



**Convegno Nazionale  
IPMA Italy -  
"Projectification"**

**SAIPEM ONSHORE  
DIVISION -  
Jazan Project  
Execution**

**24 Gen 2019**



## Jazan IGCC Project

### CONTENTS

1. Introduction to the Program
2. Project Description
3. Project execution Strategy



### Program Overview

#### Jazan IGCC Project

Saudi Aramco was charged with developing the infrastructure for the first phase of the **Jazan Economic City** which includes the **Jazan Refinery and Terminal**, the **Commercial Seaport**, an **IGCC Power Plant** and major **Infrastructures**.

These infrastructure will provide a base for investments in heavy and secondary industries, petrochemicals, mining and other conversion industries.

The main goal of the Economic City is to stimulate manufacturing and industry in the Kingdom's southwest region.

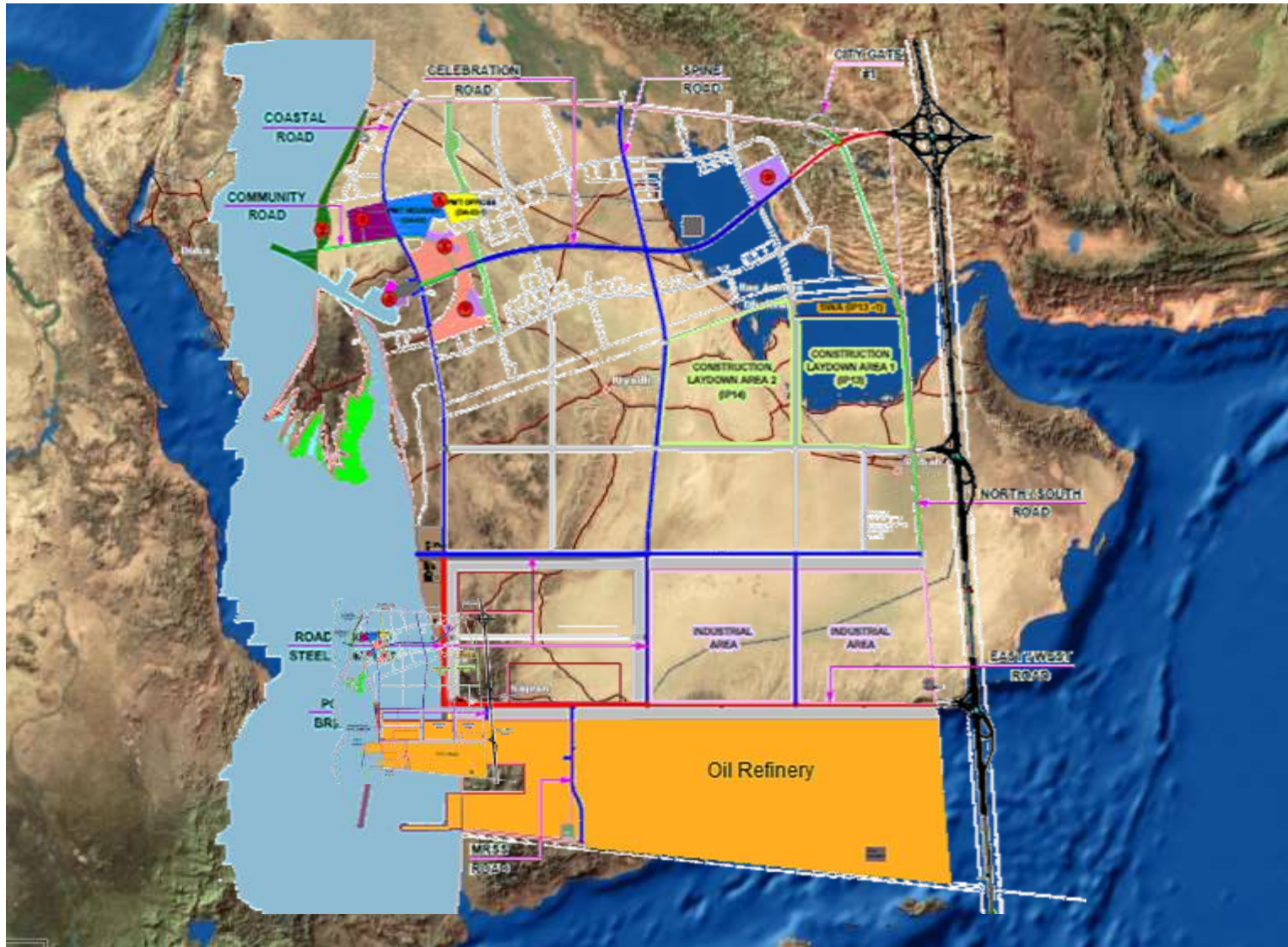
- By creating more than 1,000 jobs directly, and 4,000 jobs indirectly, for the local community.
- Promote training of local people through Jazan Contractor's Consortium for Training and Employment - "Maharat" of at least 5,000 young Saudi's.

