



CCLPEC

长隆石化装备
CCLPEC®

Jiangsu Changlong Petrochemical Equipment Co., Ltd. (CCLPEC)

Factory Add: No.19-2 Fuxin Road, Zhangjiagang, Jiangsu Province, 215637, China.
Tel: +86-512-58165523

Shanghai Office (International sales)
Add: Room 810, West Jiangchang Road No. 160, Shanghai, 200436, China.
Tel: +86-21-63177319
sales@cclpec.com

www.cclpec.com

**DETAILS
MAKE
PERFECTION**

CCLPEC INTRODUCTION



Main Products

Marine loading arm
Marine Gangway
Quick Release Mooring Hook
Truck Loading and Metering Skid
Truck Loading Arm
Loading and Metering Control system

Annual Capacity

100 sets Marine loading arm
50 sets Gangway
200 sets Truck loading skid
200 sets Quick release mooring hook
500 sets Truck loading arm

Service

Customized design
Professional manufacture & quality control
Sophisticated on-site installation
and commissioning guidance
After-sales service

Codes and Standards

OCIMF
ISO16904
SIGTTO
ATEX Directive 94/9/EC
ASME Codes
EN/ISO codes



Mr. Feng, Shigong

Chief Engineer, Founder and General Manager

“

High-quality products and professional services are our core competitiveness. We have a professional and creative team, and take the needs of customers as our eternal pursuit.

”

Contents

01	Company Introduction
05	CCLPEC Products
07	Marine Loading Arm
11	ERC & QCDC
13	Swivel Joint & Hydraulic Electric Control
15	Marine Gangway
17	Quick Release Mooring Hook
19	Truck Loading and Metering Skid
25	Truck Loading Arm
27	Sealing Ring, Break-away Coupler
29	Aftersales Service
31	Reference Projects
33	Our Client



CCLPEC Introduction

The Plant Details

- Total Area: 32,000 sqm
- Building Area: 29,500 sqm, including:
 - Office Area: 1,500 sqm
 - Warehouse Area: 2,000 sqm
 - Plant Area: 26,000 sqm
- Outdoor Area: 2,500 sqm

Jiangsu Changlong Petrochemical Equipment Co., Ltd., referred to as CCLPEC, is a Chinese manufacturer specializing in fluid loading equipment and jetty machinery equipment. CCLPEC is a holding subsidiary of Zhangjiagang Furui Special Equipment Co., Ltd. (FURUISE, stock code 300228). With continuous and proven technical innovation, reliable manufacturing and on-site installation ability, CCLPEC is a leading manufacturer with cut-edge loading technologies, especially for cryogenic liquid (LNG), and dedicated to be one of the world's first-class equipment manufacturers.

CCLPEC is specialized in manufacturing standardized and customized equipment, providing customer in LNG and other petrochemical industries with meticulous service and cutting-edge technologies. With decades of experience, CCLPEC guarantees to provide customer with safe and reliable solutions meet requirements of various environments.

CCLPEC Products

Truck Loading and Metering Skid

Truck Loading Arm

Quick Release Mooring Hook

Marine Loading Arm

Marine Gangway

Marine Loading Arm



LNG Marine Loading Arm
HPNG Marine Loading Arm
Petrochemical Marine Loading Arm

CCLPEC provides latest marine loading arm technology for gas and liquid transferring operation between ship and shore.

CCLPEC has rich experience in the design, production and installation of marine loading and unloading arms. All production strictly complies with applicable codes and standards. CCLPEC provides not only different marine loading arms for various products, but also customized services according to client's requirements.

The key components independently designed and produced by CCLPEC have the advantages of reliable performance, long service life, convenient maintenance and prompt delivery.

CCLPEC Marine Loading Arms are manufactured fully in compliance with OCIMF, ISO16904, SIL, SIS, HAZOP, ATEX, IEC and other codes and standards. The whole loading arm and all key components have tested and certificated by authoritative third party.

Marine Loading Arm

LNG, HPNG and Petrochemical marine loading arm



Functional test of LNG unloading arm in the factory

CCLPEC has rich experience in manufacturing marine loading arms with various media & sizes and different working conditions, provides customized services according to project requirements.

