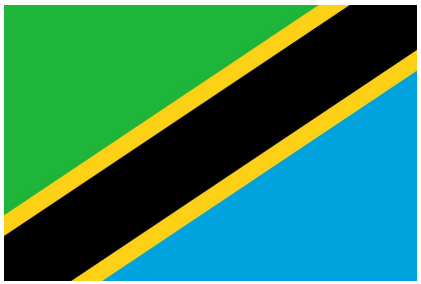


Floatable Combined Cycle Power Plant

July, 2018

FCCPP Consortium Inc.

Contents

Project Overview

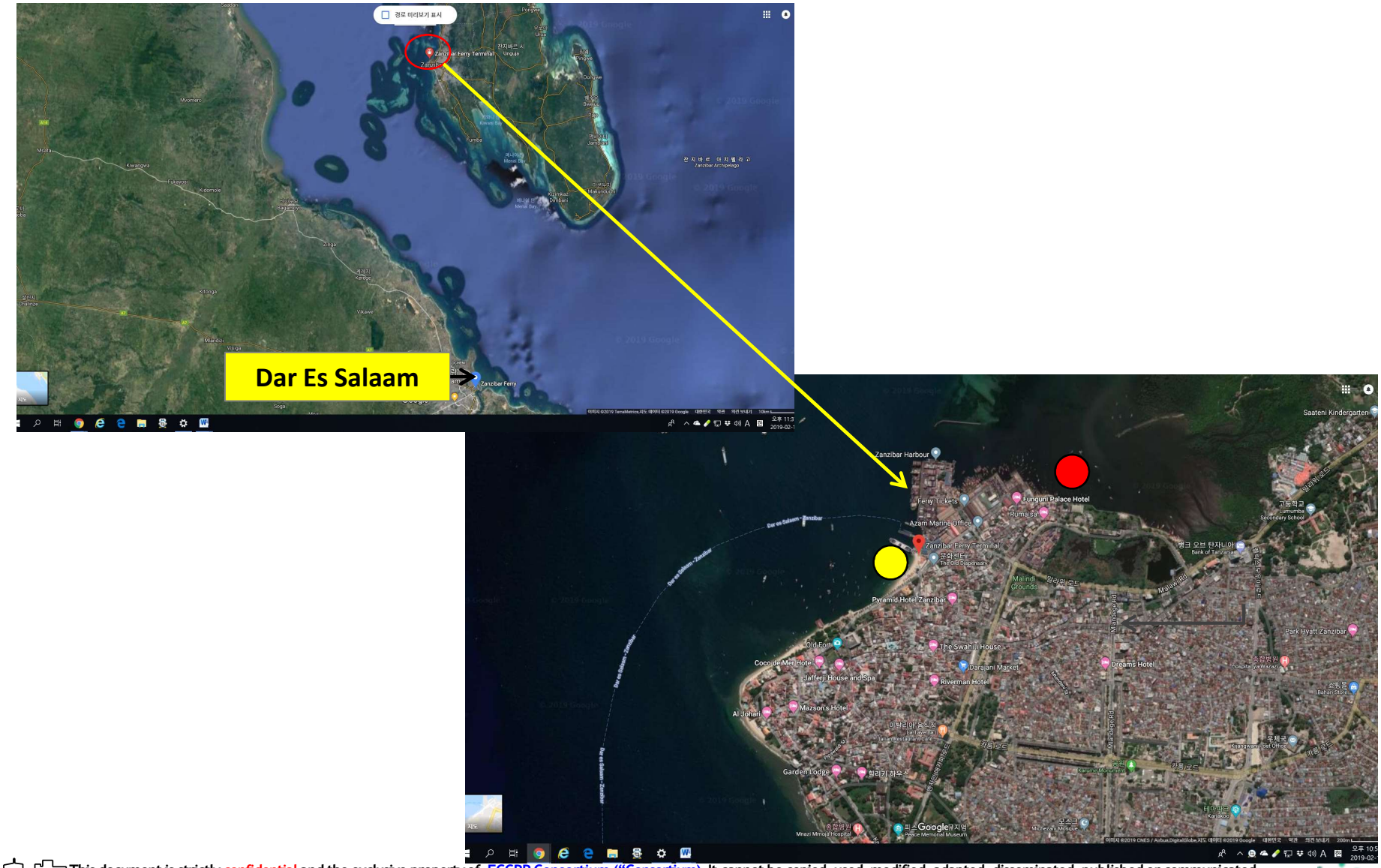
Project Overview

- **Project** : FCCPP Project for Tanzania
- **Client** : TBD
- **Location** : TBD
- **Power (Net)** : 215MWe
- **PPA** : TBD
- **Contract** : TBD
- **Duration** : 35 Months

Proposal FCCPP in Tanzania

The side surface of FCCPP to be used for mooring of Such on LNG carrier and LNG bunkering vessels

Location –Zanzibar, Tanzania



Implementation Strategy and Milestone

Standard FCCPP Design

- Adopt standard proven 215MW design
- FCCPP facility manufactured in Korea Ship Yard

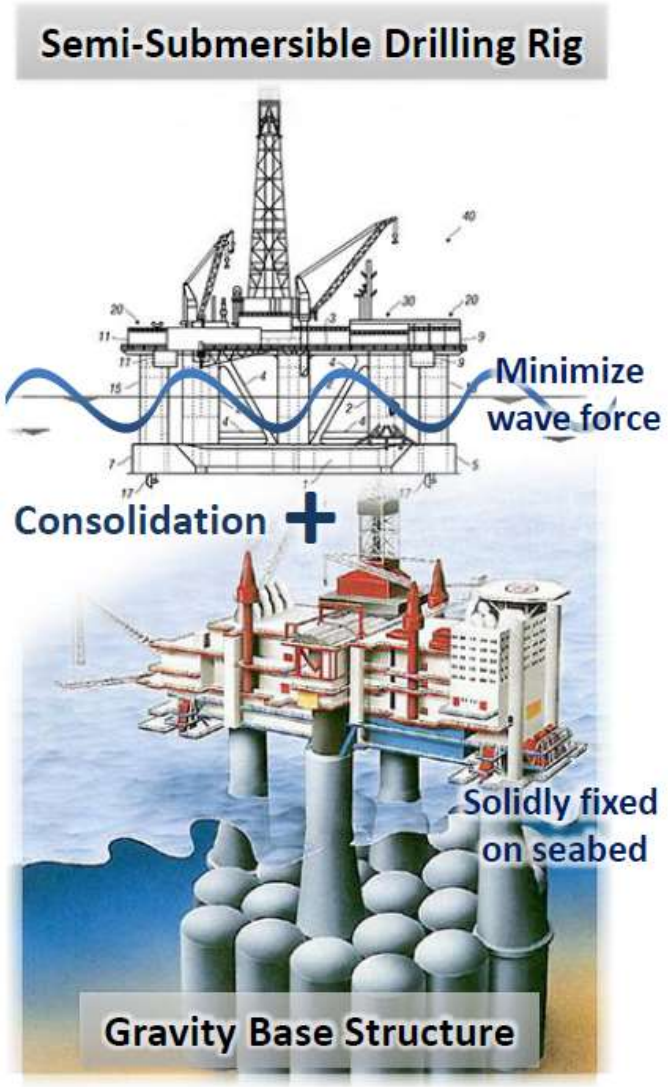
Construction Plan

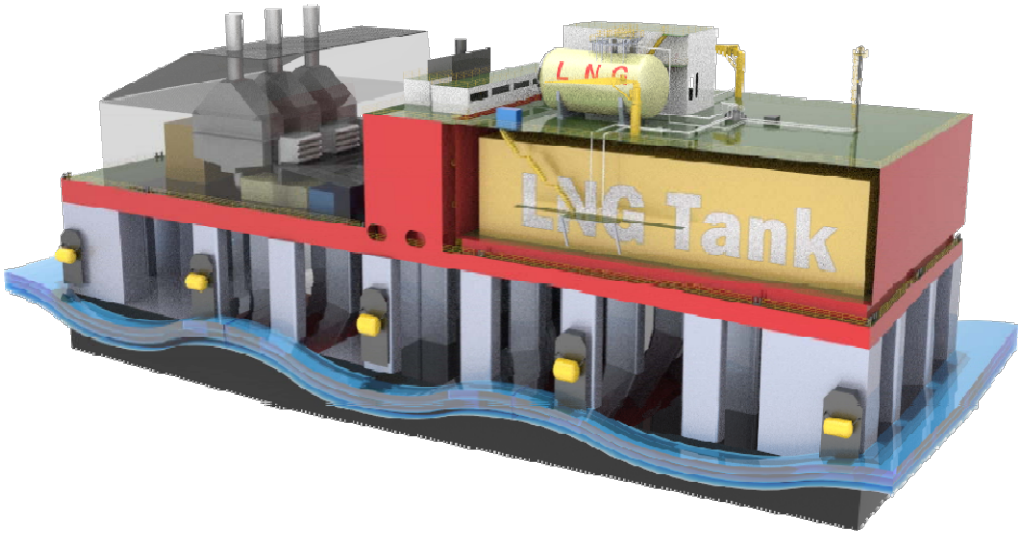
- CED (Contract Effected Date) : TBD
- COD (Commercial Operation Date) : TBD