Investment for Refinery and IGCC Power Plant range to about **20 USD billions**

**The awarded value to Saipem is equal 3.1 USD billions**

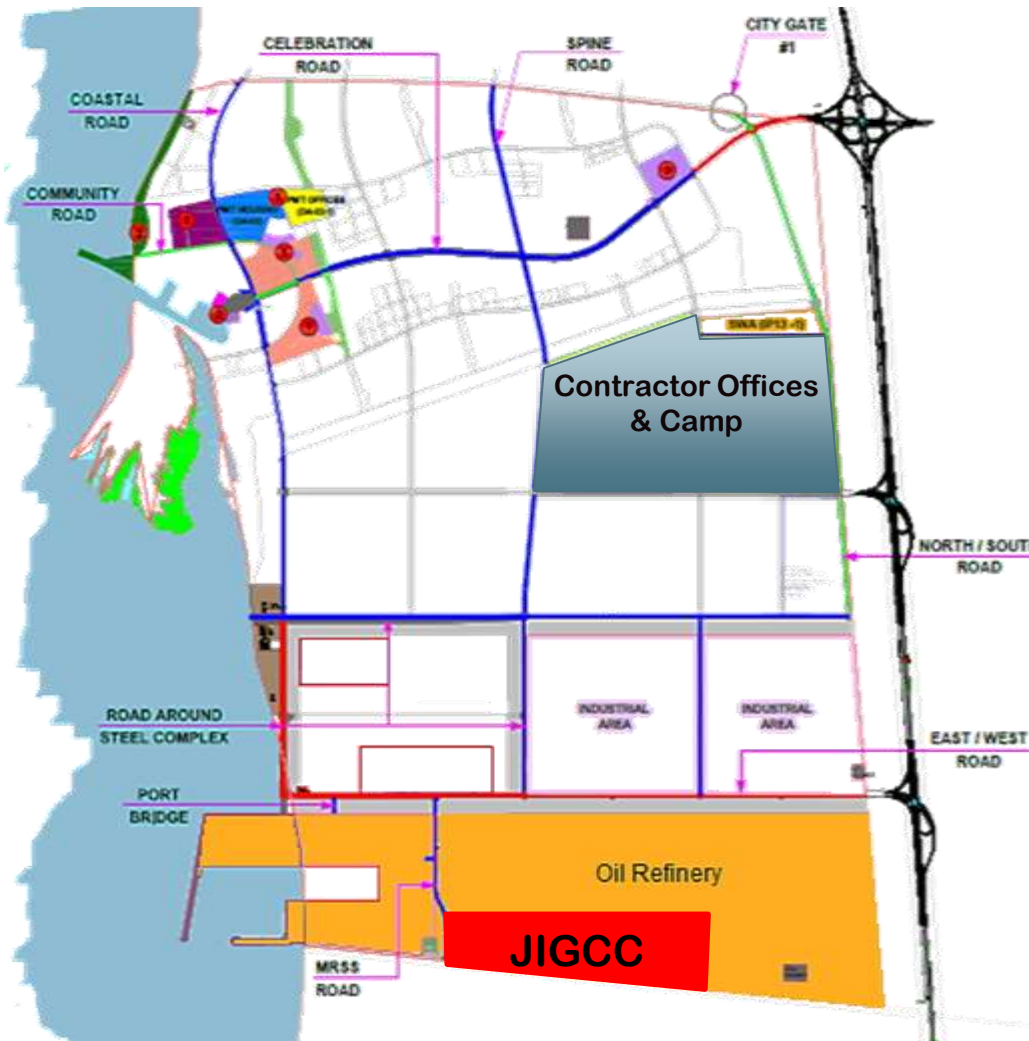
