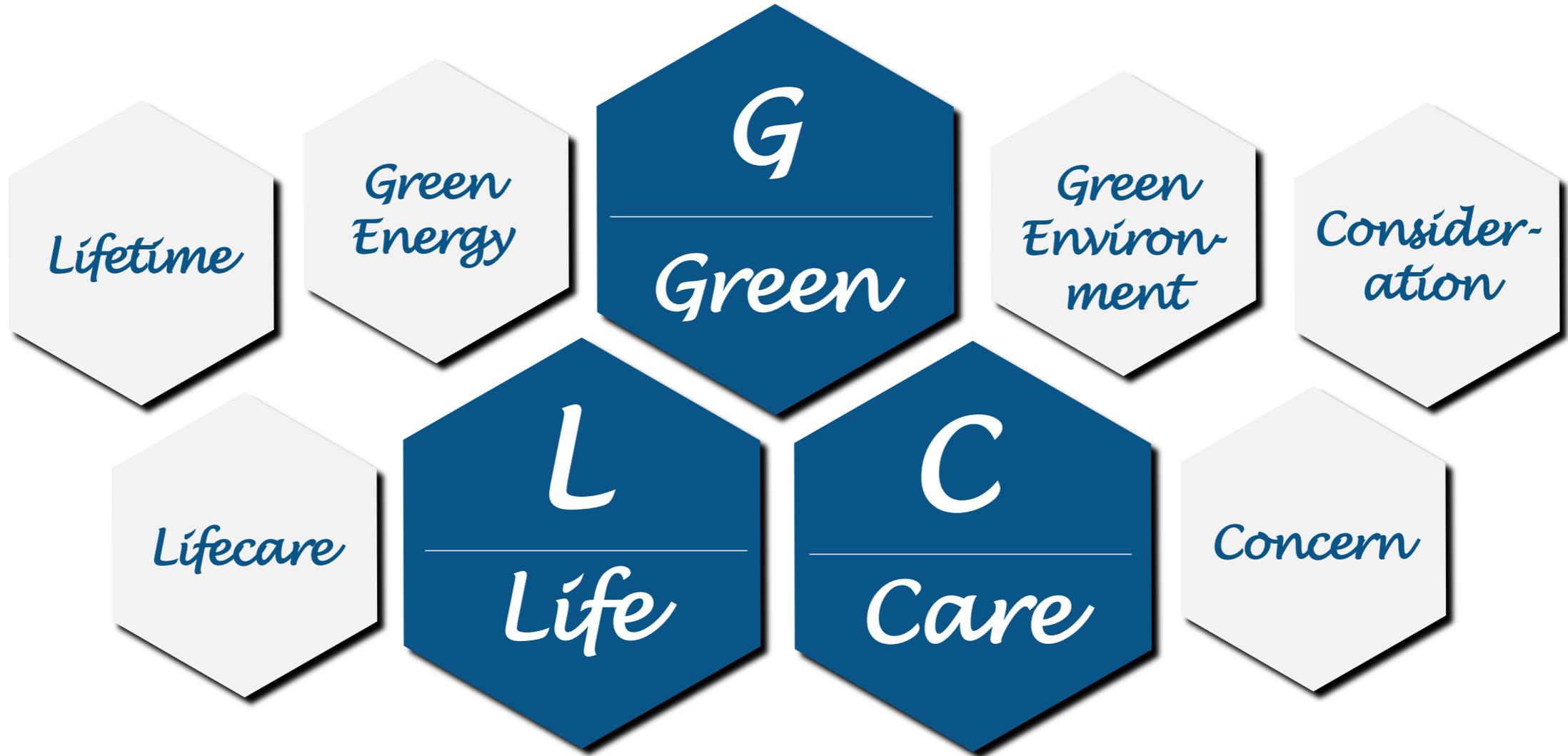


01

About **DLC**



**BEST SOLUTION in
both Energy and Environment fields.**





ISO 9001:2015
ISO 14001:2015
Certification



Service and Support

- 2000** Taipei, Taiwan
- 2003** Ningbo, China 
- 2005** Su'ao, Taiwan 
- 2013** Haiphong, Vietnam 
- 2022** Singapore

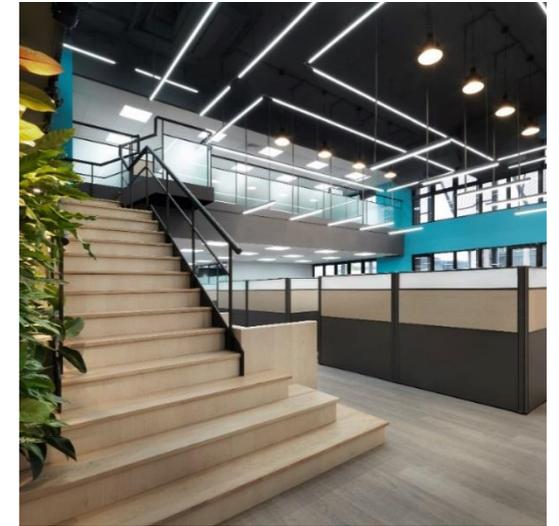
Key Numbers

- 3** Factories 
- 200** Professionals 
- 50+** Customers Serviced 
- 50+** New-Built Projects Completed 
- 20+** Retrofit Projects Completed 



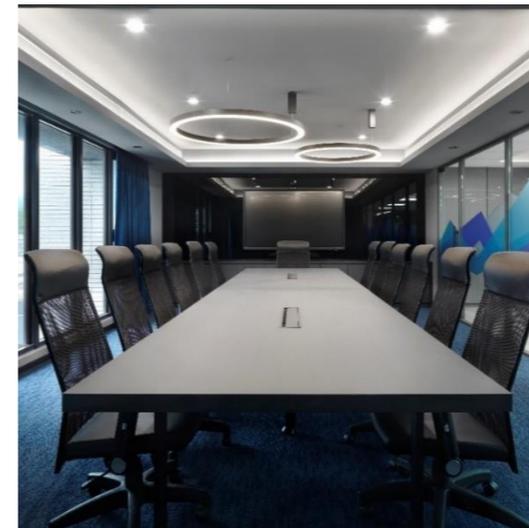
Taipei Head Office

Name GLC Engineers and Constructors Co., LTD.
Employees 30+
Capital TWD 100,000,000
Department Technology, Sales and Marketing,
Administration, Finance



Singapore Branch

Name GLC Green Energy Co., LTD.
Department Sales and Marketing (SEA Market)



Taipei Head Office

Su'ao Factory

Name	GLC Engineers and Constructors Co., Ltd. (Taipei Head Office)
Employees	50+
Capital	TWD 100,000,000 (Taipei Head Office)
Office Area	252 m ²
Production Area	3,000 m ²
Warehouse Area	500 m ²
Surface	
Treatment Area	750 m ²
Outdoor Area	9,500 m ²



Su'ao Factory

Ningbo Factory

Name	Ningbo Chang Ju Environmental Equipment Co., Ltd. (CJEE)
Employees	30+
Capital	USD 850,000
Office Area	180 m ²
Production Area	2,420 m ²
Warehouse Area	400 m ²
Outdoor Area	2,000 m ²



Ningbo Factory

Vietnam Factory

Name	GLC Ecotech Co., Ltd. / GLC Vietnam Engineers and Constructors Co., Ltd.
Employees	80+
Capital	USD 4,000,000 / USD 1,500,000
Office Area	900 m ²
Production Area	8,500 m ²
Warehouse Area	200 m ²
Outdoor Area	6,000 m ²



Vietnam Factory



Su'ao Factory



Ningbo Factory



Vietnam Factory

Registered Name	GLC Engineers and Constructors Co., Ltd.	Ningbo Chang Ju Environmental Equipment Co., Ltd. (CJEE)	GLC Ecotech Co., Ltd.
Country	Taiwan	China	Vietnam
Capital	TWD 100,000,000 (Taipei Head Office)	USD 850,000	USD 4,000,000
Office Area	252 m ²	180 m ²	900 m ²
Production Area	3,000 m ²	2,420 m ²	8,500 m ²
Warehouse Area	500 m ²	400 m ²	200 m ²
Surface Treatment Area	750 m ²	-	-
Outdoor Area	9,500 m ²	2,000 m ²	6,000 m ²
Manufacture Rate	35%	10%	55%

- **2000** GLC was established to provide engineering, steel fabrication and erection work.
- **2003** Ningbo factory was established.
- **2005** Old factory in Taiwan was moved to the place now in Su'ao.
- **2009** Get the certification of ISO 9001:2008 & ISO 14001:2008.
- **2013** Vietnam factory was established.
- **2015** Get the certification of ISO 9001:2015 & ISO 14001:2015.
- **2018** **GLC Ecotech Co., Ltd.** was established in Dinh Vu-Cat Hai Economic Zones in Vietnam.
- **2022** **GLC Green Energy Co., Ltd.** will be the first oversea branch office established in Singapore.