Expected Benefit

- Fast electricity supply by using standard proven design
- Minimum residence resistance by not acquiring land
- Apply world best Korean Ship & Power technology

Concept of FCCPP



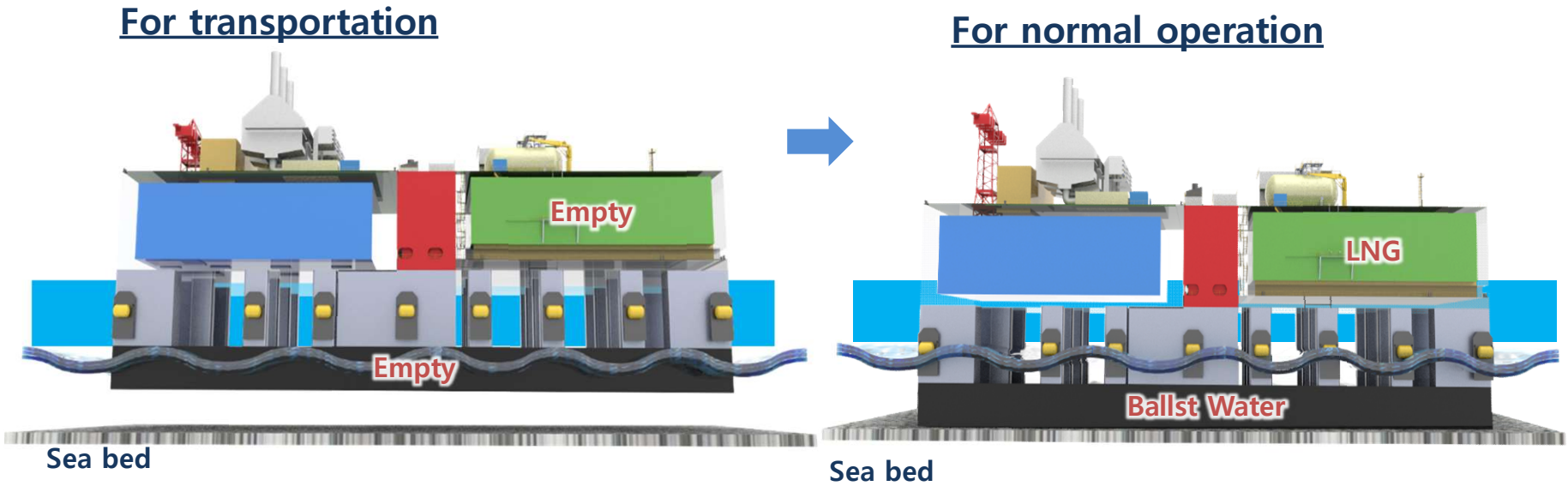


Technology and Process Concept

Basic Concept

- **215MW LNG fueled Combined Cycle Power Plant on Floatable Legged Platform (FCCPP) at the seaside of Tanzania. The FLP is a steel structure platform which to be firmly seated on seabed thanks to its own weight and ballast water.**

- **For transportation of FCCPP, the FCCPP to be floated after deballasting of ballast water.**

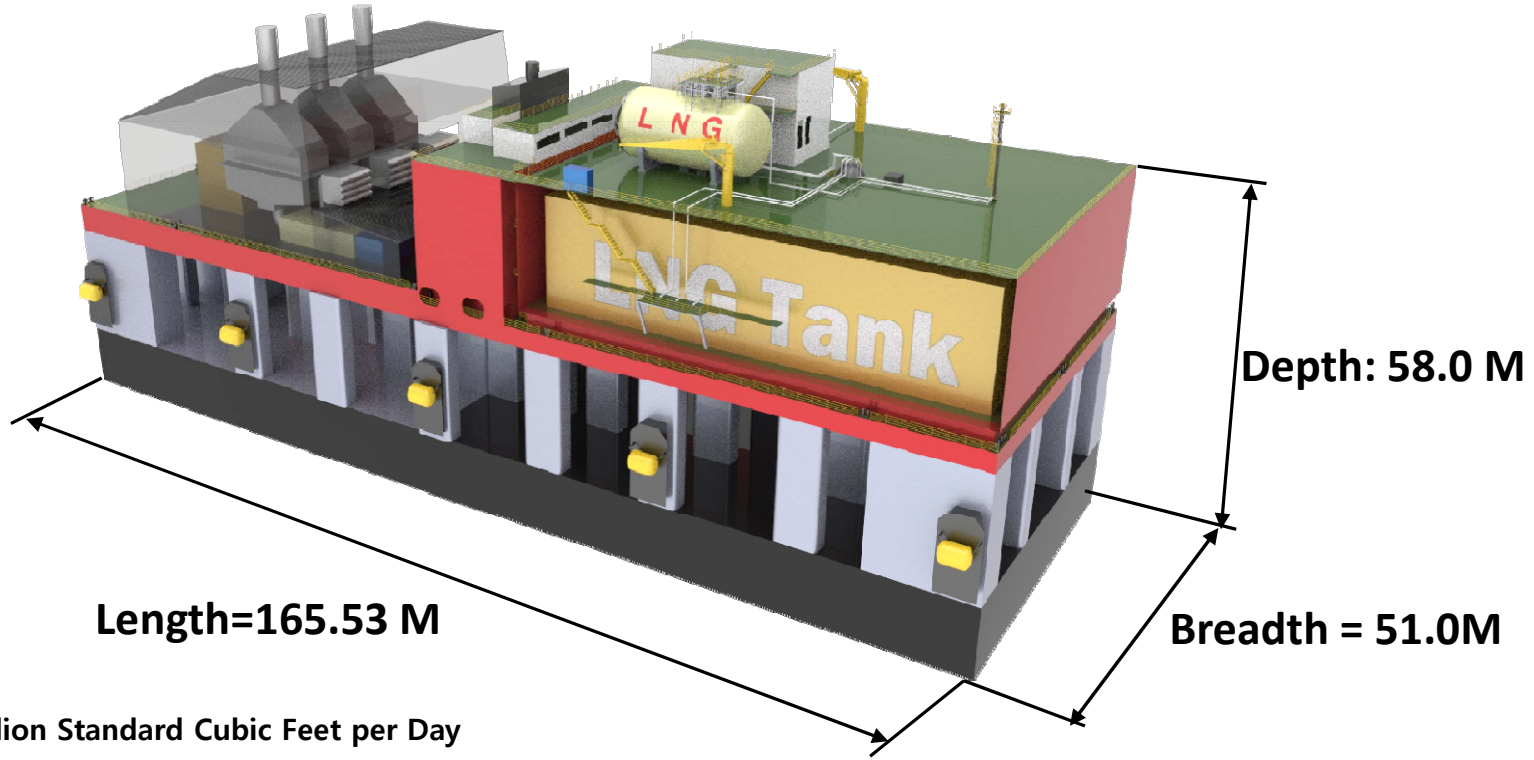


Design Concept of FCCPP

- **Firmly seated on area using its own weight and ballast weight without any mooring facility.**
- **Friction force between FCCPP bottom surface and sea bed shall be bigger than any external force due to any external forces from 12.6m wave and 50m/see wind.**
- **FCCPP shall stay stability at sea bed during magnitude 7 earthquake.**
- **The design concept of FCCPP is approved in principal by DNVGL.**
- **The influence due to Tsunami to be evaluated further for each installation condition.**