# Introduction to the Project

## Project Location



# Introduction to the Project

## Project Location



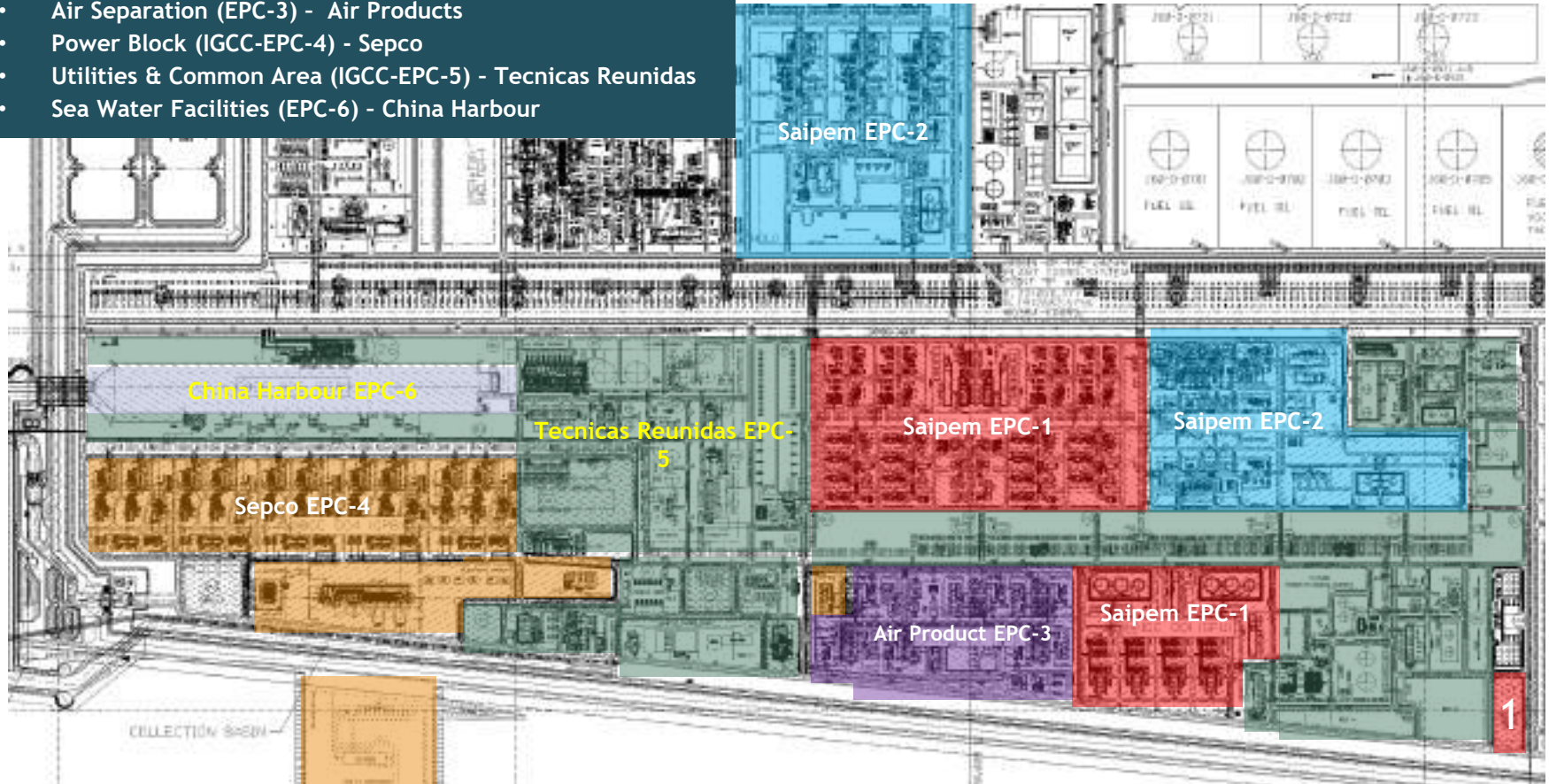
## Introduction to the Project Refinery , Terminal & IGCC