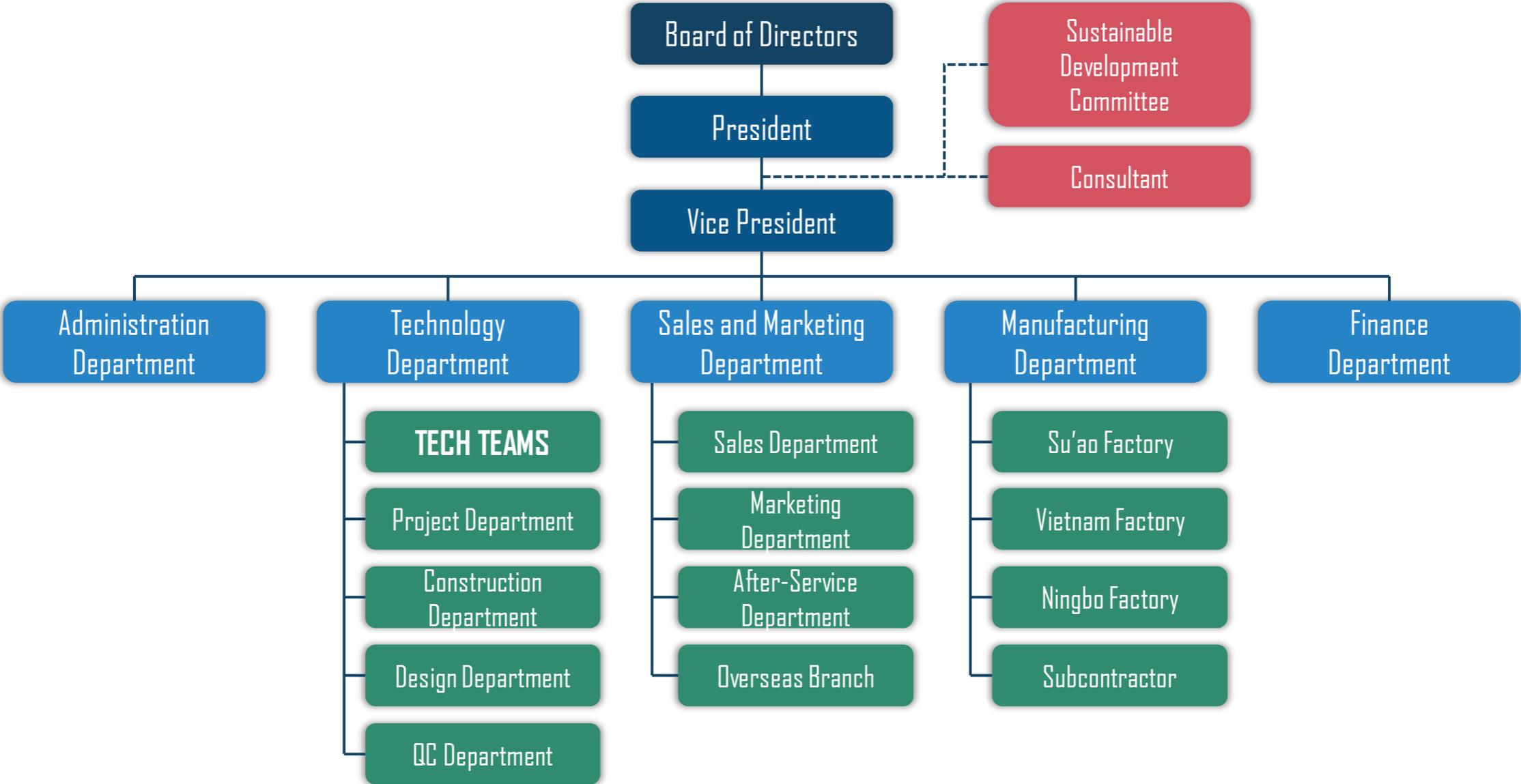


Manufacture qualified in Vietnam



02

About Members



Technology Department

Project management (PM), basic and detail design, and construction are held in this department.



Sales and Marketing Department

Global sales and marketing business, after-service, and overseas branches are held in this department.



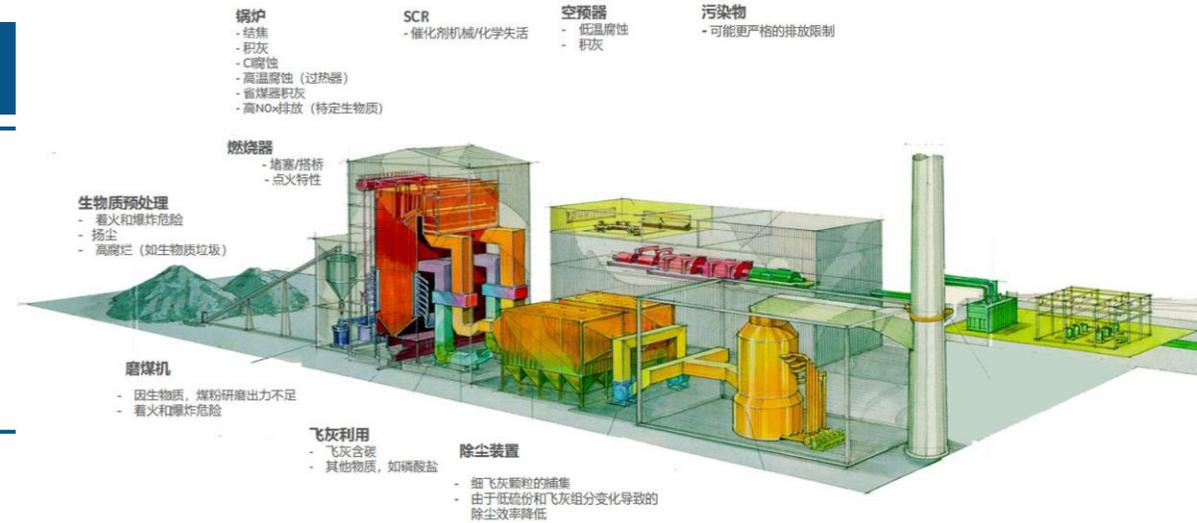
Manufacturing Department

Our own factories, subsidiaries, and subcontractors are held in this department.



TECH Teams - GLC Beijing

In order to strengthen technical cooperation, we build up a TECH teams - GLC Beijing in China. Team members include former professional technician of GE/Alstom Asia Pacific Region, which have rich experiences with biomass projects.



Main Cases

Plants	Boiler Type	Capacity	Co-fired Ratio	Biomass Type	Transport	Year	Country
Amer Unit 8	Subcritical	640 MW	25%	Wood pellets	Shipping	2002	Netherlands
Fiddlers Ferry	Subcritical	2x500 MW	20%	Wood pellets	Truck	2005	UK
Drax	Subcritical	6x600 MW	10%	Wood pellets	Truck/Train	2008	UK
Eemshaven	Ultra-Supercritical	800 MW	15%	Wood pellets	Shipping	2018	Netherlands

First in Europe

First in UK

Biggest in UK

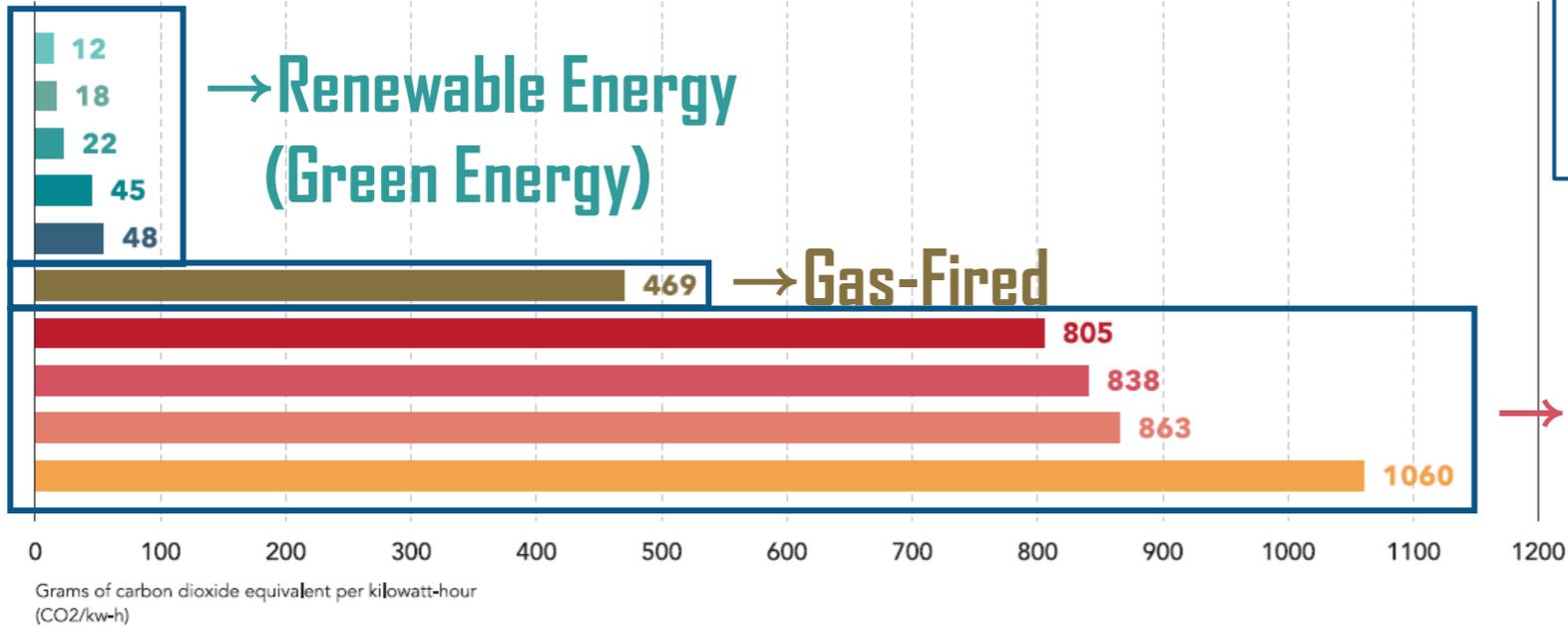
*All cases are the professional technicians designed while in GE/Alstom.