Sketch of FCCPP Unit

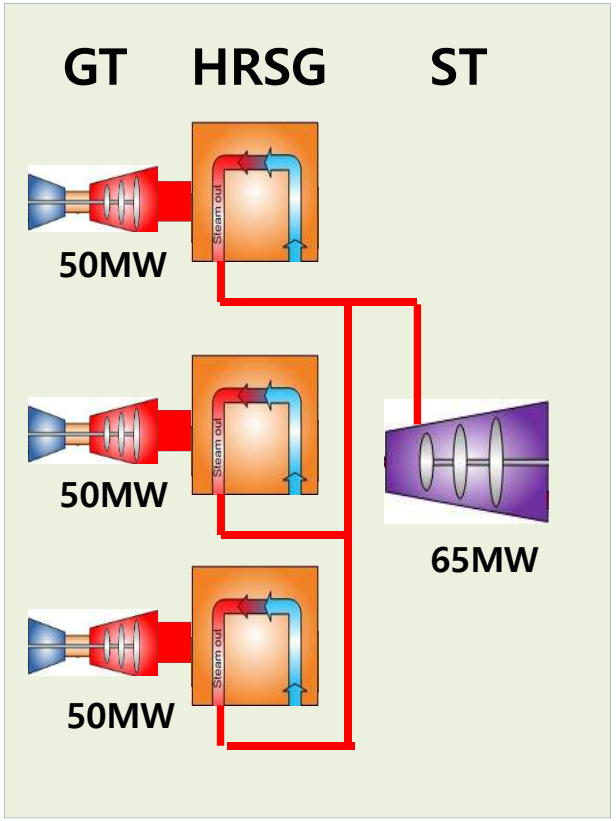
- **Dimension: 165.54 m-L x 51.0 m-B x 58.0 m-D**
- **Power plant: GT x 3 sets + HRSG x 3 sets + ST x 1 set**
- **LNG tank: 40,000 m^3 for 12 days Continuous services**
- **Regasfication capacity: 50 MMSCFD**



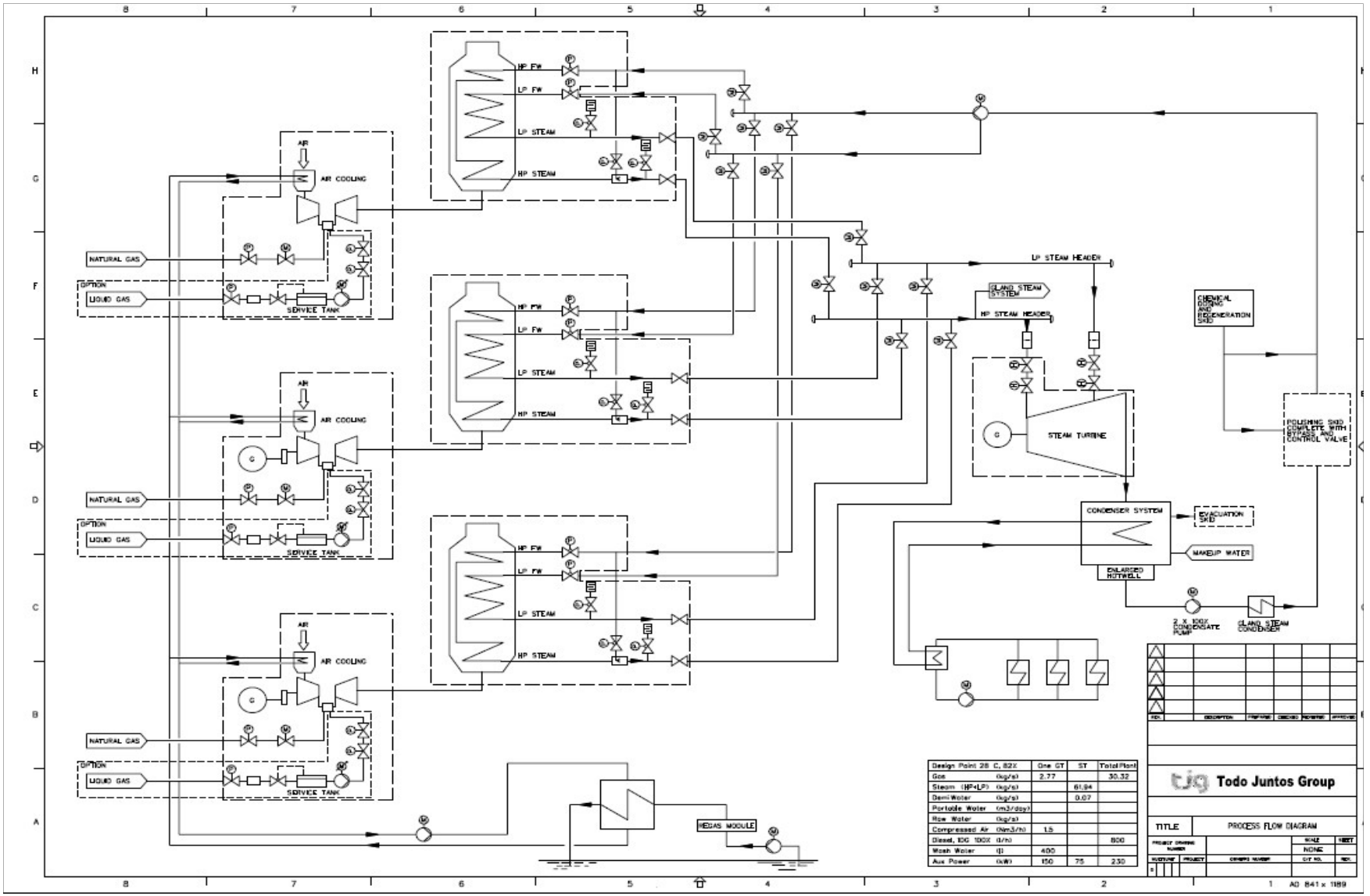
MMSCFD : Million Standard Cubic Feet per Day

Design Highlight for Power Block

- **Highly modularized 215MW FCCPP Standard Design concept for off shore applications**
- **High efficient concept ISO 56,2% for 3x1C configuration**
- **Large fuel flexibility, gas and liquid: LNG, Ethane, Propane, Diesel**
- **Equipment maintained onboard or in local onshore workshop**
- **Designed for installation on steel structures/platforms with minimum footprint**
- **Adapt Asset Management during FCCPP Lifecycle**
- **O&M available from our Consortium**

