

OFFSHORE SERVICE

— GREENTEC MARINE



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ABOUT US

Profile

Greentec Marine Engineering Co., Ltd (“Greentec Marine”), established in 2006, is a high-tech service company specializing in marine and offshore engineering services as well as green technology research.



16+ Years of Experience



100+ Technical Personnel



60+ Offshore Newbuilding Projects



ISO9001 & ISO14001



Greentec Marine has more than 100 professional technical personnel with years of experience in marine and offshore industry. Led by a dedicated team possessing a wealth of expertise, Greentec Marine has grown up to an experienced and knowledgeable service provider and extended its business to engineering, commissioning, procurement, manning and administration.

BUSINESS

Engineering



Commissioning



Procurement



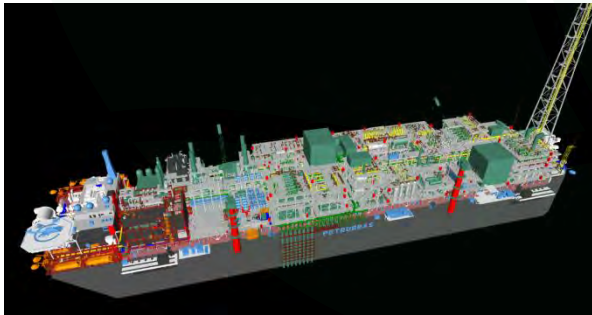
Manning



Administration

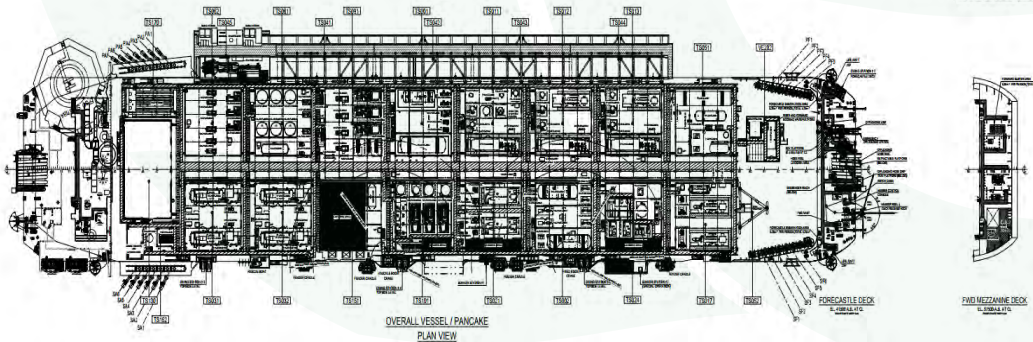
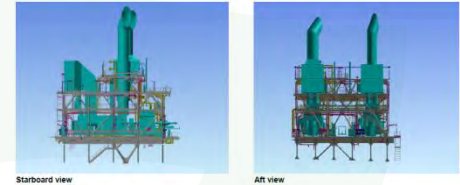
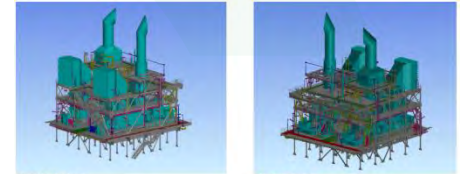
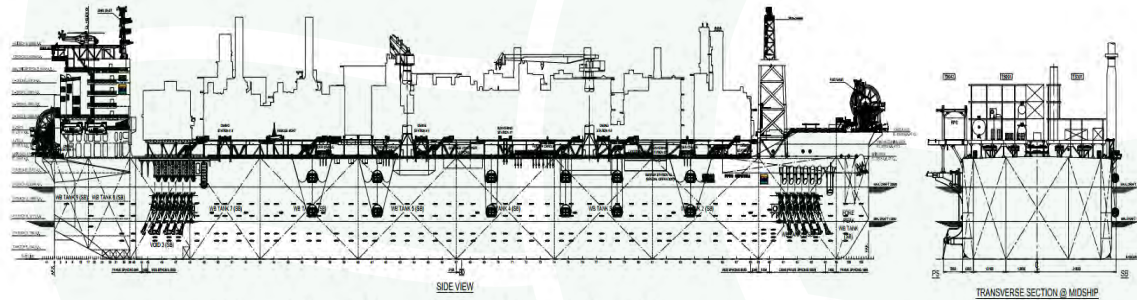
ENGINEERING