03

Industry

Carbon Emissions of Different Power Generation Methods



With the same kW-h of electricity, renewable energy emits carbon more less than gas- or coal-fired power do.

風力 Wind 12g CO₂/kw-h	生質能 Biomass 18g CO₂/kw-h	太陽能 (聚熱型) Solar CSP 22g CO₂/kw-h	地熱 Geothermal 45g CO₂/kw-h	太陽能 (光電型) Solar PV 48g CO₂/kw-h
天然氣 Natural Gas 469g CO₂/kw-h	超超臨界機組 USC Coal Ultra-Supercritical 805g CO₂/kw-h	氣化複循環發電系統 Coal IGCC 838g CO₂/kw-h	超臨界燃煤機組 Coal supercritical 863g CO₂/kw-h	亞臨界燃煤機組 Coal subcritical 1060g CO₂/kw-h

*Source: Greenpeace. November 2017. The Truth About Coal-Fired Power Generation in the World and Taiwan.

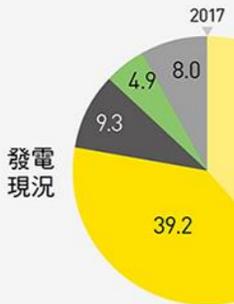
Energy Plan in Different Countries

■ Coal-Fired ■ Gas-Fired ■ Renewable Energy ■ Nuclear ■ Others

Taiwan

台灣

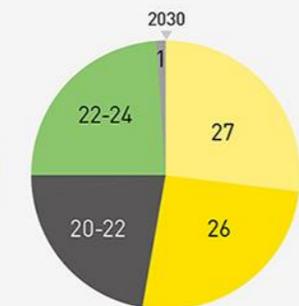
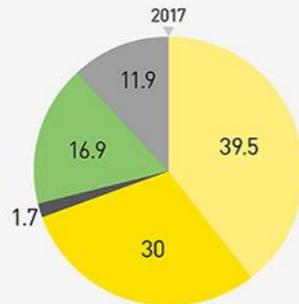
五成「賭氣」，
補核電、燃煤缺口



Japan

日本

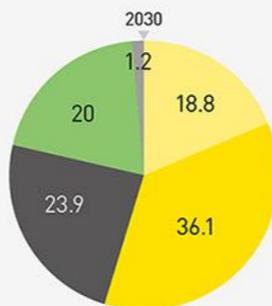
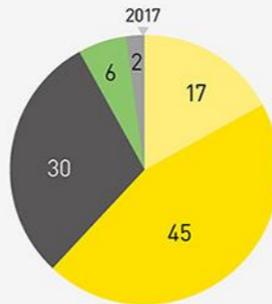
加碼近兩成核電，
降天然氣比例



S. Korea

韓國

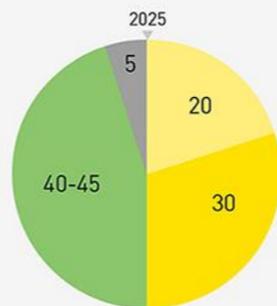
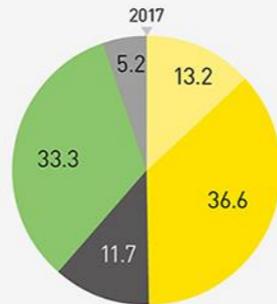
降低燃煤，逐步降
低核電佔比，大力
發展再生能源



Germany

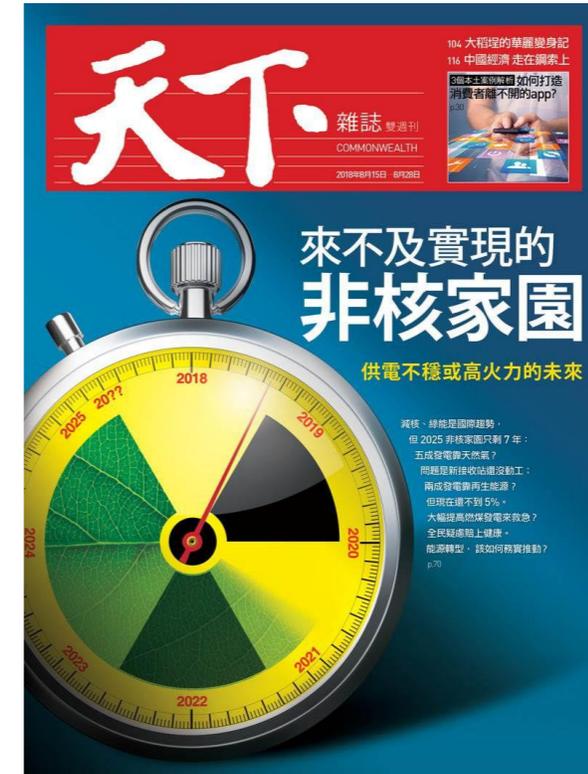
德國

80年代開始轉型，
拚四成綠電
打造非核家園



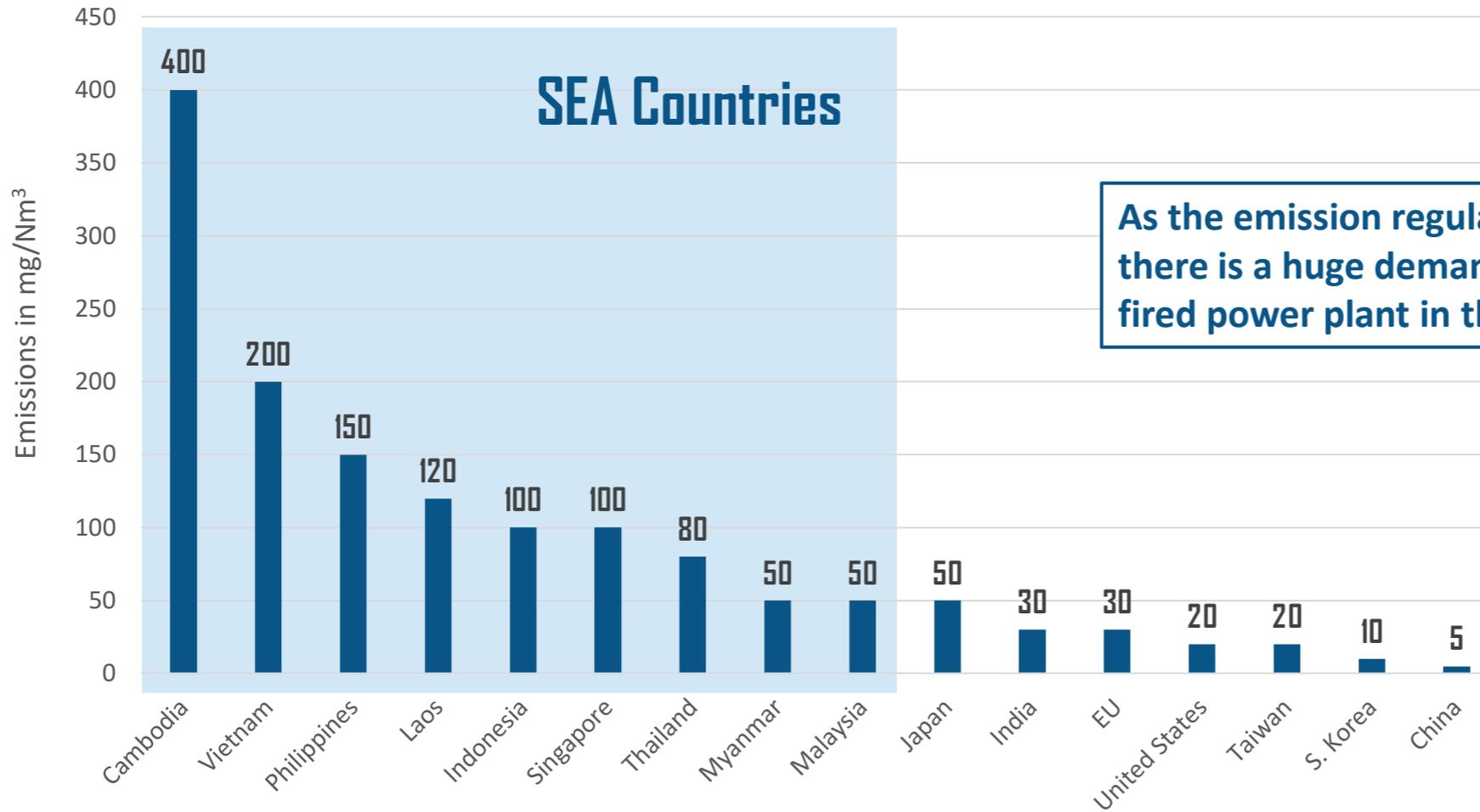
Current
Situation
(2017)