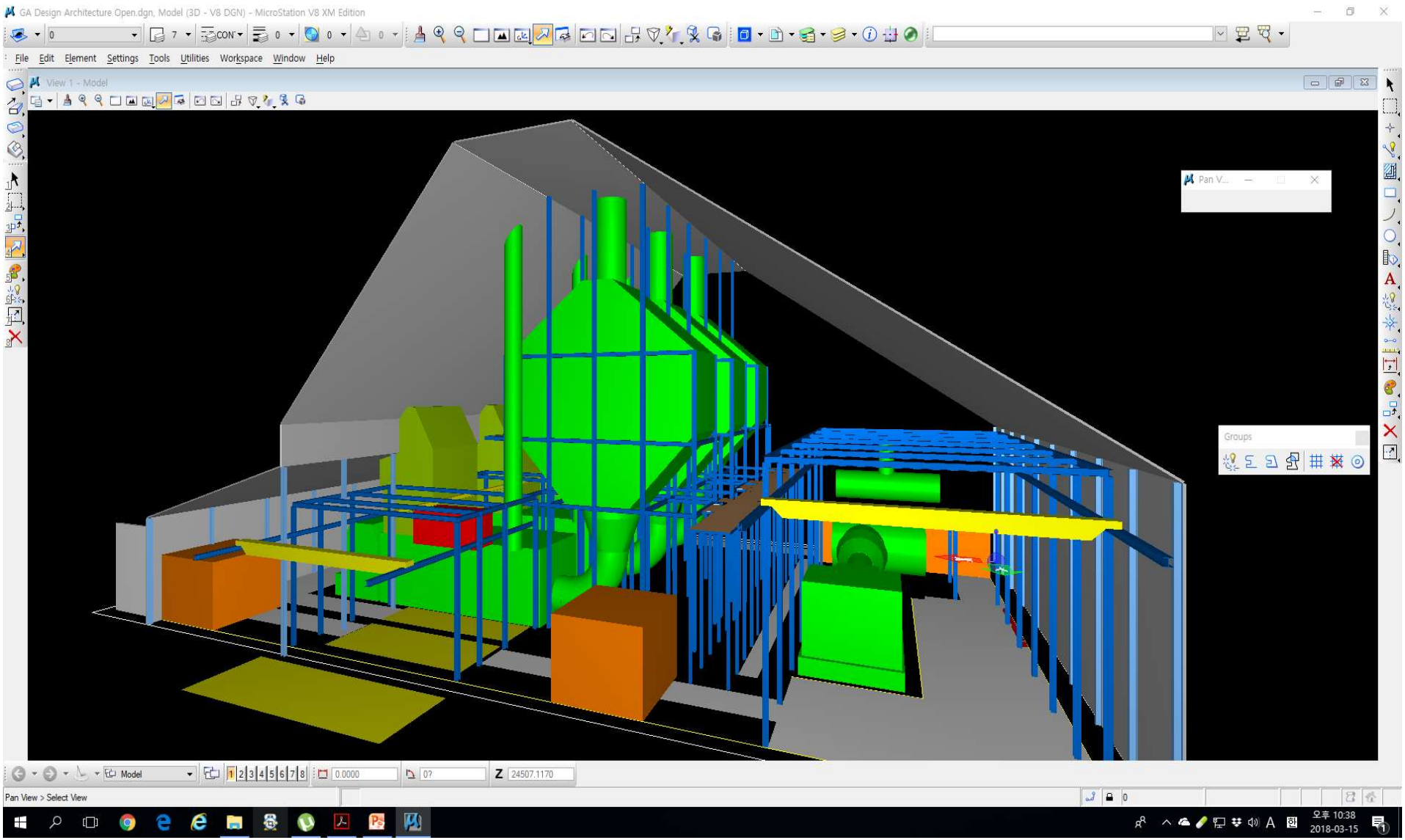


Process Flow Diagram



Plan View

Physical Design Model

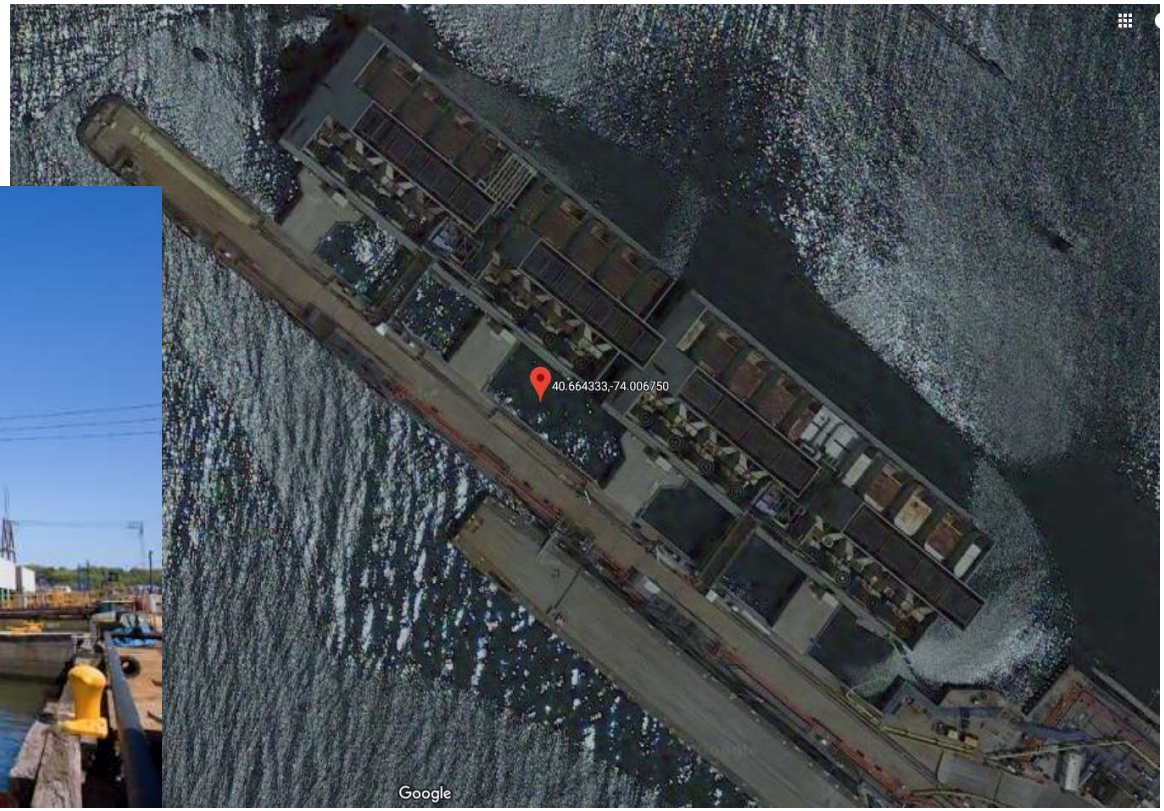


Reference Plant

New York Reference Site

Gowanus – 640MW

- **Gowanus Bay, borough of Brooklyn**
  - GPS : 40.664333 N, 74.006750 W
- **32 Simple Cycle Combustion Turbine**
- **4 Floating Barges**



Narrows – 352MWe

- **Brooklyn, east side of Upper New York Bay**
  - GPS Coordinate: 40.651036 N, 74.025430
- **16 simple cycle combustion**
- **2 floating power barges**