CCLPEC provides loading and unloading solutions for FSRU and FLNG. The HPNG marine unloading arm is installed at the wharf for high-pressure gas transmission between the FSRU and the onshore pipeline. The LNG marine unloading arm is for the transfer of LNG and NG between LNGC and shore-based LNG storage tanks.

Feature

1. Materials for main pipeline can be GB materials, American standard materials or European standard materials.
2. Electrical components with ATEX or IEC explosion-proof certification.
3. Key components, such as swivel joint, emergency release coupler (ERC), hydraulic / manual quick connecting and disconnecting coupler (QCDC), sealing etc., are all patent and manufactured independently.



Category

CCLPEC has supplied safe and reliable standard, piggy-back (with vapor return arms) and single pipe LNG and HPNG marine loading arms all over the world.

The LNG marine loading arms are used to transfer LNG from LNGC to FSU or storage tanks on jetty, the design temperature is around -196°C . CCLPEC has own innovation patents of the cryogenic (LNG) loading systems.

The HPNG marine loading arms are used for FSRU. The max working pressure is up to 15Mpa. All high-pressure swivel joints, sealing rings, QCDC are designed and manufactured in CCLPEC factory.

Piggy-back (with vapor arm) marine loading arm, which combines both liquid and vapor return lines on one column riser, is generally used for volatile liquid loading.

Available configuration:

- Manual or hydraulic QCDC.
- Remote controller.
- Position monitoring system (PMS).
- Redundant PLC and control system.
- Accumulator.
- Blind plate.
- Dummy manifold.

Specification

Nominal Diameter: DN50 – DN500 etc.

Design Temperature: $-200 \sim +300^{\circ}\text{C}$

Design Pressure: 2 – 15 Mpa.

Operation: Manually or Hydraulically.

Explosion Proof Standards: ATEX / IEC / NEPSI / PCEC / CNEX.

LNG Marine Loading Arm



HPNG Marine Loading Arm



Piggy-back Marine Loading Arm

Marine Loading Arm Main Components

Emergency Release Coupler



The CCLPEC Emergency Release System (ERS) is composed of a double ball valve (DBV) and an powered emergency release coupler (PERC). It is characterized by a four-bar linkage mechanism, this double mechanical interlocking can ensure safety and reliability during the whole loading process. When an emergency occurs or the vessel accidentally drifts beyond working envelope of marine loading arm, the upper and lower ball valves will quickly and automatically close, and only after both of them are completely closed, the PERC can finally be separated.

This product is fully compliant with the latest version of OCIMF and ISO16904 standards. And the double ball valves have Lloyd's fire protection certification and meet the API 607-2016 standard.

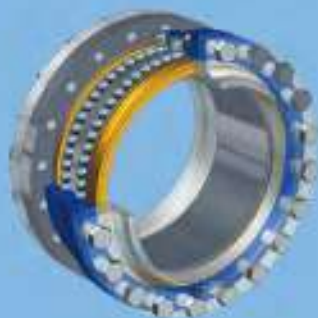


Quick Connection & Disconnection Coupler

The CCLPEC Quick Connection & Disconnection Coupler (QCDC) can be operated manually or hydraulically. All the clamps of the hydraulic QCDC are operated by one hydraulic cylinder, so that they can be clamped on the manifold flange force-evenly and simultaneously. And because of the reliable spring locking device, all clamps are locked even when hydraulic system fails.



Marine Loading Arm Main Components



Swivel Joint

- The superior performances of seals, including great abrasion resistance, self-lubrication and automatic wear compensation capabilities, lead to no leakage & great long service life.
- Flexible rotation under high bending moments and strength condition by patent structure and precise machining.
- An inspection hole is setting on flange for monitoring the working condition of main sealing and detecting the failure in time.
- Patented structural design of swivel joint, the sealing ring can be easily maintained and replaced without taking out steel balls.

Specification

- Material: Carbon steel, low temperature carbon steel, stainless steel, and other metal alloy.
- Temperature range: -200°C up to 300°C.
- Pressure range: up to PV / 150 bar.



400,000 times uninterrupted rotation life test

The CCLPEC Cryogenic Swivel Joints successfully passed the 400,000 continuous rotation life test under cryogenic conditions (-196°C), the whole process was witnessed by BV.