Future
Goal
(2025/30)



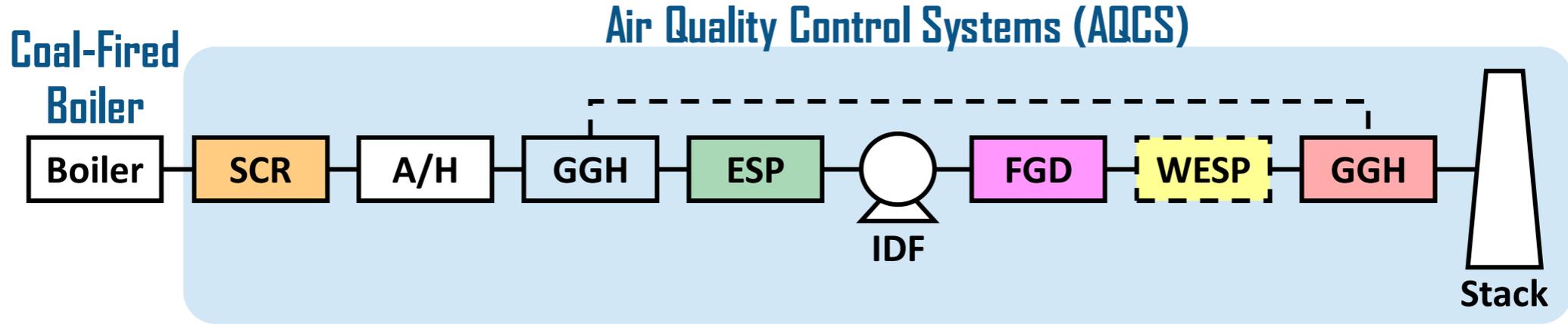
*Source: K. Y. Liu. August 2018. Commonwealth Magazine Vol. 654

Regulations in Different Countries



*Source: Vinay Trivedi 2021, *Coal-based Thermal Power in Southeast Asian Countries*, Centre for Science and Environment, New Delhi
 Wilczyńska-Michalik, W., Dańko, J., Michalik, M. (2020). Characteristics of Particulate Matter Emitted from a Coal-Fired Power Plant.
Polish Journal of Environmental Studies, 29(2), 1411-1420. <https://doi.org/10.15244/pjoes/106034>

Coal-Fired Power Plant Equipment



- For the stricter regulations, some clients are facing the issue of upgrading AQCS systems (especially ESP) in coming years.
- For the goal to reduce carbon emission, most of the coal-fired boilers are planned to transform gas-fired boilers or co-fired with biomass. For those expired equipment will even be shut down directly.



GLC can provide the best solution according to the client's budget, needs, and future plans.



04 Approach

GLC provides all services in both Energy and Environment fields.

Energy



Environment



- ✓ Ability in Large EPC Services
- ✓ Leading Technology in Green Energy Field
- ✓ High-Quality Manufacturing and Services

Waste to Energy (WtE)

The renewable energy center Waste to Energy (WtE) has been actively established in Taiwan, mixed burning by biomass fuels such as wood pellets, palm shells, biogas, etc. EU countries and neighbor countries like Japan and S. Korea have already implemented to reduce carbon instead of using coal energy and nuclear power. In addition to the air pollution control system, we also actively develop combustion control technology to achieve cleaner exhaust emissions.



Wood Pellets



Palm Shells



Air Quality Control Systems (AQCS) EPC Services

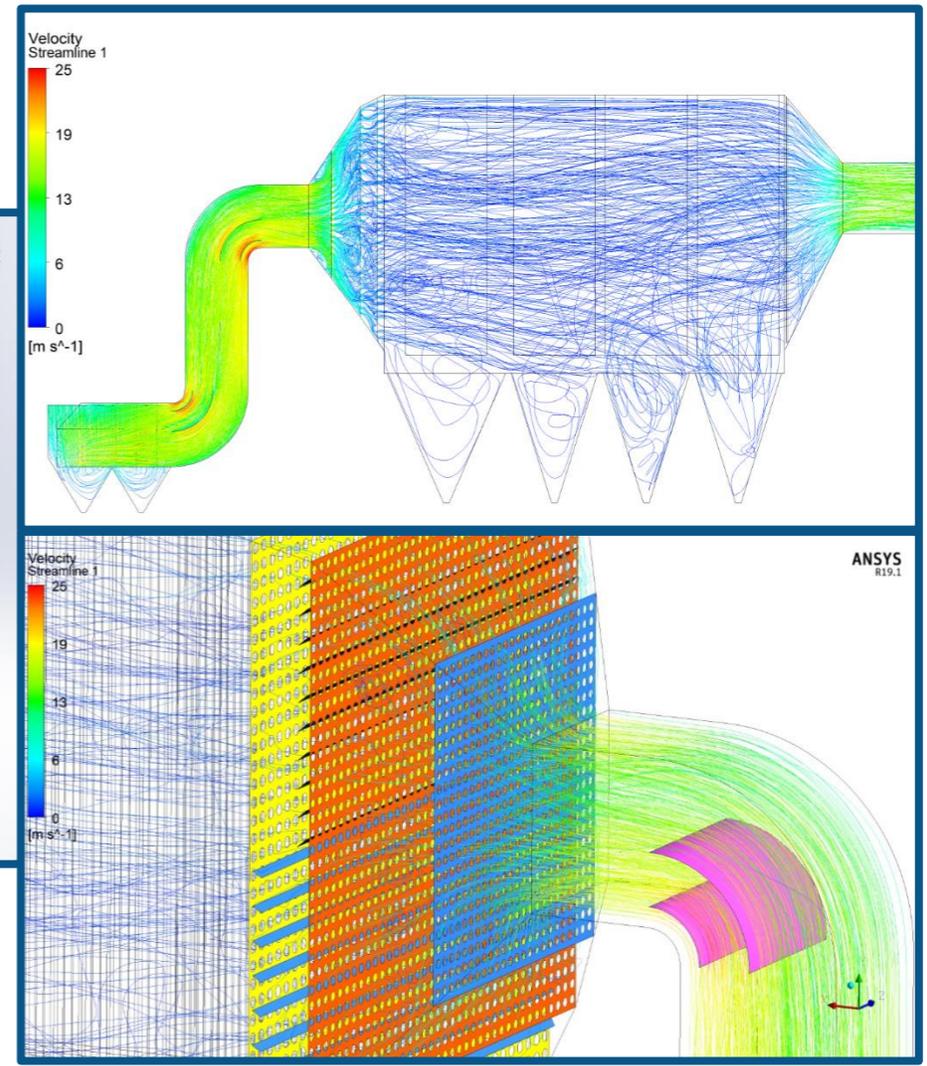
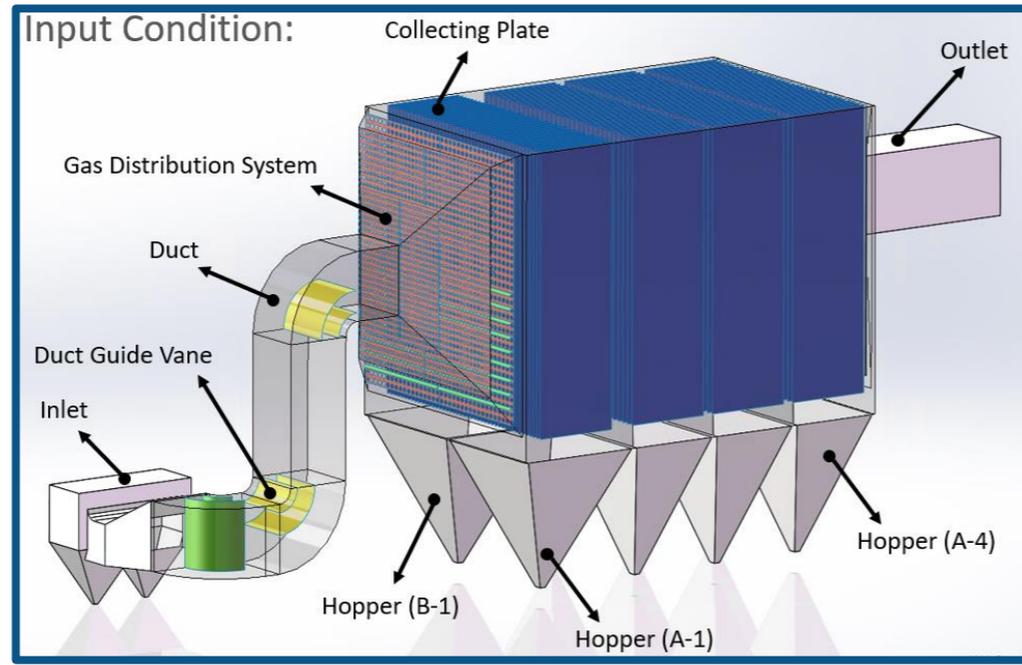
GLC has dedicated in Air Quality Control Systems (AQCS) EPC Services for over 20 years experiences. Our technologies are ahead of the regulations, and the products we manufactured are qualified by large scale company over the world. GLC is one of the few companies that can provide one-stop shopping in the industry.

