

大型模块化工厂建造解决方案 Construction Solution for Large-scale Modular

通过细致科学的场地使用规划，海油工程青岛场地同期可以开展40+个单体的总装建造工作。

Super capacity to erect more than 40 modules simultaneously at COOEC Qingdao yard by scientific and reasonable yard use planning.

当前记录：2022年，青岛场地高峰期同期在建16个项目65个单体，其中同期总装阶段的单体最大达到38个。

Current Record: In 2022, 16 projects including 65 units under construction at Qingdao yard, among which there are Max. 38 units under erection at the same time.



Modularized Plant Projects Record at COOEC Qingdao Yard

摘要:

Abstracts:

World-class modularized product construction capability 世界级模块化产品建造能力

PAR+PAU integrated construction 一体化建造

290+ Module Units 模块单体

5 Trains LNG plants 列液化天然气工厂

1 Chemical plant 化工厂

1 Refining plant 炼化工厂

1 Mining plant 采矿工厂





► Modularized Plant – Koniambo Nickel Plant

CLIENT 业主	EPC 总包	TYPE 类型	SIZE 尺寸	WEIGHT 重量	UNIT QTY. 单体数量	LOCATION 安装地	DELIVERY TIME 交付时间
Xstrata	Technip-Hatch	Onshore mining modularized plant	38.65m X 22.5m X 67.7m (Length*Width*Height)Max.	30,000 tons	15 modules	New Caledonia	2010.10

► Modularized Plant –Gorgon LNG Plant



CLIENT 业主	EPC 总包	TYPE 类型	SIZE 尺寸	WEIGHT 重量	UNIT QTY. 单体数量	LOCATION 安装地	DELIVERY TIME 交付时间
Chevron	KJVG	Onshore LNG PAR	N/A	41,500 tons	172 Modules	WA Barrow Island	2013.12

► Modularized Plant –Gorgon LNG Plant



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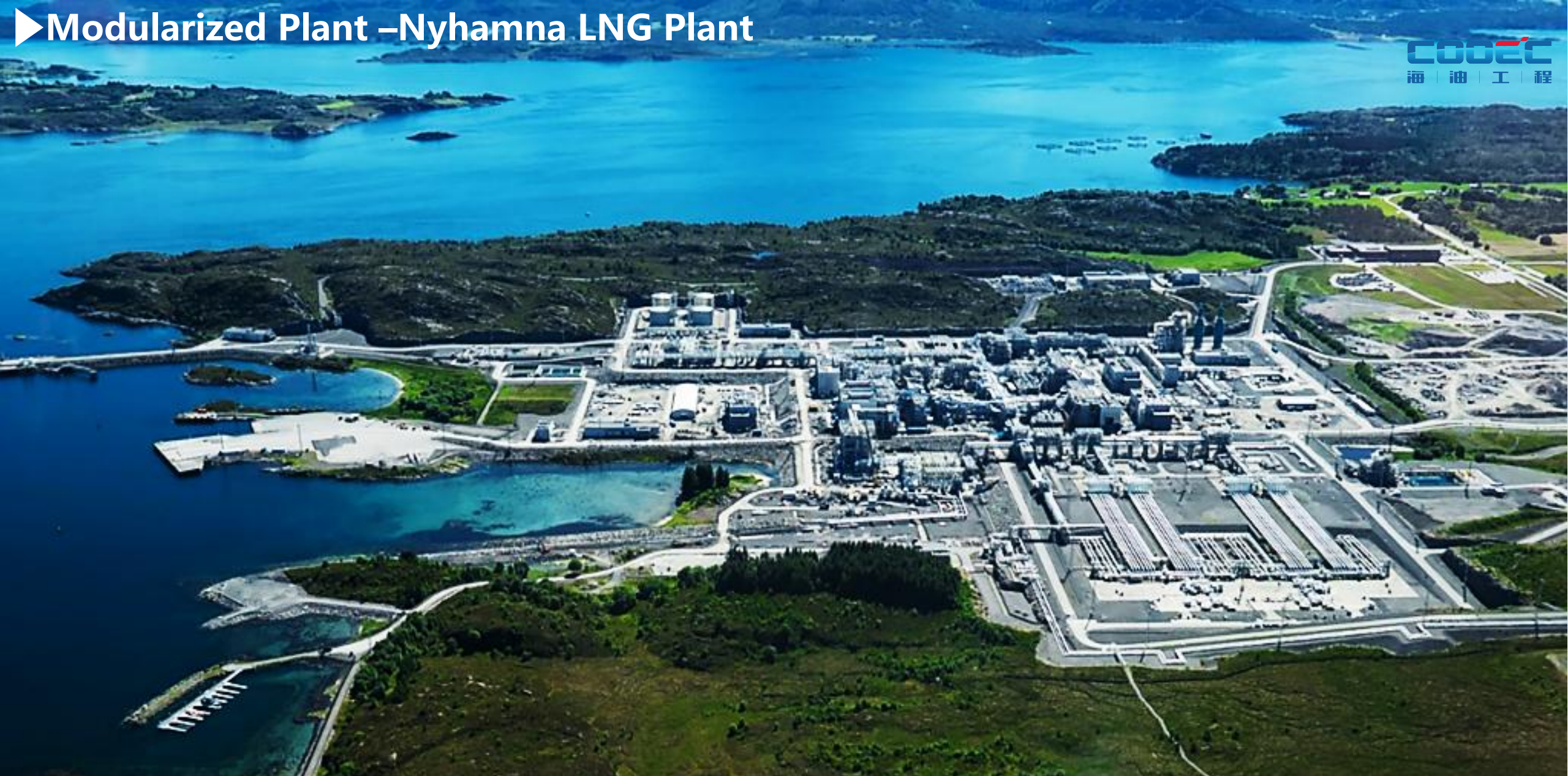
►Modularized Plant –Nyhamna LNG Plant