- 40 engineers for offshore with aid of advanced software.
- Detailed & Production design.
- Pipeline stress analysis & Structure FEA.
- Pre-commissioning & Commissioning procedure.
- Noise and vibration measurement and analysis.
- 3D scanning & Modeling for conversion project.



ENGINEERING

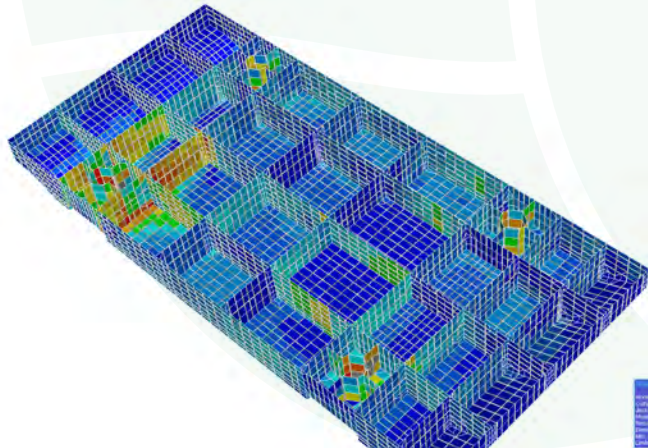
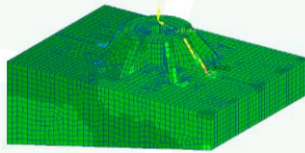
Detailed & Production Design



ENGINEERING

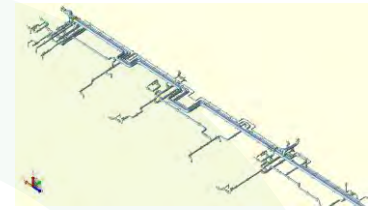
Strength Finite Element Analysis

- Beam structural analysis
- Buckling strength analysis
- Local strength calculations
- Yielding check of structure

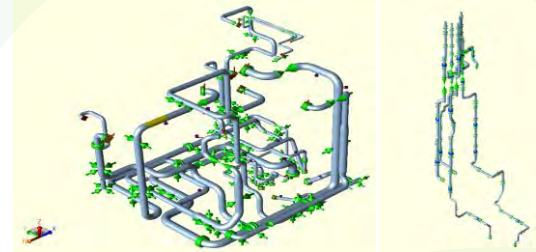


Pipeline Stress Analysis

- Cargo system
- Sea water system
- Fire fighting system
- Topside hydrocarbon system