- Consult
- Evaluate
- Permit
- Project Management
- Design

- Manufacture
- Erection
- Commissioning
- Maintenance
- After Service

- Consult
- Evaluate
- Permit
- Project Management
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CFD (Computational Fluid Dynamics) Analysis and Improvement Plan Provision



AQCS (Air Quality Control System) Whole Plant Project Management

Consult

Evaluate

Permit

Project Management

Design

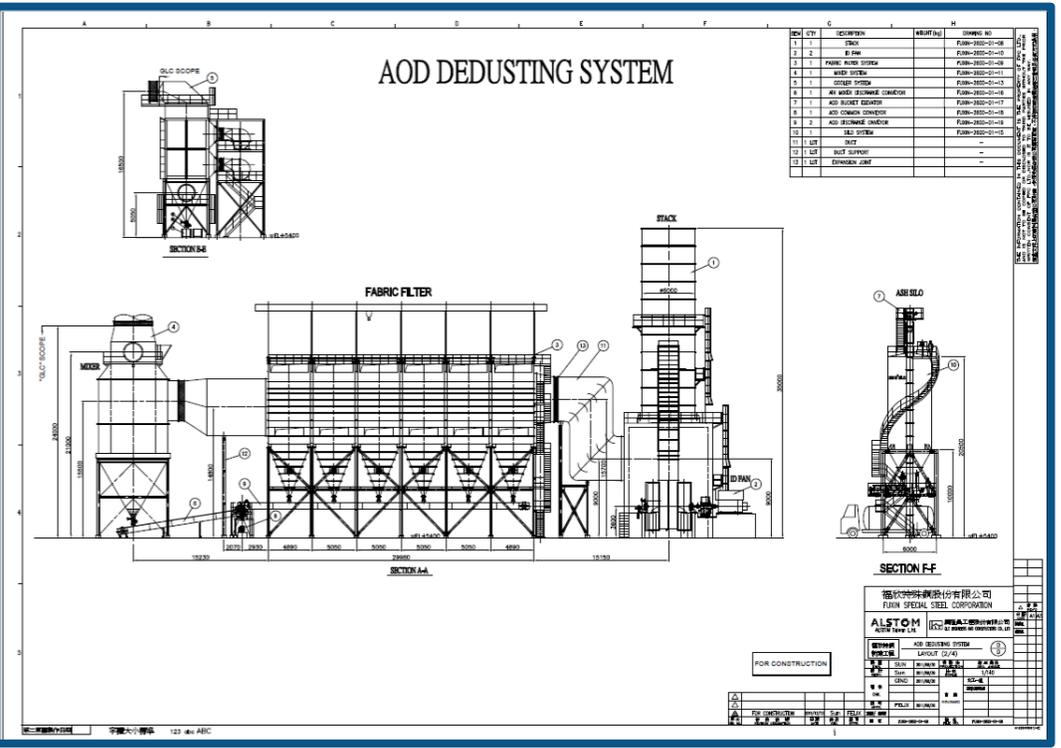
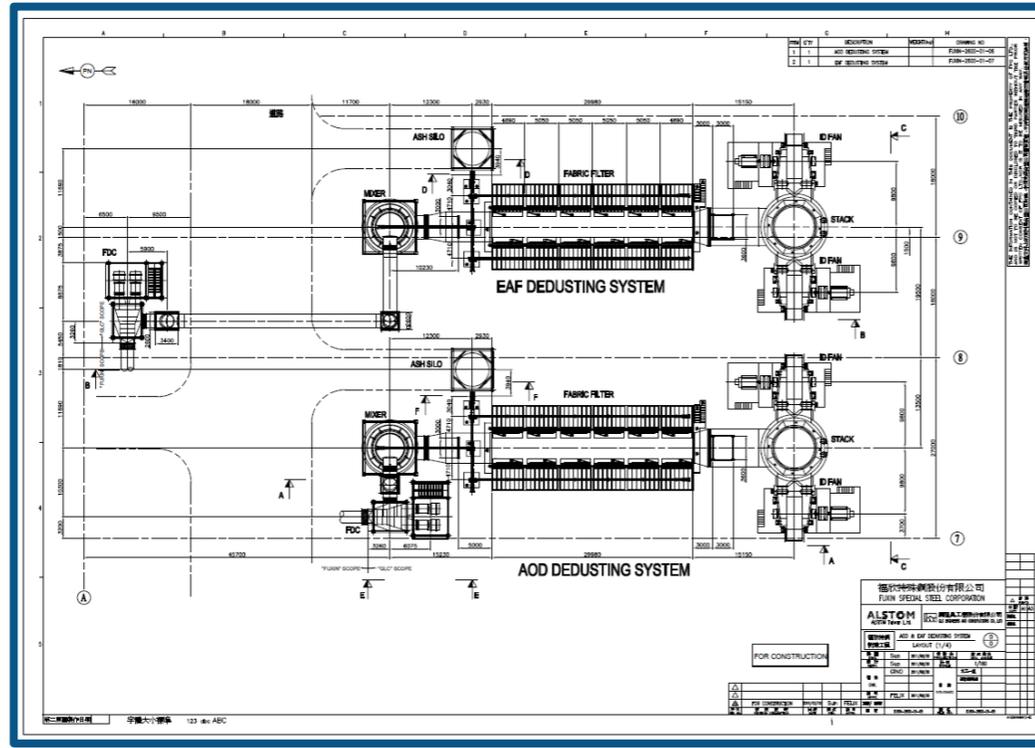
Manufacture