CLIENT 业主	EPC 总包	TYPE 类型	SIZE 尺寸	WEIGHT 重量	UNIT QTY. 单体数量	LOCATION 安装地	DELIVERY TIME 交付时间
SHELL	KVAERNER	Onshore LNG PAR	N/A	1,800 tons	17 modules	Norway	2015.06

► Modularized Plant –Nyhamna LNG Plant

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► Modularized Plant –Ichthys LNG Plant



CLIENT 业主	EPC 总包	TYPE 类型	SIZE 尺寸	WEIGHT 重量	UNIT QTY. 单体数量	LOCATION 安装地	DELIVERY TIME 交付时间
INPEX	JKC	Onshore LNG Central PAR	350m X 42m (Length X Width)	50,000 tons	8 separate modules	Northern Territory, Australia	2015.06

► Modularized Plant –Ichthys LNG Plant



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►Modularized Plant –Pernis SDA Refining Plant



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SHELL	SHELL	Onshore Refining Modularized Plant	30m X 12m X 20m (Length*Width*Height)Max.	5,880 tons	5 PAUs+5 PARs	Netherland	2017.10

► Modularized Plant –CANADA LNG Plant



CLIENT 业主	EPC 总包	TYPE 类型	SIZE 尺寸	WEIGHT 重量	UNIT QTY. 单体数量	LOCATION 安装地	DELIVERY TIME 交付时间
LNGC	JFJV	Onshore LNG Modularized Plant	83m X 46m X 50m (Length X Width X Height) Max.	179,000 tons	35 Modules	Kitimat Town B.C., Canada	2023.03

► Modularized Plant –CANADA LNG Plant



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► Modularized Plant –BASF Ethylene Project



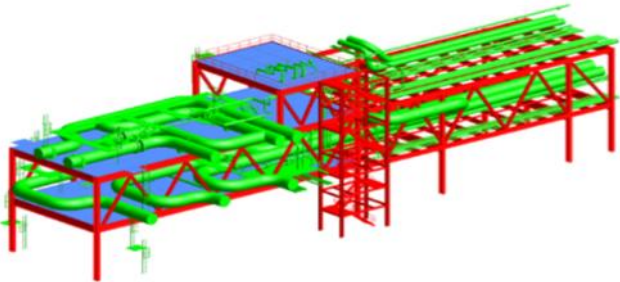
CLIENT 业主	EPC 总包	TYPE 类型	SIZE 尺寸	WEIGHT 重量	UNIT QTY. 单体数量	LOCATION 安装地	DELIVERY TIME 交付时间
BASF	China Huanqiu Engineering Co., Ltd	Onshre Refining Modularized Plant	50m X 20m X 47m (Length X Width X Height) Max. Module	15,350 tons	13	Zhan jiang, Guang dong province, China	2024.09

Modularized Plant Construction Capacity

PARs

- Connecting PARs/transporting LNG
- Small size, Lightweight, Numerous

PAR = ST+PI+Valve+Support+Instrument+
Lighting+Junction box+ Cable tray+
Safety Equipment

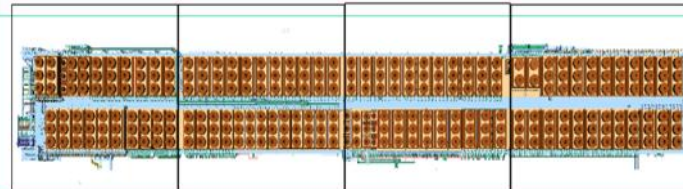


Central PARs

- Mainly for the liquefaction function
- Heavyweight, Small quantity

Central PAR = ST+PI+Air cooling
machine+Valve+Support+Instrument+Lighting
+Junction box+ Cable tray+Safety Equipment