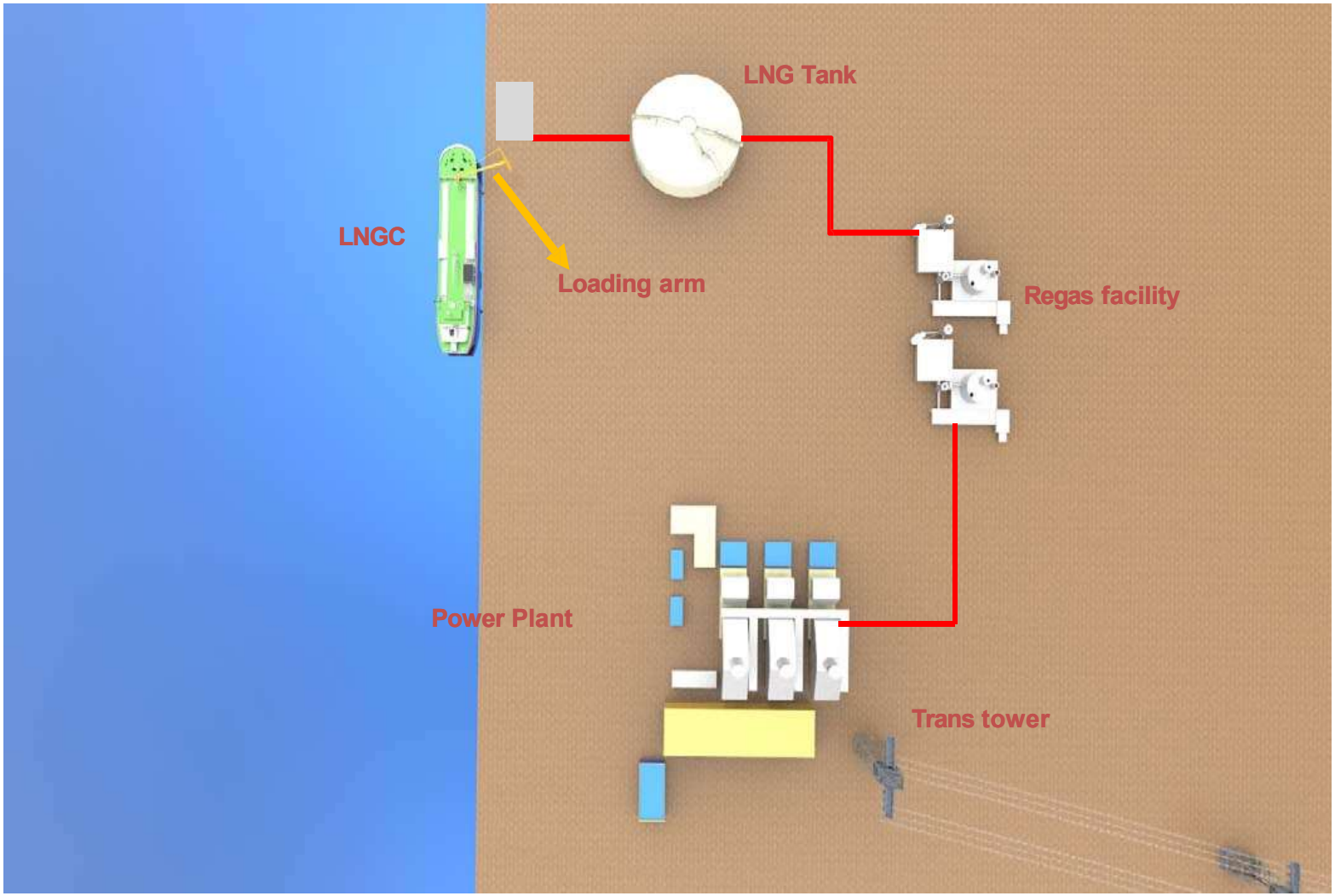
Comparison with Other Power Plant

Comparison Table

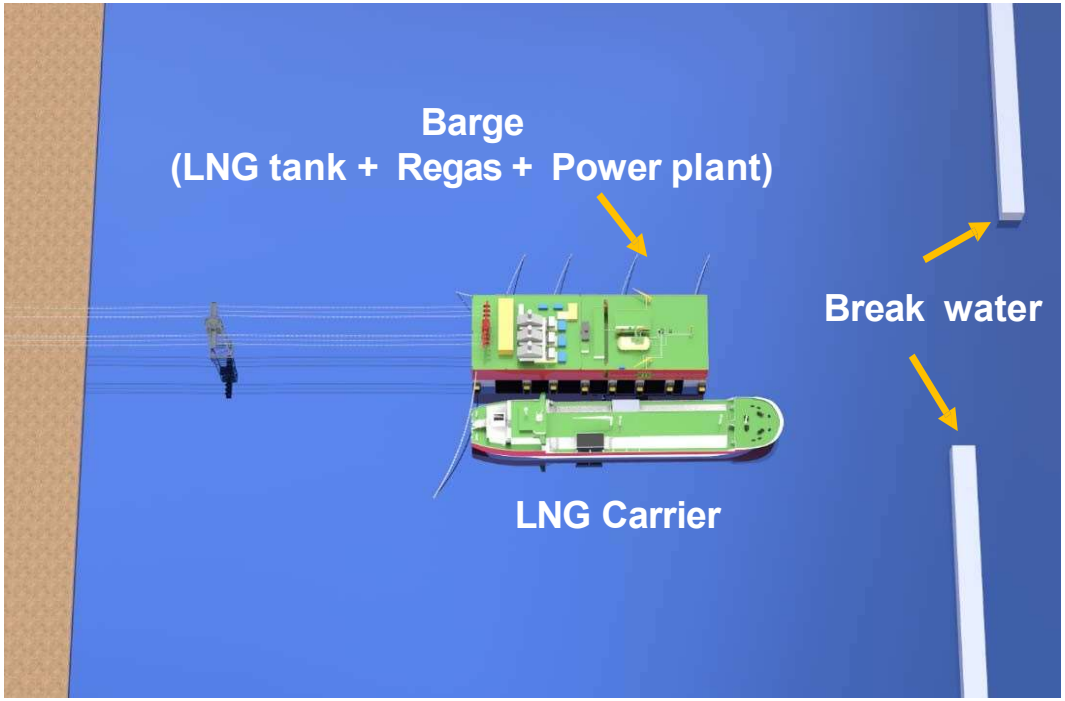
Item	Base of Power Plant		
	Land based CCPP	Barge based CCPP	FCCPP
Land	Required	N/R	N/R
LNG storage tank	On land	On barge	On FLP
Power plant	On land	On barge	On FLP
Mooring facility	N/R	Required	N/R
Break water	Required	Required	N/R
Port facility / Quay	Required	N/R	N/R
Investment cost	High	Medium	Low
Bunkering terminal	Good	Good	Best
Moveability	Impossible	Possible	Possible
Construction period	Long	Short	Short
Cost for cold store	High	Low	Low