Erection

Commissioning

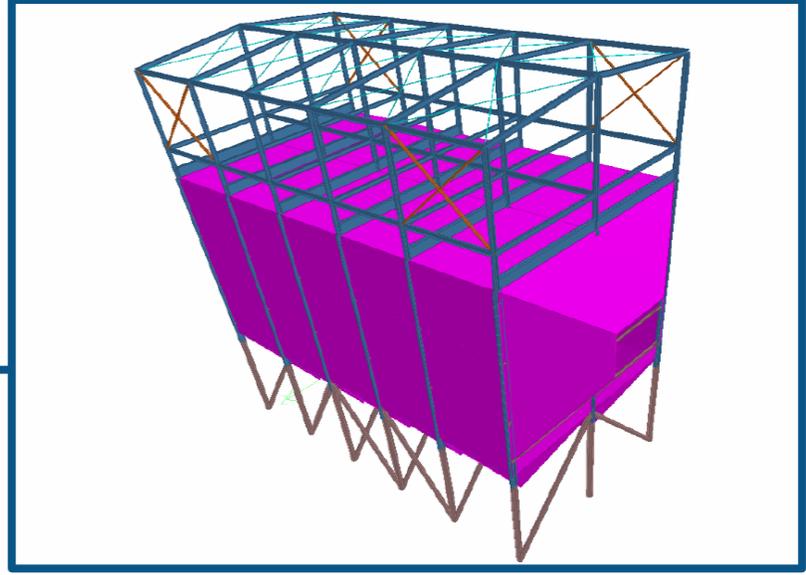
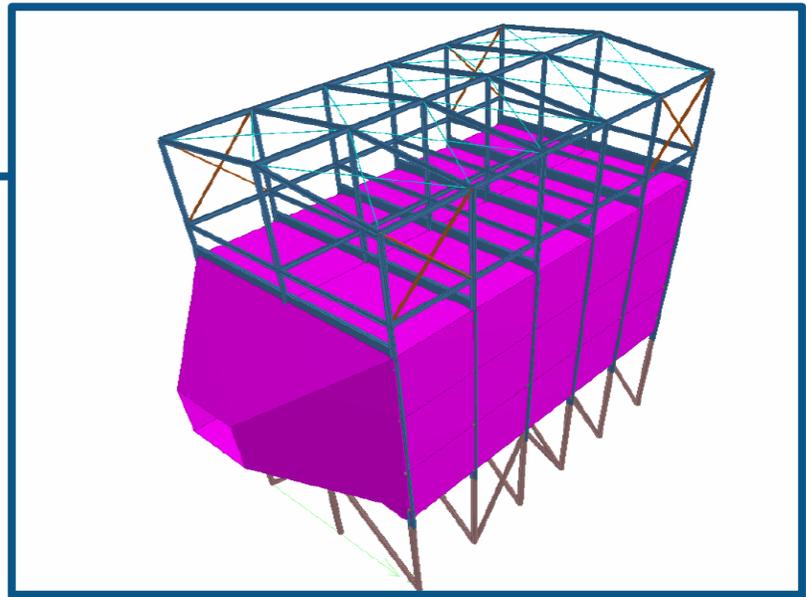
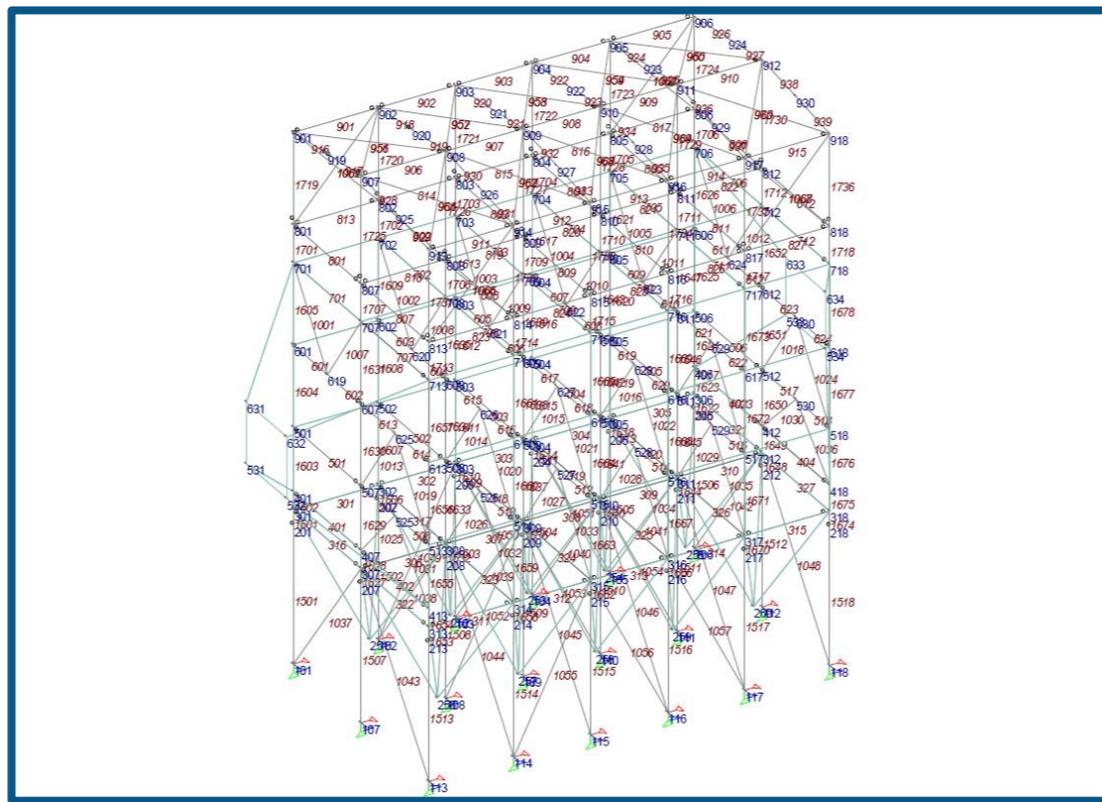
Maintenance

After Service



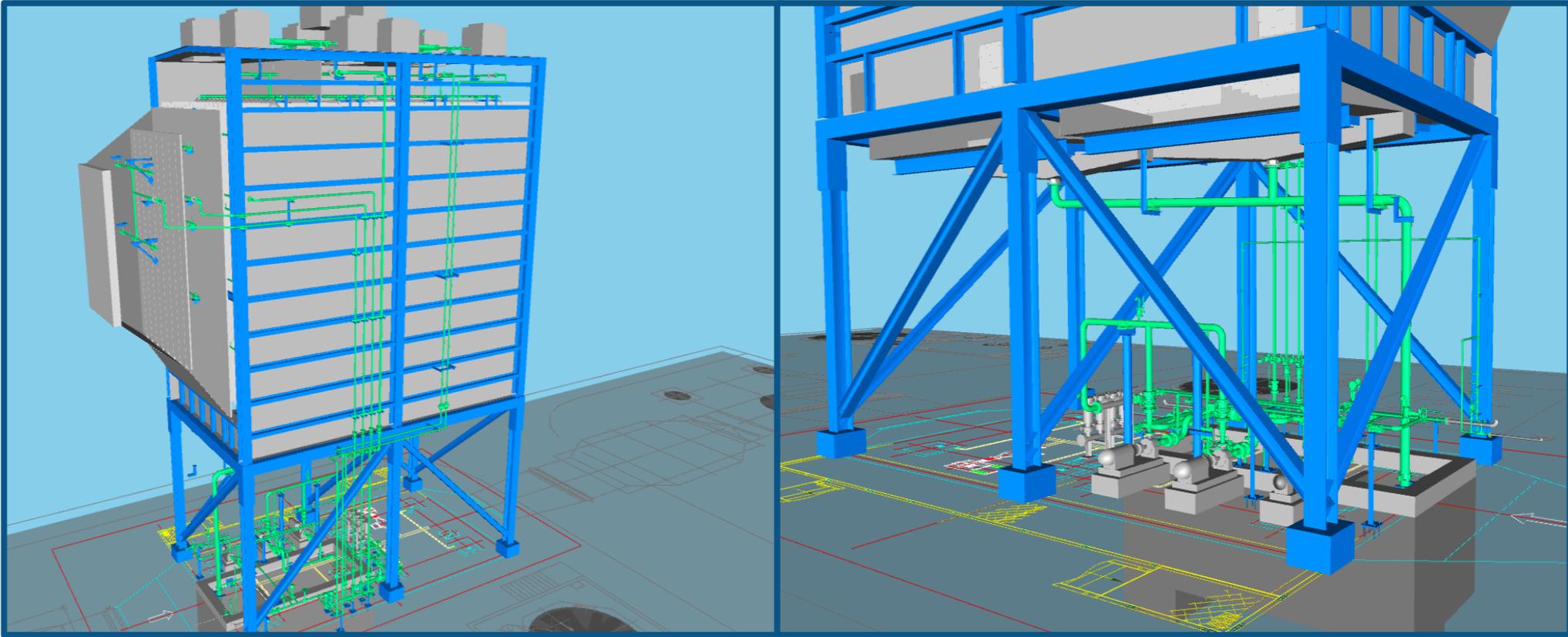
- Consult
- Evaluate
- Permit
- Project Management
- Design**
- Manufacture
- Erection
- Commissioning
- Maintenance
- After Service

Steel Structure Design, Calculation, 3D Simulation



3D Simulation of Equipment Appearance and Pipeline Configuration

- Consult
- Evaluate
- Permit
- Project Management
- Design**
- Manufacture
- Erection
- Commissioning
- Maintenance
- After Service



GLC Does the Manufacture and OEM of AQCS Related Equipment

Consult

Evaluate

Permit

Project Management

Design

Manufacture

Erection

Commissioning

Maintenance

After Service

Electrostatic Precipitator (ESP)



Ho-Ping Power Plant
@Hualien, Taiwan

Fabric Filter, Bag Filter (FF)



Fujian Fuxin Special Steel Co., Ltd.
@Fujian, China

Wet Electrostatic Precipitator (WESP)



Chang Chun Petrochemical Co., Ltd.
@Miaoli, Taiwan

GLC Does the Manufacture and OEM of AQCS Related Equipment

Consult

Evaluate

Permit

Project Management

Design

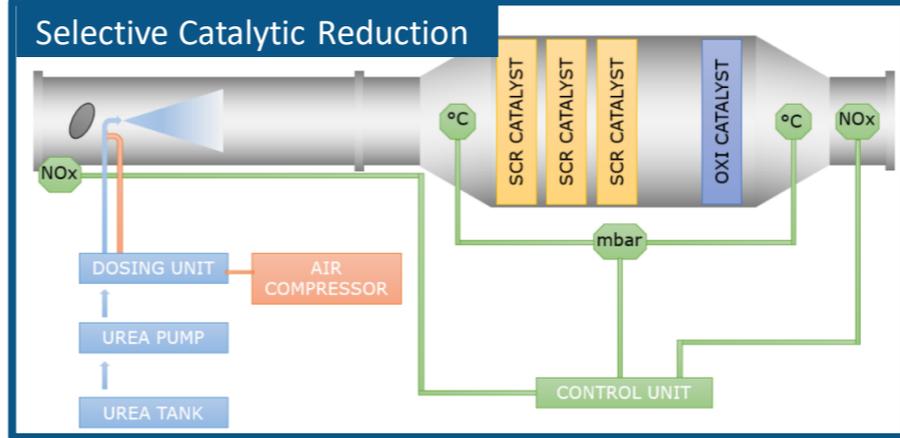
Manufacture

Erection

Commissioning

Maintenance

After Service



AQCS Whole Plant Equipment Manufacturing, Installation, and Commissioning

- Consult
- Evaluate
- Permit
- Project Management
- Design
- Manufacture**
- Erection**
- Commissioning**
- Maintenance
- After Service