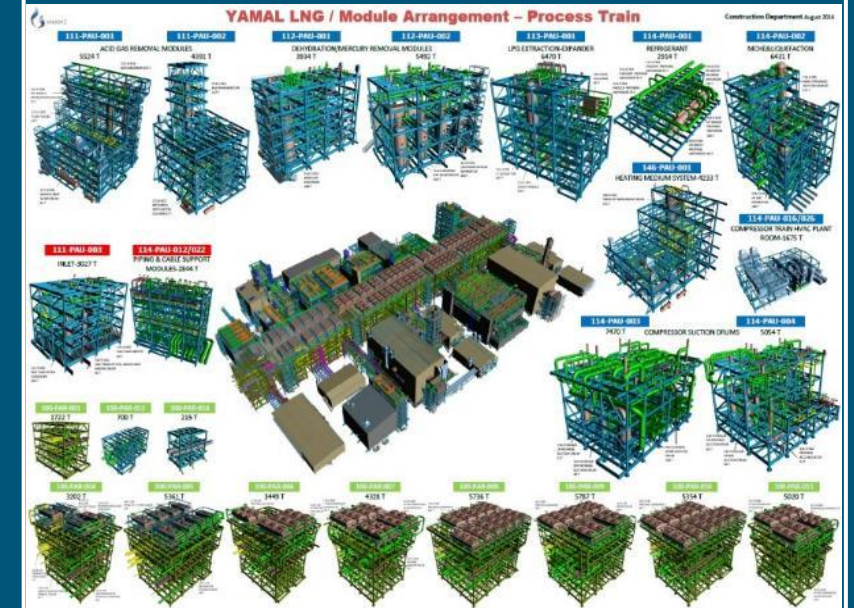
A2PD/A1PD A2PC/A1PC A2PB/A1PB A2PA/A1PA



Core Modules

- Process treatment module, Refrigeration, Liquefaction, Compression, Ventilation, Acid removal, Dehydration and Mercury Removal
- Heavyweight, functionalization

Core Modules= All Disciplines



► Modularized Plant Construction Capacity-Key technological breakthroughs

Special welding technique

- ❑ Welding technology of large diameter and ultra-low temperature stainless steel pipeline
- ❑ 625 Ni base composite pipe and 825 Ni base alloy ultra low temperature pipeline

Precision control technique

- ❑ SINGLE WELD Hook-up size control technology for pipeline ends
- ❑ Dimensional tolerance control technology for multi-leg (40) modules

Flange management technology

- ❑ Material control
- ❑ Personnel training and personnel qualification management
- ❑ Industry advanced normative processes and records

SPMT roll-off load out technology

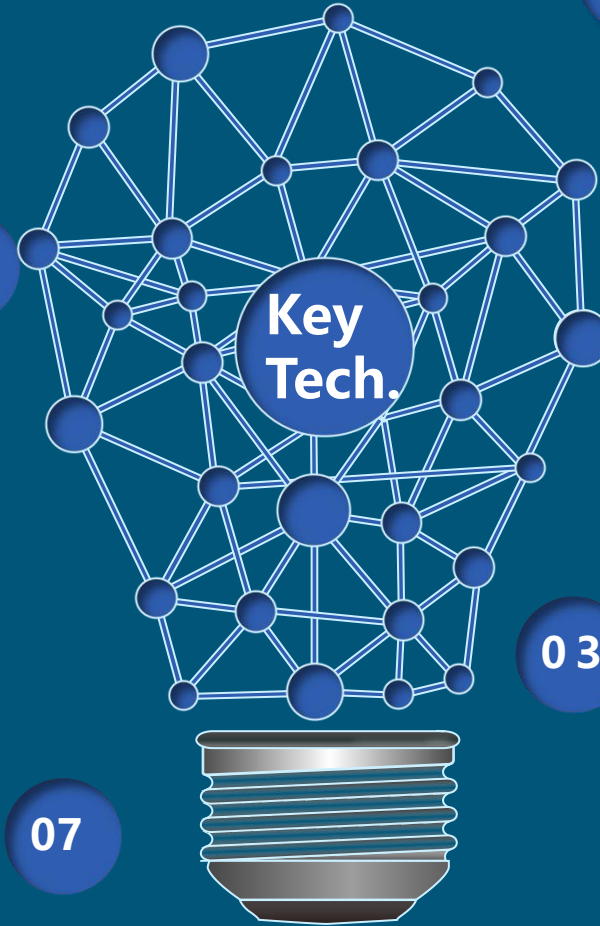
- ❑ Design and ship independently
- ❑ Innovative multi-module stacking ship

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06

07



Non-slide area construction technique

- ❑ Dynamic monitoring of foundation settlement
- ❑ Module multi point weighing technology
- ❑ Super long, super large module joint construction, joint pressure test technology
- ❑ Integrated construction technology

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Special insulation construction technology

- ❑ Cryogenic insulation technology
- ❑ Sound insulation and noise reduction technology
- ❑ Personal protection technology
- ❑ Foam glass construction technology

02

Passive fire prevention construction technology

- ❑ The new construction technology of multi-channel coating of fireproof paint on H-beam steel
- ❑ The application of new CSP anti-low temperature splashing material
- ❑ The application of vacuum sandblasting technology
- ❑ The trial of the protective material of peeling topcoat

03

2022年，海工青岛公司承建的加拿大LNG项目获得全球建筑业学会（CII）颁发的2022年全球最优秀AWP项目奖，是业界对青岛公司大型项目数字化管理执行能力的最高认可。

In 2022, LNG Canada project undertaken by COOEC Qingdao Yard won the AWP Large Project Award from Construction Industry Institute (CII).

It is the industry's highest recognition for large-scale project digital management and execution capability.