In 2021, CCLPEC successfully developed the high-pressure swivel joint especially for high-pressure natural gas marine loading arm (FSRU solution).



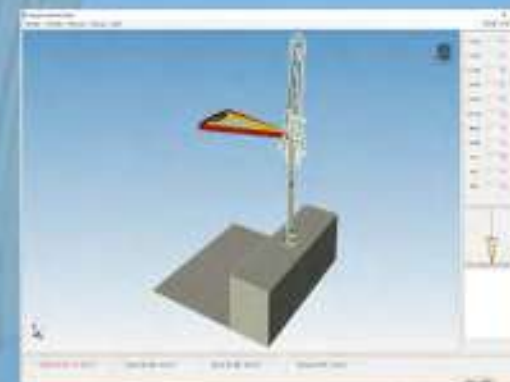
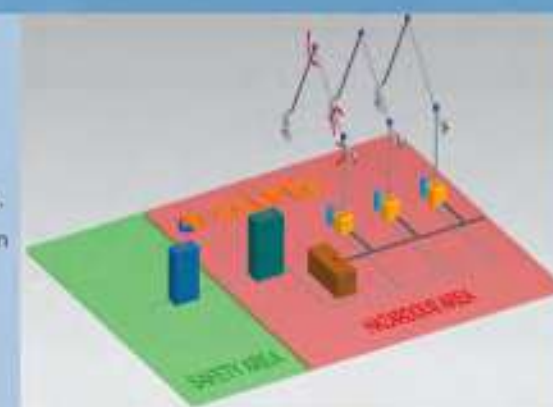
Hydraulic Power Unit (HPU)

The electro-hydraulic control and operating system are composed of hydraulic power unit (HPU), accumulator, solenoid valve unit (SVU), local control panel (LCP), PLC control cabinet and remote controller. The hydraulic power unit is equipped with oil tank, motors, hydraulic pumps, hand pump, solenoid valves, flow control valves, pressure transmitter, temperature transmitter, level switch, filters and pressure gauges, etc.

Local Control Panel (LCP)

The CCLPEC MLA has several control methods:

- By buttons and switches on local control cabinet, which is installed on dock.
- By wired controller at triple swivel assembly or at local control cabinet, when it is close to manifold flange.
- By wireless remote controller at any place within 100m around LCP.
- By manual lever in hydraulic substation at the root of MLA riser column.



Position Monitoring System (PMS)

The CCLPEC Position Monitoring System can display the real-time status of marine loading arms on control screen and records the position and alarm information. This system can be installed in central control room or on local control cabinet, to facilitate operators to monitor status of loading arms during the whole loading process.

Marine Gangway

The Marine Gangway is designed to facilitate transfer between shore and ship, and vice-versa. CCLPEC Marine Gangways provide an optimum and safe access, even under severe conditions.

CCLPEC supplies column type gangway, tower type gangway, and a high-standard emergency evacuation access gangway for FSRU. All these gangways meet the requirements of SIGTTO and ISO standard.

The marine gangway is comprised of tower (or column), bulwark ladder, lifting & rotating platform, driving mechanism, hydraulic power unit, PLC control system etc.

Tower type gangway, Column type gangway

Tower Type Marine Gangway

Suitable for vessel larger than 50,000 DWT.

With several floor levels (depends on the height of vessel), the platform and bulwark ladder are able to elevate and accurately stop at suitable floor according to the height of vessel.

Column Type Marine Gangway

It is suitable for vessel small than 50,000 DWT.

As a cost-effective solution for small jetty, it has the advantage of compact structure and easy operation.

Control System

All electrical equipment has been explosion proofed according to ATEX or IEC standard, and meets the requirements in hazardous areas, to guarantee safe operation. Wireless controller is available.

Auxiliary

0.5~3.0T hose crane may be supplied for auxiliary services at the top or middle height.



Quick Release Mooring Hook

With the characteristics of safety, reliability, labor-saving and efficient, quick release mooring hook (QRMH) has been used worldwide and has become the popular mooring solution in modern jetty.

The CCLPEC Quick Release Mooring Hooks increase the safety and stability of operation, reduce labor intensity but highly improve the efficiency. As an updated replacement of bollard, they are suitable for large and modern jetty which requires safe & efficiency release of mooring line with minimum labors.