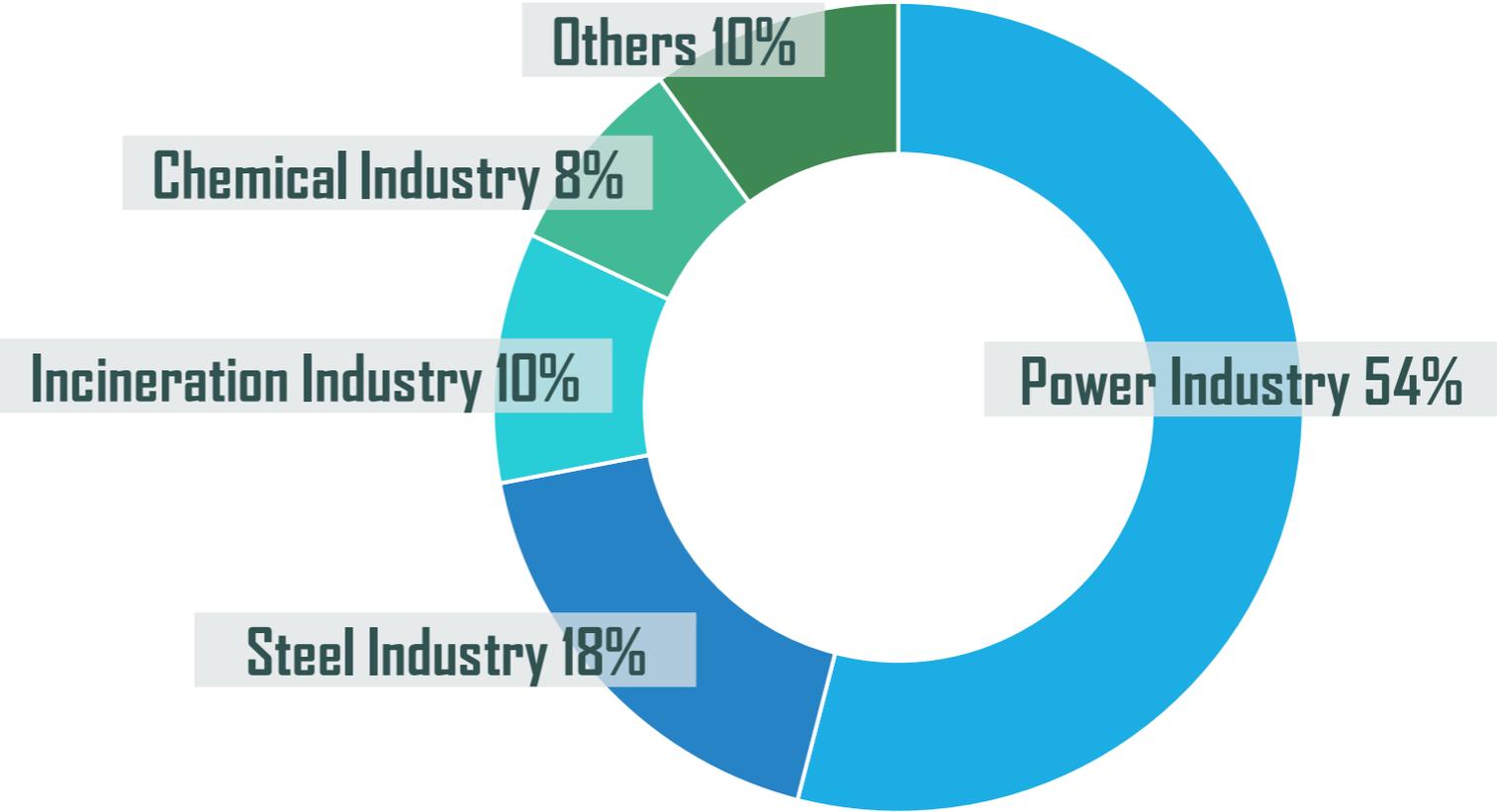
After Service for Repair, Maintenance, Adjustment, and Commissioning

- Consult
- Evaluate
- Permit
- Project Management
- Design
- Manufacture
- Erection
- Commissioning
- Maintenance**
- After Service**



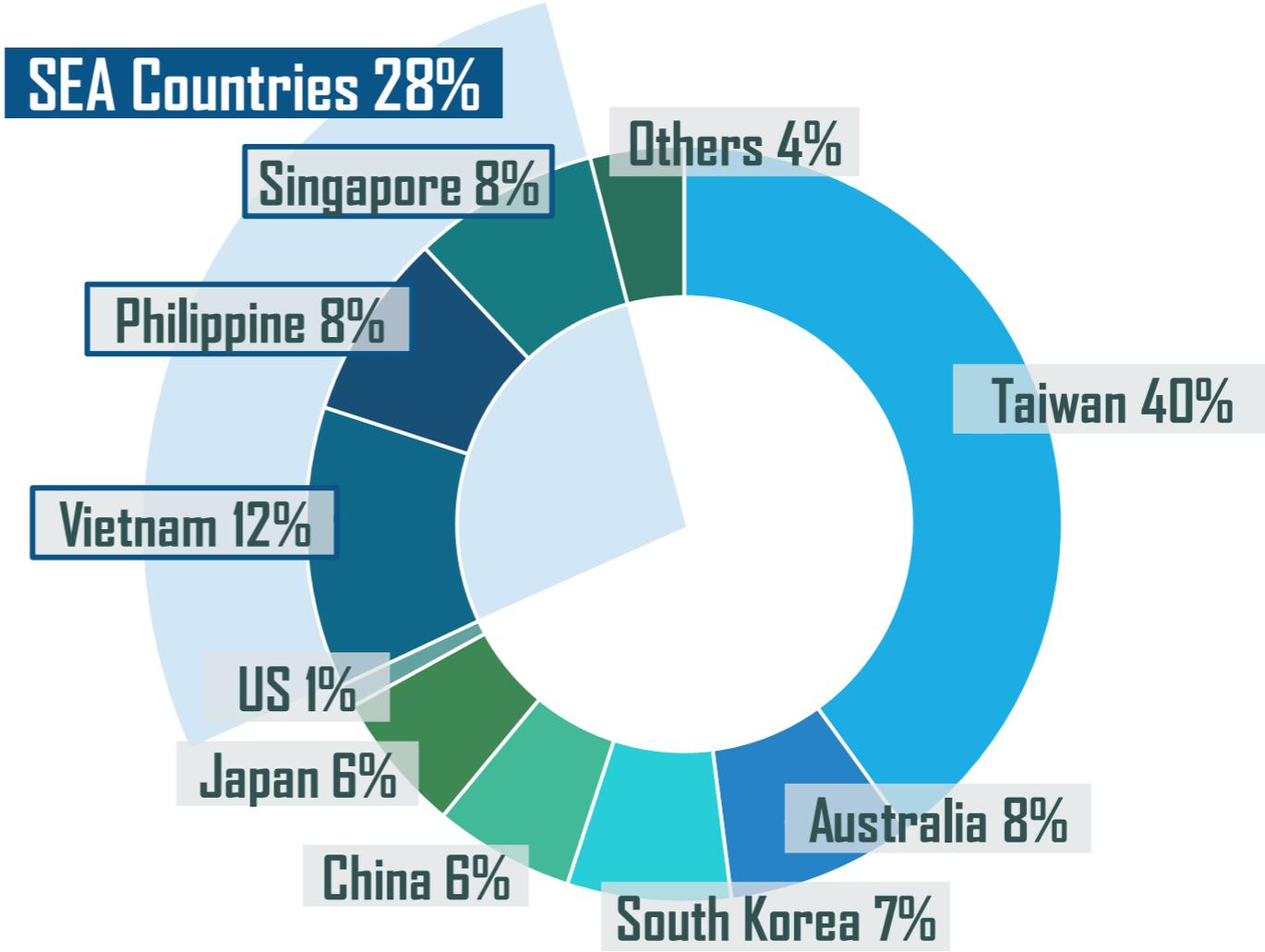
During: 2000 - 2022

- Power Industry
- Steel Industry
- Incineration Industry
- Chemical Industry
- Others



During: 2000 - 2022

- Taiwan
- Australia
- South Korea
- China
- Japan
- US
- Vietnam
- Philippine
- Singapore
- Others





With precision manufacturing and pre-assembly, GLC can complete erection and commissioning work efficiently. For more than 20 years, GLC has accomplished over 50 new projects and over 20 retrofit projects.