## Introduction to the Project

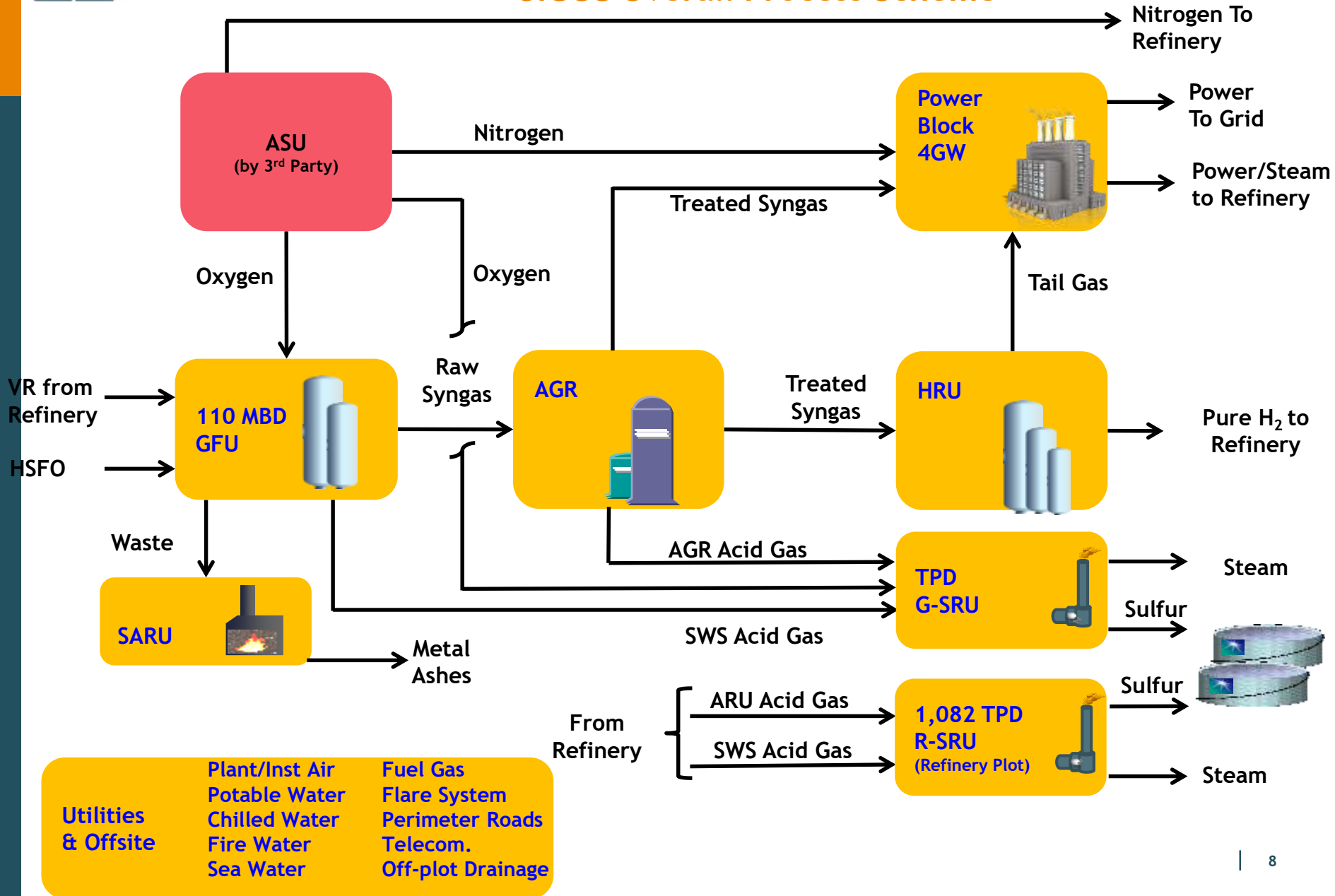
### IGCC Packages

- Gasification and SARU Block (IGCC-EPC-1) - Saipem
- Sulfur Recovery (EPC- 2) - Saipem
- Air Separation (EPC-3) - Air Products
- Power Block (IGCC-EPC-4) - Sepco
- Utilities & Common Area (IGCC-EPC-5) - Tecnicas Reunidas
- Sea Water Facilities (EPC-6) - China Harbour