CCLPEC provides customized high quality QRMH and release monitoring system under the consideration of client's requirements.

Hydraulic Quick Release Hook, Electric Quick Release Hook

Release mechanism can be operated by manual, electrical actuator, or hydraulic cylinder.



SPECIFICATION

Hook Qty: 1- 6.
SWL (safe working load) 25- 250 Ton.
Explosion proof: ATEX/IEC/NEPSI/PCEC/CNEX.
Protection Grade: IP56, IP66 etc.

OPTIONAL

1. Laser berthing system.
2. Load monitoring and remote release system.
3. Environmental monitoring system.
4. LCD display.
5. Overload audio-visual alarm.
6. Remote controller.



QRMH and jetty monitoring system



Truck Loading and Metering Skid

Truck Loading Solution

LNG truck loading and metering skid
LNG truck loading arm
Petrochemical truck loading and metering skid
Petrochemical truck loading arm
Truck loading system

The loading and metering skids are modern solutions for tank, train, trailer and truck loading and unloading operations, which integrate controllers, process pipelines, valves and instruments into one complete set of equipment. It is widely used in LNG, LPG, and other petrochemical industries.

CCLPEC provides integrated loading solutions including: quantitative truck loading skid, truck loading arm, weighbridge system, automatic loading control system, etc. The loading skid is welded, assembled, tested and coordinated with the control system in workshop, then packed and delivered to the project site in one unit. So the on-site installation is easy, convenient, time-saving, labor-saving and cost-saving for customers. CCLPEC has designed and supplied thousands of LNG loading and metering skids and LNG loading arms, with over 70% of market share in China and Southeast Asia.

LNG Truck loading and Metering Skid

CCLPEC is an expert in cryogenic liquid loading systems, who has provided more than 1000 sets of LNG loading and metering skids for over 20 LNG Receiving Terminals in China, Southeast Asia, and Africa. All key components are patent, e.g. swivel joints, break-away couplings, sealing rings. CCLPEC guarantees high quality, long service life, easy operation and simple & convenient maintenance for all own branding components and equipment. CCLPEC Loading and Metering Skid is designed and manufactured in compliance with applicable codes & standards.

- Integration of all process pipelines according to customer requirements, such as liquid pipeline, vapor pipeline, nitrogen purging pipeline, cold circulation pipeline, venting pipeline, instrument air pipeline.
- Both automatic and manual control valves are available.
- Vaporizer and pump are available for unloading operation.
- Detection and control instruments are installed to monitor entire process and to ensure safe operation.
- Rich experience in installation, commissioning and after-sales service for more than 1,000 LNG skids worldwide.



Technical Feature

- Fulfill one LNG semi-trailer (40 cubic meters) within 1 hour.
- Easy and flexible operation with one hand.
- High-integration, and clear hookup interface is convenient for delivery and on-site installation.
- Customized according to project requirements.
- The central control SCADA system makes loading process efficient and orderly.
- Visualized loading progress by LCP and batch controller.
- Safe, non-leakage, long service life and low maintenance.



MALAYSIA LNG TRUCK LOADING FACILITY
AT REGASIFICATION TERMINAL PENERANG-2021



Dual Loading and Metering Skid

CCLPEC Dual Truck Loading Skid integrates two stream systems into one frame, can simultaneously and separately loading two tankers at two side. It is a space-saving and cost-saving solution for loading plant.

Due to its high integration, more loading arms can be arranged in loading area. Furthermore, CCLPEC dual loading skids save investments in infrastructure construction, e.g., the canopy, upstream pipelines, etc. The process pipelines and electrical control system at both sides for each stream are complete independent. When a failure occurs at one side, the other can be operated normally.

Petrochemical Truck Loading and Metering Skid

The Petrochemical Truck Loading and Metering Skids are used for loading and metering petroleum, refined oil, chemicals and other liquid products to truck, train and trailer. With local controller (programmable logic controller, batch controller or flow computer) and central control system, operators can easily complete loading operation through the preset process. It realizes automatic loading operations and avoid manual mis-operation.

There are top loading skid and bottom loading skid. The top loading and metering skids are placed under the platform for easy installation and maintenance. The loading arm, batch controller and folding stair are installed on the platform for loading operations.