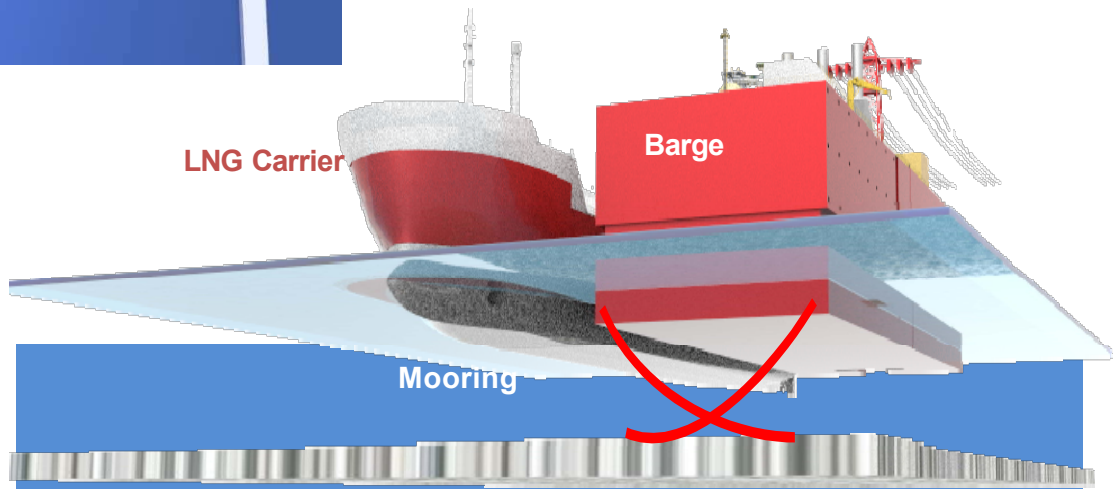
*) N/R: Not required

Land based CCPP

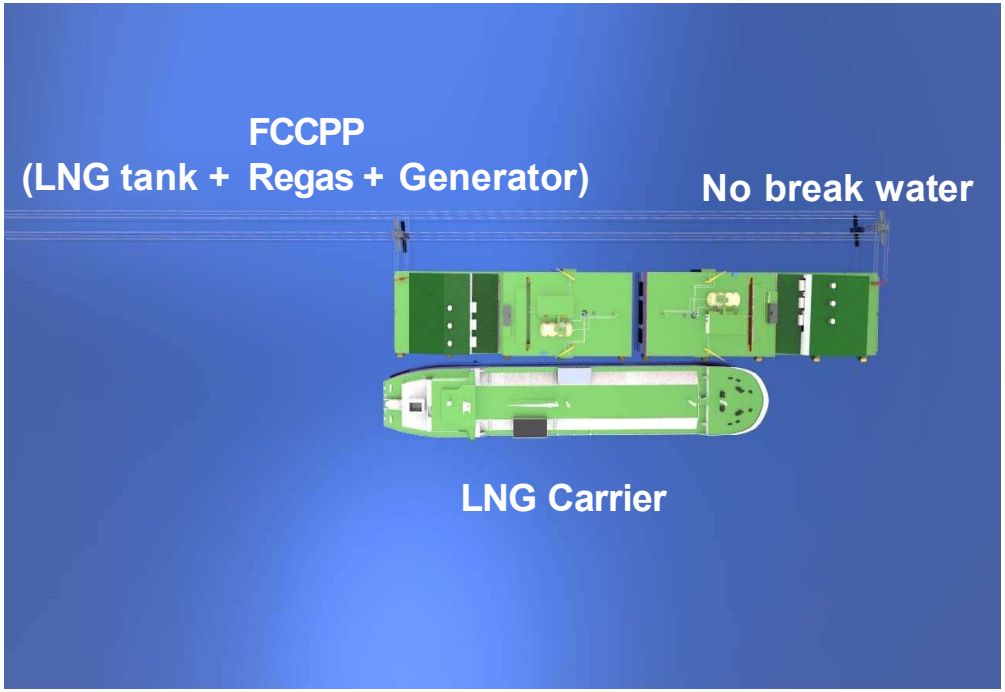


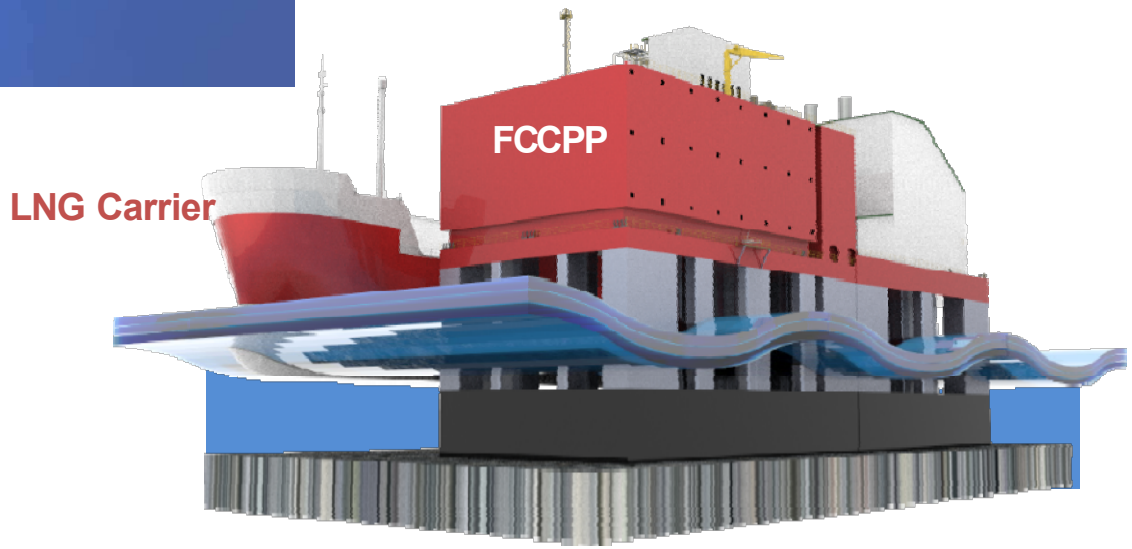
Barge based CCPP





FCCPP





Conclusion

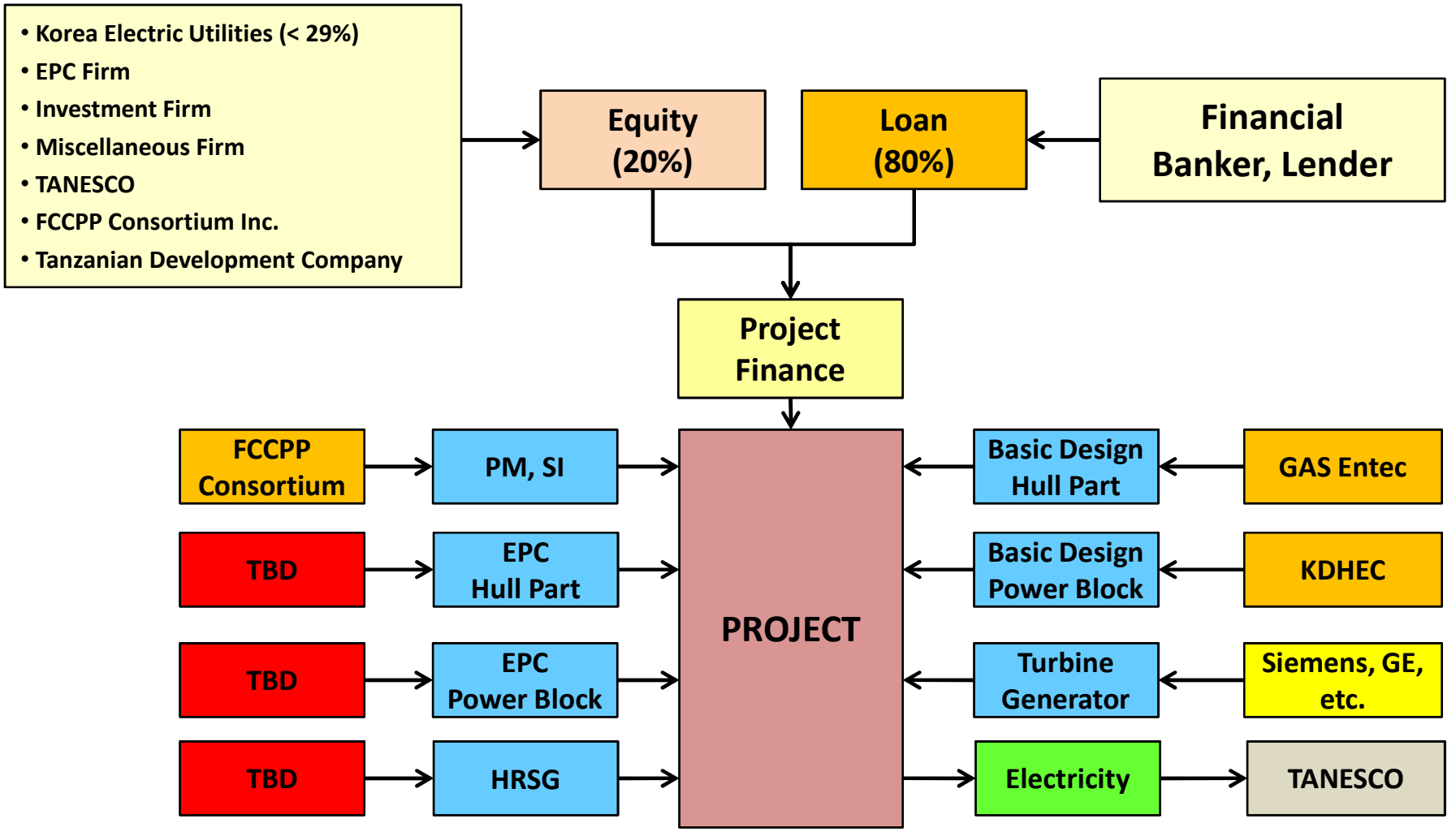
- Thanks to the cleanliness and economics LNG became very preferred fuel for electric power generation.
- FCCPP Consortium Inc. have developed the concept for a compact LNG fueled power plant named FCCPP. (FCCPP stands for Combined Cycle Power Plant on Floatable Legged platform)
- Comparing to ordinary land based power plant, FCCPP can provide the following advantage;

No land is Required	⇨	Low protest from residential
No break water, Port facility, Gas pipe line is required	⇨	Less cost
LNG Cold energy & T/G Hot energy can to be mixed	⇨	Less influence on water temperature
Move Ability	⇨	Easy risk management

- FCCPP Consortium Inc. will remain as the good partner for the client who needs environmental friendly and economic solution for power generation.