# Introduction to the Project

## JIGCC Overall Process Scheme



## Jazan IGCC Project

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## Summary Data

### Jazan IGCC Project

<i>Project:</i>	IGCC Program - EPC Package 1 & 2 (Integrated Gasification Combined Cycle Project)
<i>Client:</i>	Saudi Aramco
<i>Location:</i>	Jazan, Kingdom of Saudi Arabia
<i>Contract type:</i>	Lump Sum Turn Key
<i>Contract value:</i>	3.1 bn USD
<i>Scope of Work:</i>	Engineering, Procurement, Construction, Pre-commissioning & Commissioning assistance

## Scope of Work EPC Package 1

### Jazan IGCC Project

#### *Plant Facilities:*

GFU - Gasification Unit **Unit A01**  
*(4 blocks equal to 2,360,000 Nm<sup>3</sup>/h - produced Syngas)*

HRU - Hydrogen Recovery Unit **Unit A02**  
*(2 blocks equal to 184,000Nm<sup>3</sup>/h - produced H<sub>2</sub>)*

AGR - Acid Gas Removal Unit **Unit A03**  
*(4 blocks equal to 2,110,000 Nm<sup>3</sup>/h - Treated Syngas)*

SARU - Soot Ash Removal Unit **Unit A06**  
*(4 blocks equal to 788 kg/h - produced Ash)*

#### *Project Duration:*

44 Months

### Jazan IGCC Project

#### Plant Facilities:

Sulphur Recovery Unit for Jazan Refinery  
(3 trains x 541 t/d sulphur recovered)

**Unit J30**

Sulphur Recovery Units in IGCC area  
(3 trains x 509 t/d sulphur recovered)

**Unit A07**

#### Project Duration:

44 Months

## Jazan IGCC Project

### Main Project Quantities

	Unit of Measure	EXECUTION PHASE QUANTITIES
Equipment	No.	1.927
Reinforced Concrete	M3	105.810
Steel Structures	ton	67.201
Piping Steel	ton	45.558
Piping RTR-PVC	ton	2.613
Piping Fabrication	DIA	2.463.495
Piping Erection	DIA	1.393.020
Ele & Instr. Cables	km	6.472
Total I/O	Num.	53.653