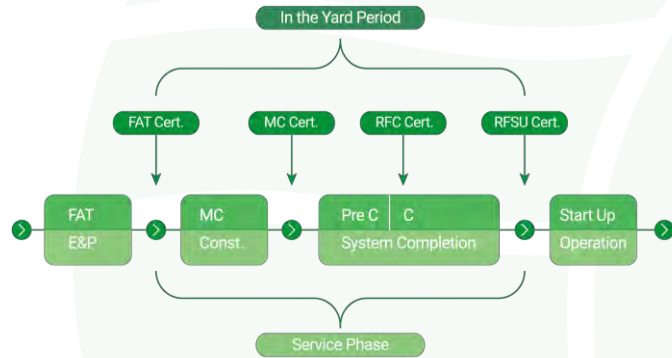
logy



Pre-commissioning & Commissioning Procedure

		Pre-Com - Commissioning and Start up Activity list												page 75 of 75				
		System - 130-03-00 : Regeneration Gas System																
System Description		The gas from Regeneration-Ox Separator V-11002 at a pressure of 53.7bars is compressed by the Regeneration-Ox Compressor K-11001 at about 94.7 bars and recycled back to the trail of Dehydration Feed water Cooler S-11001												Sub-System list				
Activity		Activity Name	Seq	Task	Pre-requisite	Est. Duration (hrs)	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11
010000	010000	Pre-commissioning	1	Check Instrumentation	None	2												
020000	020000	Commissioning	2	Check Instrumentation	None	2												
030000	030000	Start-up	3	Start-up	None	2												

COMMISSIONING



Mechanical Completion (MC) and Construction Support

Disciplines: Electrical, instrument & control, mechanical, piping, HVAC, telecom, etc

MC:

- Conformity checks of equipment items - punch clearance
- Static/de-energized tests of equipment items
- Alignment of all equipment and flushing and cleaning of the pipes and vessels
- Calibration and cable continuity tests
- Insulation and continuity tests
- Functional tests and operational tests, etc

Flange Management Service:

- Torque and tension bolting equipment
- Pipe cutting, beveling, milling, boring, grinding
- Valve testing (Popping test)

Carryover Work:

- Additional work, changes rectification work, integration work for all disciplines

Receiving Inspection & Preservation:

- Cleaning
- N2 charging & check
- Equipment protection
- Lube oil & grease filling
- Motor megger check & space heater
- Shaft rotation
- Protection cover



Bolting



Machining



Joint Integrity



Leak Sealing



Hot Tapping



Mechanical Plugging



Heat Treatment



Valve Testing

COMMISSIONING

Pre-commissioning & Commissioning

Disciplines: Electrical, instrument & control, mechanical, piping, HVAC, telecom, etc

Activities:

- Preliminary checks
- Punch killing
- Loop test
- Functional tests
- Operational tests
- Support activities
 - Hydro milling
 - PIG cleaning
 - Oil flushing
 - Chemical cleaning
 - N₂/He leak test
- Commissioning during towing

Available Equipment for PC & C Work

Category	Equipment	Capacity
Generator Systems	Diesel Generator	1200kVA
	Diesel Transfer Pump Skid	25m ³ /h
	Fuel Storage Tank	2m ³
	Load Bank	6000 kVA
	Transformer	5000 kVA
Compressor Systems	Air Compression Package 100HP (Motor driven)	9.3m ³ /min
	Air Compression Package 200HP (Motor driven)	19.4m ³ /min
	Air-Compressor Package (Engine driven)	18.5m ³ /min
	Air Tank	7.3m ³
	Air Dryer (Desiccant type)	1326 Nm ³ /h
Pump System	Air Dryer System	1800 Nm ³ /h
	Fresh Water Pump Skid	5,000ℓ/min
	Booster Pump	0.16ℓ/min
Piping	Oil flushing pump	
	Onsite Pipe cutting, beveling, milling, boring, grinding machine	
He/N ₂ test	He/N ₂ filling device	
	Helium mass spectrometer	

COMMISSIONING

Green Our Sea by Technology

A co-project team with our collaborating partner, a professional commissioning company with rich experience of offshore projects in Korea, for project execution.

● ISSAC Engineering & Consulting Ltd.

ISSAC E&C was established in 2010, and has successfully accomplished near 20 commissioning of offshore projects including 6 FPSO/FSO. The top management of ISSAC E&C has strong background as commissioning managers at major Korean shipyards and rich experiences. They understand how important commissioning work is and the concerns of clients for this crucial stage during entire project.

A co-project team will be established by Greentec and ISSAC E&C for project execution. Utilizing the advantage and experience of both partners, our co-project team is committed to achieving flawless delivery of all systems without delay.