Project Execution Strategy

Project Structure

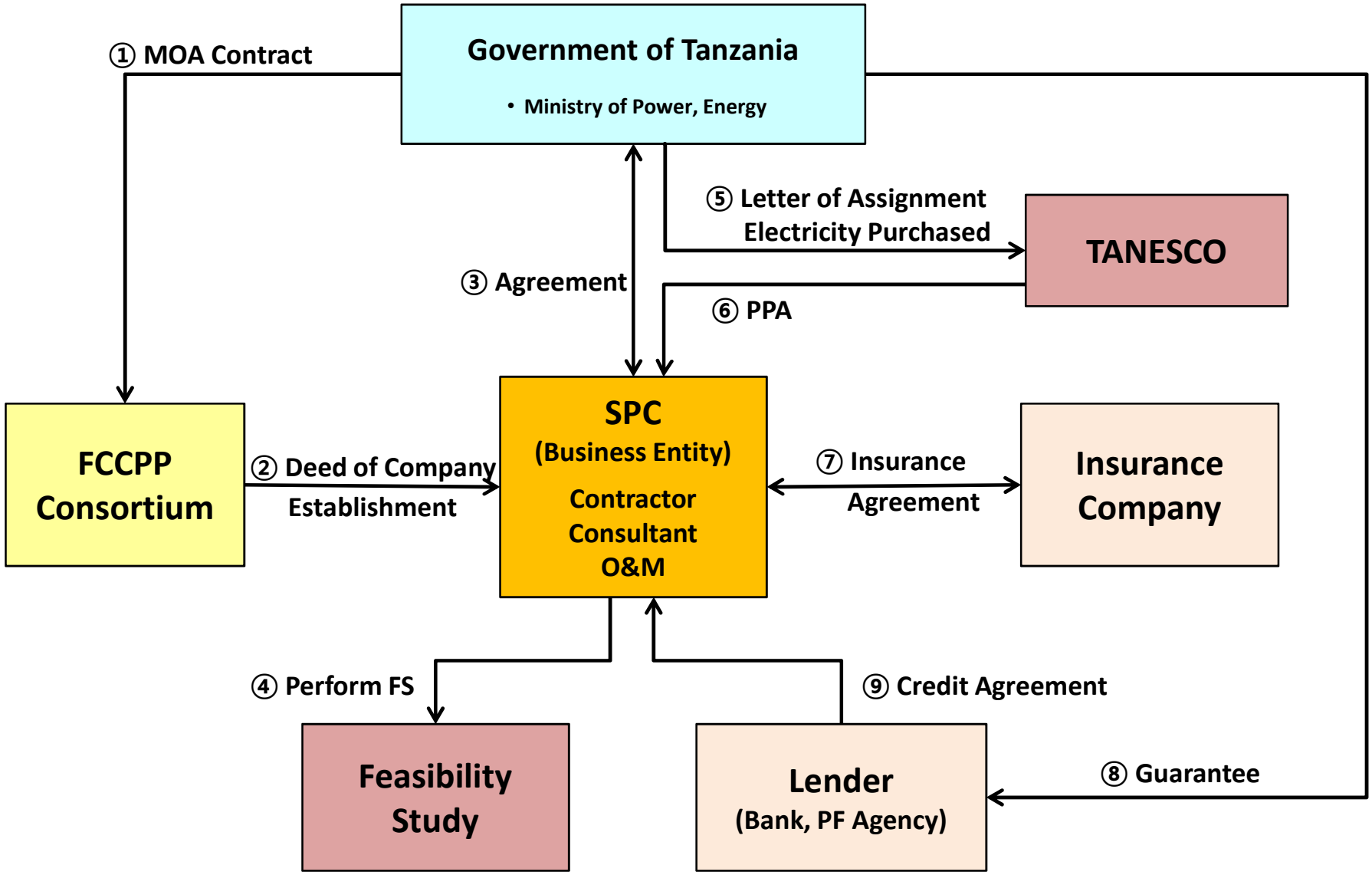


PM : Project Management
SI : System Integration

Role & Responsibility for Stakeholder

Entity	Role and Responsibility each Phase				Remark
	Development	SPC Share	Construction	O&M	
Korea Electric Utilities	Invest		PM	O&M	
EPC Firm	Invest		EPC		
Investment Firm	Invest				
Miscellaneous Firm	Invest				
TANESCO	?				
FCCPP Consortium Inc.	Coordination		OE, SI		
Tanzanian Local Team	Coordination with Government		Coordination		