Ho-Ping Power Plant
Collecting Plate Suspension Installation Work
@Hualien, Taiwan



Ho-Ping Power Plant (Hualien, Taiwan)

Ho-Ping Power Company

ESP Retrofit

In Construction

2018 - 2021

Gas Volume

2x 2,111,600 Nm³/hr

Collecting Efficiency

99.95 %

Outlet Dust Emission

48 mg/Nm³
▶ 10 mg/Nm³

The largest power plant in eastern Taiwan

The fourth largest coal-fired power plant in Taiwan



Formosa Ha Tinh Steel Power Plant (Ha Tinh, Vietnam)

Formosa Ha Tinh Steel Corporation

ESP New-Built

In Construction

2013 - 2016

Gas Volume

3x 565,454 Nm³/hr

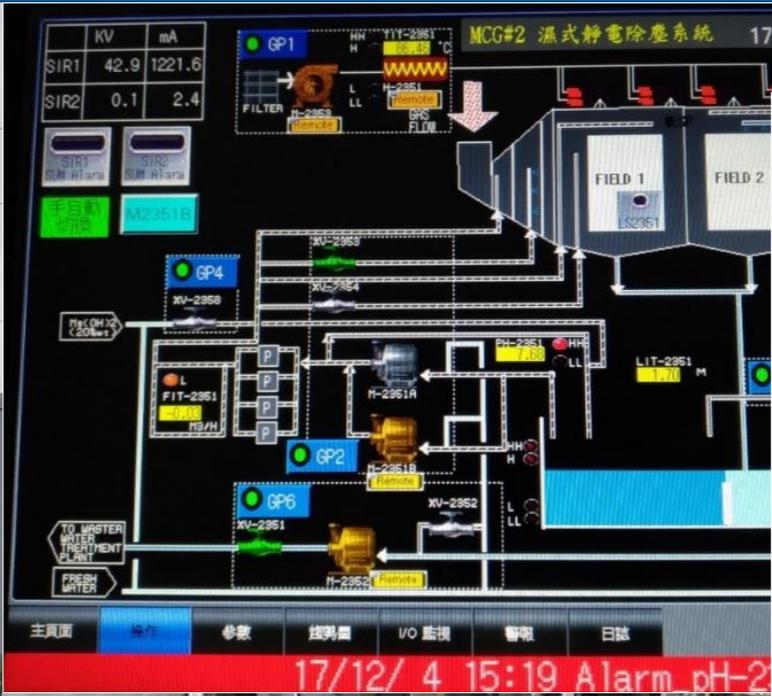
Collecting Efficiency

99.98 %

Outlet Dust Emission

23 mg/Nm³

Taiwan's largest investment in Vietnam



CCPC Miaoli Plant (Miaoli, Taiwan) Chang Chun Petrochemical Co Ltd (CCPC) WESP New-Built

In Construction

2017

Gas Volume

379,400 Nm³/hr

Collecting Efficiency

84 %

Outlet Dust Emission

5 mg/Nm³ (Contract)

Outlet emission could be 1 mg/Nm³ tested by third-party.

GLC is ready for facing the future with 3 strengths.



Air pollution regulations are getting stricter day by day. Take the regulations of power industry in Taiwan for example, **outlet dust emission for new-built must lower than 10 mg/Nm³, for those old plant also needs to be improved to 20 mg/Nm³.**

The outlet dust concentration of the Chang-Chun retrofit project we completed in 2017 was reached **1 mg/Nm³**, which is not only **far lower than the owner's requirements**, but also proves that **our technology is ahead of the regulations.**

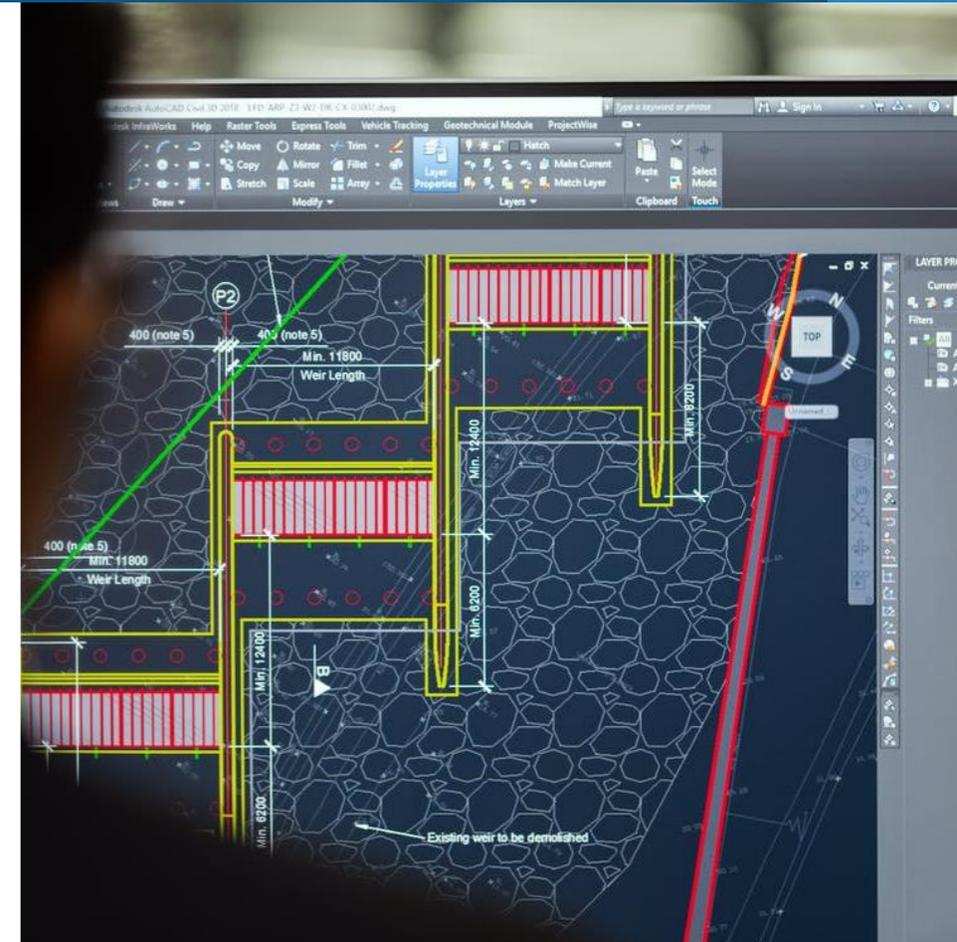


In addition to establishing our own factories in Taiwan, we also set up in China and Vietnam, which are convenient to provide local cases manufacturing and manpower support nearby. On the other hand, **all the factories are close to the port**, export costs and time can be greatly reduced.

Due to the political factors, Taiwan is unable to sign FTAs with major international economies. Vietnam has signed FTAs with other countries, **we set up factories in Free Trade Zone in Vietnam**, which can greatly **reduce trade costs** and connect to the market that accounts for **60% of the world's total GDP**.



With providing complete industrial services (Total Solution), **GLC is one of the few companies that can provide one-stop shopping in the green energy industry.** Customers do not need to undertake the cost of company-to-company communication. At the same time, the spare parts are also manufactured and stored by our own factories, which not only reduces the cost of replacement, but also reduces the difficulty of maintenance. GLC can meet your requirement through a complete range of services.



GLC strives to expand the market and beats the challenges.

SEA Market

GLC will keep expanding the SEA Market in the future. Build-up local teams and find reliable agent will be our strategies.

Promises to Clients

For domestic cases (Taiwan), we provide a guarantee of on-site service within 24 hours. For overseas cases, we provide a guarantee of contact with 24 hours.





Retrofit Projects: Ho-Ping Power Plant (Taiwan, 2019)

Through precision manufacturing and pre-assembly, we are able to complete erection and commissioning work in just 40 days.



職位要件與工作內容(業務工程師)

需求條件：

- 1、臺灣公私立大專院校畢業生
- 2、機械、電機、化工、電子、環工等理工科系佳(商貿與國貿科系佳)
- 3、具英文或其他第二外語能力佳

工作內容：初期先了解公司產品與各部門工作協調流程，熟悉後開始指派正式業務。

- 1、國內外業務(包含直接客戶及代理商)開發與維繫
- 2、產品與服務之定議價管理
- 3、訂單與業務處理
- 4、設備保固調查、維運與檢修等售後服務諮詢

Sales Engineer (Malaysian & Thailander & Filipino)

Requirements:

1. Graduated from Taiwan's colleges and universities .
2. Mechanical, electrical, chemical, electronics, environmental engineering and other science and engineering majors are preferred (business and international trade majors are preferred).
3. Good command of English or other second foreign language .

Job Discription:

In the first stage, you need to understand GLC's products and the work coordination process of departments, and then start to assign formal business after familiarity.

1. Development and maintenance of domestic and foreign business (including direct customers and agents).
2. Product and service pricing management.
3. Order and business processing.
4. After-sales service consultation (such as equipment warranty investigation, maintenance and repair).



GLC

Thanks for your attention!