Major Reference					
Date	Owner & Project	Type	Date	Owner & Project	Type
2013.03	PTSC BienDong	FSO	2016.06	Statoil Gina Krog	Fixed Platform
2014.05	Teekay Knarr	FPSO	2017.07	INPEX Ichthys	FPSO
2014.05	ExxonMobil Arkutun-Dagi	Fixed Platform	2017.06	Royal Dutch Shell Prelude	LNG FPSO
2014.12	Chevron Wheatstone	Fixed Platform	2017.07	Statoil Cat-J	Jackup-Rig
2015.02	Chevron Mafumeirea Sul	Fixed Platform	2017.07	Dong Hejre	Fixed Platform
2016.01	Petronas FLNG	FLNG	2017.10	Total Egina	FPSO
2016.02	MOG Gaza	FSO	2018.03	Petronas FLNG 2	FLNG
2016.02	Songa Offshore	Drilling Rig	2018.07	ZADCO	Fixed Platform
2017.05	Statoil Mariner	Fixed Platform	2021.04	Chevron Anchor	Semi-Rig

PROCUREMENT

Resource and Advantage

- Fully-equipped warehouse
- Strong sense of dedication
- Thousands of product line items from international brand partners



Procurement and Supply

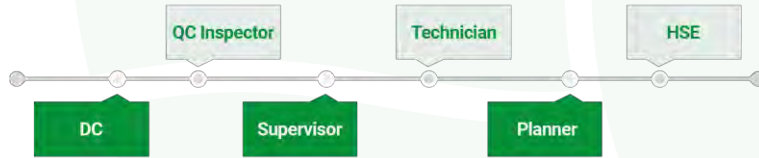
- Storage container
- Lifting equipment
- Kitchen equipment
- Petroleum products
- Welding equipment
- Commissioning tools
- Tableware and cutlery
- Cutting and measuring tools
- Grease, refrigerant and chemical
- PPE
- Food material
- Tailored catering and associated services
- Freezer, chiller and dry storage containers for food material delivery

MANNING

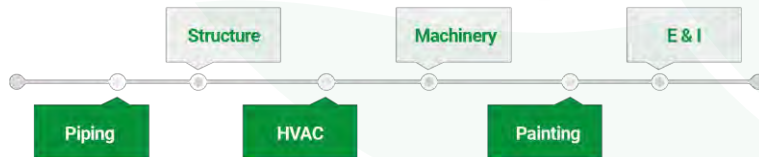
Local & Expat Employment

We have one talent pool including supervisor, engineer, technician etc. totally more than 300 people which can satisfy owner's demand.

Role:



Discipline:



ADMINISTRATION



- **Accommodation**
Meal
Apartment rental and management
- **Transportation**
Departure support
Meet & Greet pick-up
Pick-up between shipyard and apartment
- **24/7 Emergency response**
First aid
Collaborated clinic and hospital
- **Local working permit service**
Social insurance
Personal income tax
Payment arrangement
Chinese labor law consulting
Visa & Residence work permit



CASE STUDY



- **Ship Name**

GTA FPSO

- **Ship Owner**

BP MAURITANIA INVESTMENTS LTD.

- **Ship Type**

241K FPSO

- **Class**

BV

- **Service Scope**

Supply of storage containers, commissioning tools, grease, refrigerant and petroleum products, PPE, consumable items, kitchen equipment and manpower, calibration of tools, interior decoration, etc.

CASE STUDY

- **Ship Name**

ATLANTIS

- **Ship Owner**

COTEMAR S.A. DE C.V.

- **Ship Type**

Accommodation Platform

- **Class**

DNV

- **Service Scope**

Supply service of nautical equipment, paint, PPE, pneumatic tools, adhesive, electrical equipment, chemical, grease, hand tools, medicine and medical equipment, galley and cabin utensils, etc;
Administration service of accommodation, transportation, etc.



SERVICE NETWORK

Green Our Sea by Technology



Nantong Headquarter



Shanghai Branch



Singapore Branch



CLIENT



BENEFIT





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Q&A

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