The bottom loading skids are easily to be installed, and suitable for the transportation of various products, with the connect interface at the side or back of tanker or trailer.



TAS for truck loading station

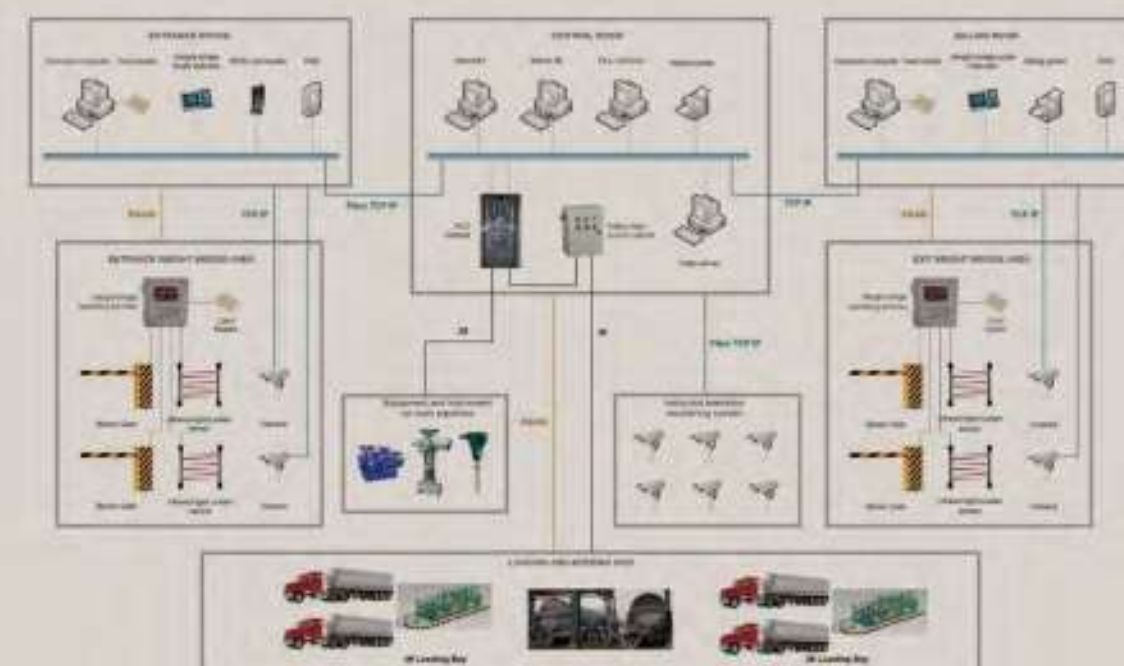


Batch controller display

PC Management and Control System

The PC control system is mainly composed of business station, monitoring station, control cabinet and other accessories. The PC management and control system can monitor skid operation status such as the information of temperature, pressure, flow rate, setting volume and real volume. It can collect the important data of each skid with safe and reliable management.

CCLPEC provides SCADA system for LNG loading station, the system normally consists of seven functions, including access control, queuing, weighing management, quantitative loading control, central data management, instrument control and industrial TV monitoring, realizing intelligent and efficient loading operation of LNG terminal.



SCADA loading business management and control system diagram

Truck Loading Arm

CCLPEC has been producing truck loading arms for more than ten years and has supplied more than 2000 sets of cryogenic truck loading arms, which are the most reliable and widely used products in the world.

CCLPEC provides customized Top or Bottom Loading Arms according to different on-site requirements and product characteristics.

SPECIFICATION

Products: petrochemicals and cryogenic liquids (LH2, LNG etc)
Nominal Diameter: DN25 – DN200
Design Pressure: -0.06 Mpa ~ 5.0 Mpa
Design Temperature: -269 ~ +300°C
Pipe Material: SS316L, SS304, CS etc.