Contracting and Funding Scheme

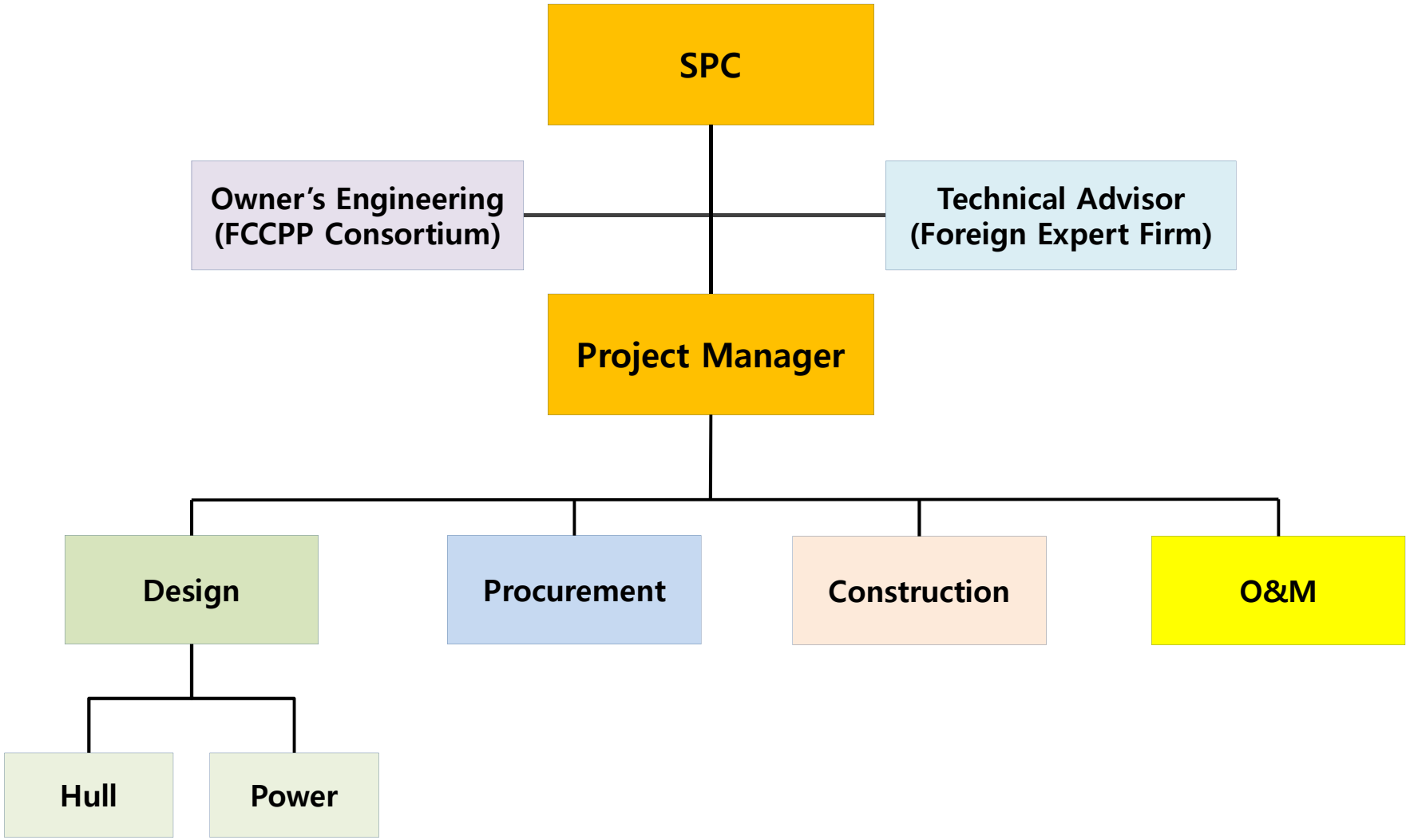


Project Overall Time Schedule

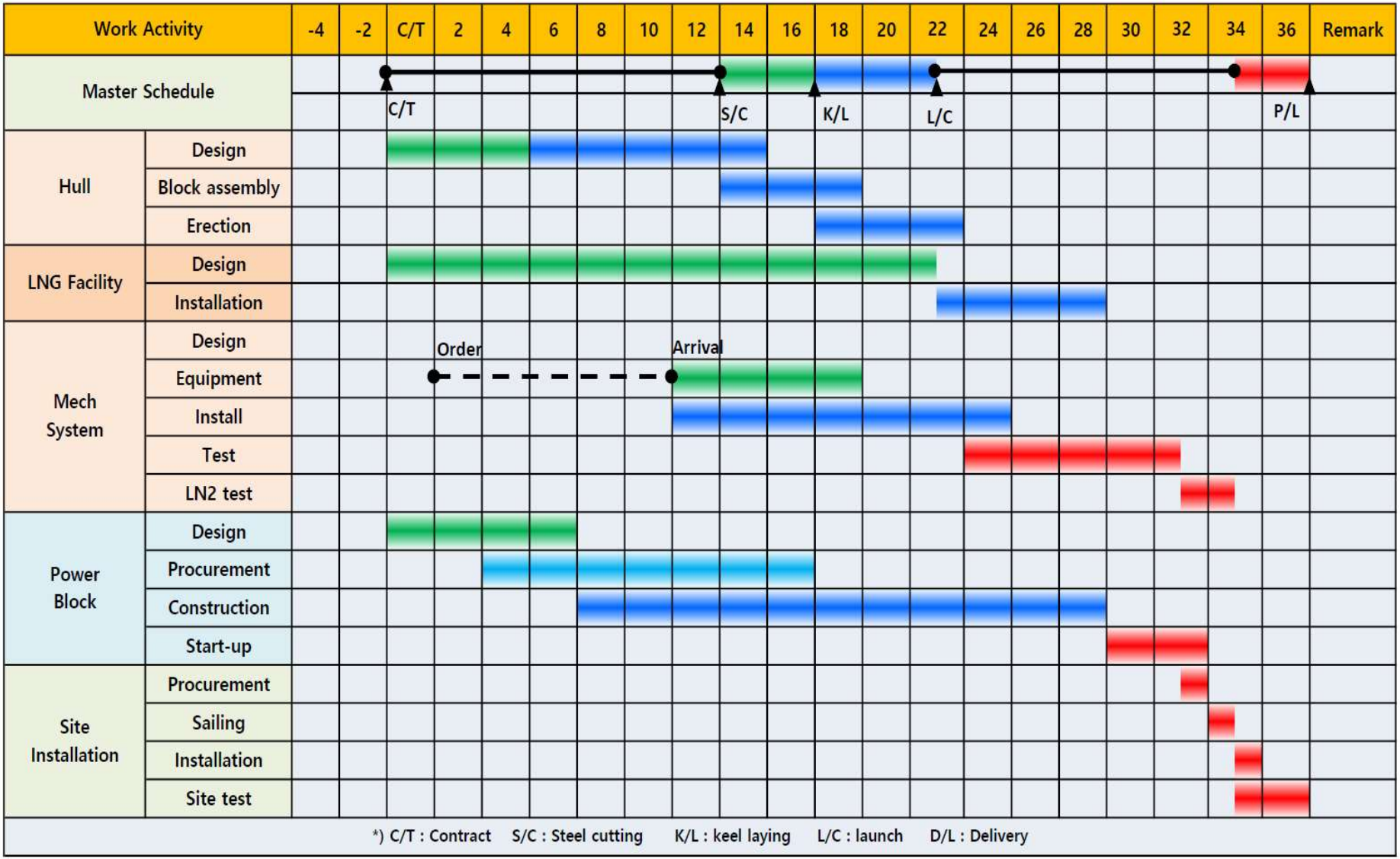
#	Work Activity	Duration	Scope	Remark
1	MOA Letter	1 mon	GoT	
2	Deed of Special Purpose Company Establishment	1 mon	FCCPP Consortium	
3	Public Private Partnership Agreement	1 mon	GoT/SPC	
4	Perform Feasibility Study	5 mon	SPC	
5	Request FCCPP Power Plant Construction Permit	6 mon	GoT	
6	Letter of Assignment Electricity Purchased to TANESCO	1 mon	GoT/TANESCO	
7	Power Purchase Agreement with TANESCO	3 mon	TANESCO/SPC	
8	Insurance Agreement	2 mon	SPC	
9	Credit Agreement (Financial Closing)	3 mon	Lender/SPC	
10	Perform Basic Engineering for EPC Bidding	6 mon	SPC	
11	Bidding EPC and Contract	2 mon	SPC	
12	Start Construction (EPC)	35 mon	EPC	
13	Finish and Commercial Operation	25 years	SPC	

GoT : Government of Tanzania

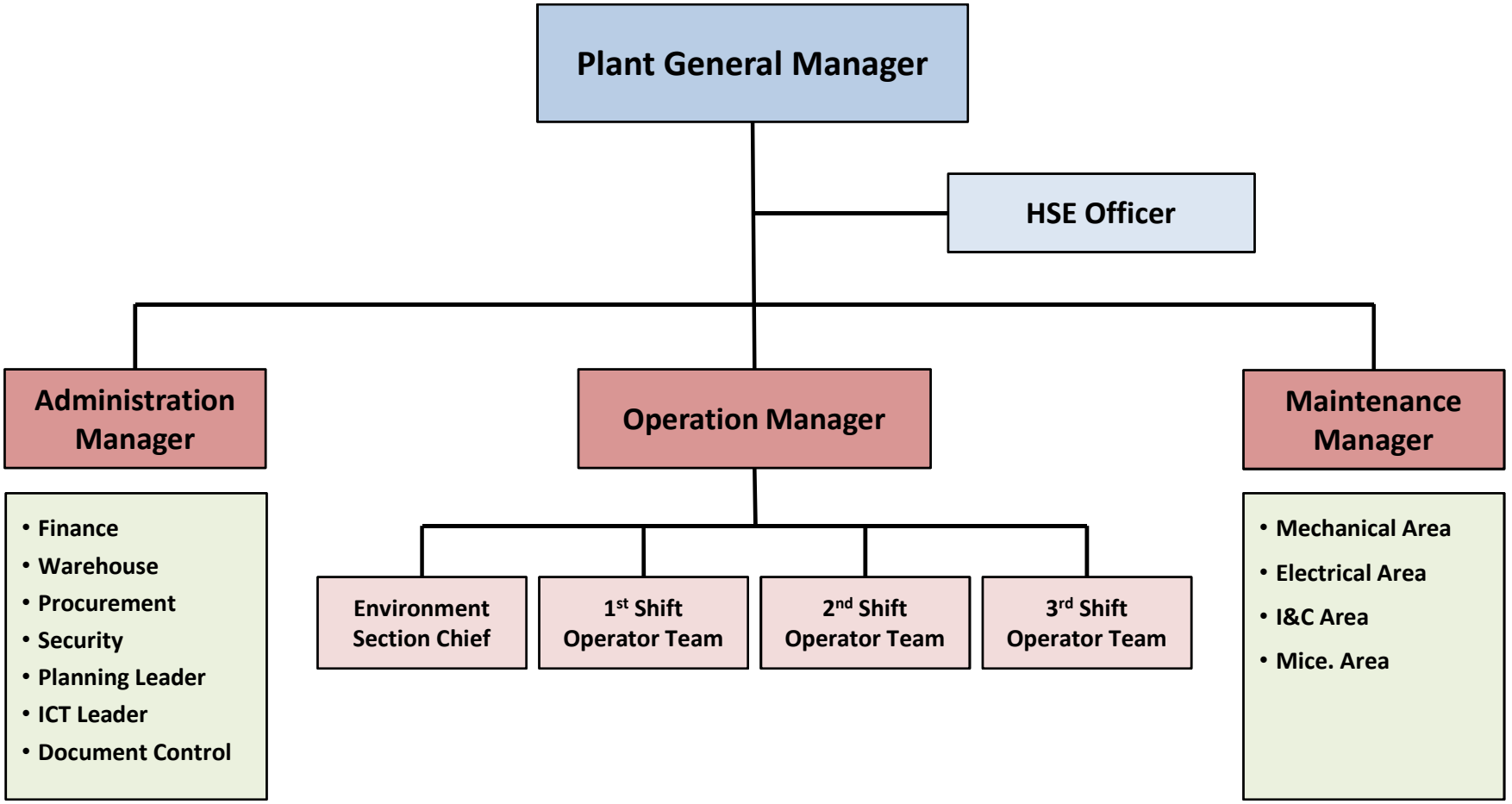
Project Execution Organization



Project Overall Time Schedule



O&M Organization



Financial Analysis

Plant Basic Data

No.	ITEM	Data	Unit	Remark
1	Operation Year		Year	
2	Plant Location		-	
3	Transmission Line with EDL		GPS	
4	Electricity Tariff (PPA)		USCent/kwh	
5	Local Government Invest to SPC		%	
6	Equity Ratio		%	
7	Cooperate Tax		%	
8	Estimate Interest Rate for Loan		%	
9	Estimate Discount Rate for Loan		%	
10	Average Worker Salary (1year)		$US	
11	Payback Period		year	

EPC Cost

No.	ITEM	Cost	Remark
1	HULL + LNG facility	110	Including Hull/outfit , LNG tank , LNG facility, Trans /install
2	Power Plant	222.4	Including All Power Block Equipment and Construction Cost
3	Common Area	16.6	Switch Yards, Mobilization, etc.
Total		349.0	

*) All the costs are for budgetary purpose only.
The final costs to be decided according to the contract.

Financial Analysis

ITEM	Value	Unit	Remark
Total Investment		USD	(for 3 Years)
Total Sales Electricity		USD	25 years
O&M Cost per Year			1 year
Fixed O&M Cost		USD	25 years
Variable O&M Cost		USD	25 years
Financial Cost (Debt + Interest)		USD	(for 10 Years)
Cooperate Tax		USD	
Net Income		USD	
Net Present Value(NPV)		USD	
Internal Rate of Return(IRR)		%	

Thank you!

FCCPP Consortium Inc.