LNG Truck Loading Arm



LPG Bottom Loading Arm



Bottom Unloading Arm



CNG Bottom Loading Arm



Top Loading Arm



Top Loading Arm
With Sealing Cone



Top Loading Arm
with Heat Tracing



Bottom Loading Arm
with API Coupler



Accessories of Truck Loading Arm



Sealing Ring

The sealing rings of CCLPEC are all independently designed and produced by ourselves, which have the features of short delivery time, cost saving, high-quality and low risk of failure. CCLPEC LNG sealing ring has excellent resistance to elasticity reduction, can fully compensate for the large shrinkage rate at -169°C . New cryogenic resistant materials & the unique structural design further optimize the wear resistance & toughness of sealing ring, and improve its service life in cryogenic environments.



SPECIFICATION

Nominal Diameter: DN50 ~ DN500 and other size
Design Temperature: $-269^{\circ}\text{C} \sim +300^{\circ}\text{C}$
Applicable Products: LH₂, LNG, Low temperature ethylene, liquid oxygen, liquid nitrogen, liquid argon, other low temperature products



Break-away Coupling



The break-away coupling is a safety guarantee component used to prevent spillage, injury to personnel and damage to assets. Protect personnel from dangers caused by sudden and accidental disconnection between truck loading arm and truck, like trucks leave without disconnecting truck loading arm during emergency evacuation at loading plant. When the axial tension is more than 30KN, the couplings will break away automatically, and divide into two closed and separated valve bodies during this disconnecting process. It ensures that the liquid and gas in truck and loading arm will not leak out. The installation method adopts welding type, flange type and threaded type.

Feature

- Leak-free.
- Compact and lightweight.
- Protection for truck and loading equipment.
- Easy installation and repair.



Cryogenic breakaway function test in CCLPEC workshop

After-sales Service

Installation and commissioning on-site guidance
Lifetime maintenance service
First fill standby service
Spare parts replacement service
Automatic upgrade of control system
Regular visit and product follow-up



CCLPEC has an experienced & fully equipped service team specializing in installation guidance, commissioning, troubleshooting, and regular maintenance. We promise to serve our customers with on-site or on-line guidance as soon as possible. The consumable parts are fully stocked and ready for delivery.



Reference



Our Clients



The reference list to China's LNG terminals

Project	Supply	Delivery Date
(1)CNPC Tangshan LNG Terminal	Loading and Meterig Skids	2013/2014
(2)Sinopec Group Qingdao LNG Terminal	Loading and Meterig Skids	2014/2016
(3)Sinopec Group Tianjin LNG Terminal	Truck Loading Arms	2016/ 2017
(4)CNOOC Ningbo LNG Terminal	Loading and Meterig Skids	2016/2017/2018
(5)Shenzhen Gas LNG Terminal	Loading and Meterig Skids	2016/2021
(6)Pipe China Beihai LNG Terminal	Loading and Meterig Skids	2016/2020
(7)Xin'ao Zhoushan LNG Terminal	Truck Loading Arms	2017/2018
(8)Pipe China Tianjin LNG Terminal	Loading and Meterig Skids	2018
(9)Shanghai LNG Terminal	Loading and Meterig Skids	2018
(10)Honghai Jiangyin LNG Terminal	Loading and Meterig Skids	2018
(11)Huafeng Zhongtian LNG Terminal	Loading and Meterig Skids	2018
(12)Shenzhen DP LNG Terminal	Truck Loading Arms	2018
(13)CNOOC Zhuhai LNG Terminal	Loading and Meterig Skids	2018
(14)Pipe China Hainan LNG Terminal	Loading and Meterig Skids	2018
(15)Guanghui Qidong LNG Terminal	Loading and Meterig Skids	2020
(16)Zhejiang Jiaxing LNG Terminal	Loading and Unloading Skids	2020
(17)Pipe China Zhangzhou LNG Terminal	Marine Unloading Arm	2020
(18)Pipe China Yuedong LNG Terminal	Truck Loading Arms	2020
(19)CNOOC Binhai LNG Terminal	Loading Skids / Marine Loading Arm	2021
(20)Beijing Gas Tianjin LNG Terminal	Loading and Meterig Skids	2022
(21)Xiexin Yantai LNG Terminal	Loading and Meterig Skids	2022
(22)Huagang Wenzhou LNG Terminal	Loading and Meterig Skids	2022
(23)Huaying Chaozhou LNG Terminal	Loading Skids / Marine Loading Arm	2023

Professional and Trustworthy Manufacturer
Reliable and Friendly Service