## Jazan IGCC Project

### Main Project Quantities

#### Concrete



**71,053 M3 OF REINFORCED CONCRETE QUANTITY  
EQUIVALENT TO:**

**45% MORE CONCRETE OF THE EMPIRE STATE BUILDING**

## Main Project Quantities

### Jazan IGCC Project

### Concrete/Asphalt Paving



**216,398 M2 OF PAVING EQUIVALENT TO:**

**PIAZZA DEL DUOMO X 13**

## Main Project Quantities

### Jazan IGCC Project

### Steel Structures

**52,461 TONS OF STEEL STRUCTURES EQUIVALENT TO:**

**BROOKLYN BRIDGE X 3**



## Main Project Quantities

### Jazan IGCC Project

### Piping Erection (TONS)

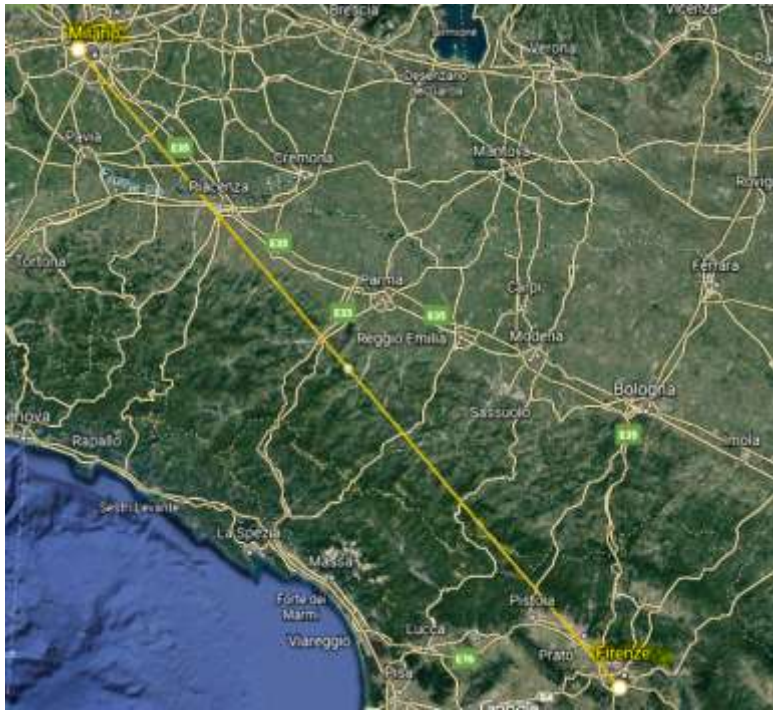


**35,766 TONS OF PIPING EQUIVALENT TO:  
GIUSEPPE GARIBALDI AIRCRAFT CARRIER X 2.5**

## Main Project Quantities

### Jazan IGCC Project

### Piping in Dia-Inches (Fabrication & Erection)



**FACTORIZED INCHES 3,218,993 EQUIVALENT TO:**

**256 KM OF LINEAR WELDING  
(DISTANCE MILAN TO FLORENCE)**

## Main Project Quantities

### Jazan IGCC Project

### Electrical and Instrumentation Cable Length



**OVER 4,652 KM OF CABLE TO BE  
PULLED EQUIVALENT TO:**

**MILANO -JAZAN GROUND DISTANCE.**

## Jazan IGCC Project



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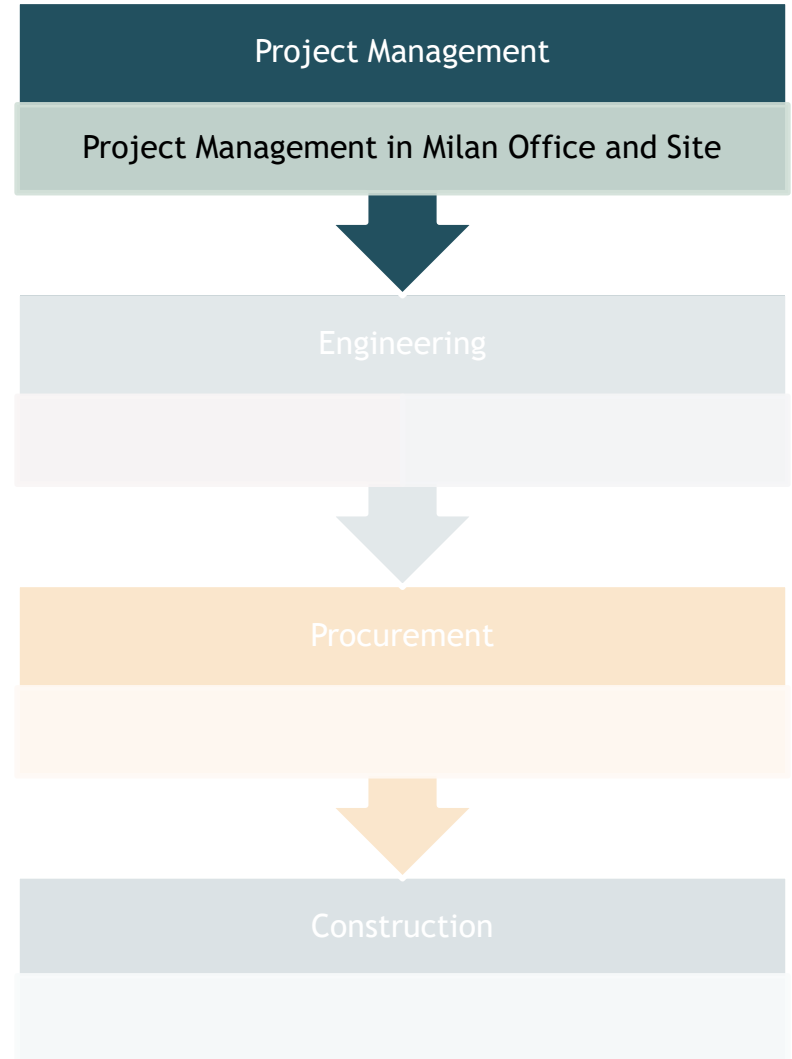


## Jazan IGCC Project

### Project Execution Strategy

Project Management Team initially based in Milan throughout the Home Office activities, together with Saudi Aramco

Then relocated in Jazan at the beginning of Construction



## Jazan IGCC Project

### Project Execution Strategy

#### 2.650.000 Engineering Manhours at the end of the Project

##### General activities executed at Head Office Milan:

- FEED Verification
- Process, Utilities, Material & Corrosion, Loss Prevention

##### Detailed Engineering Equipment:

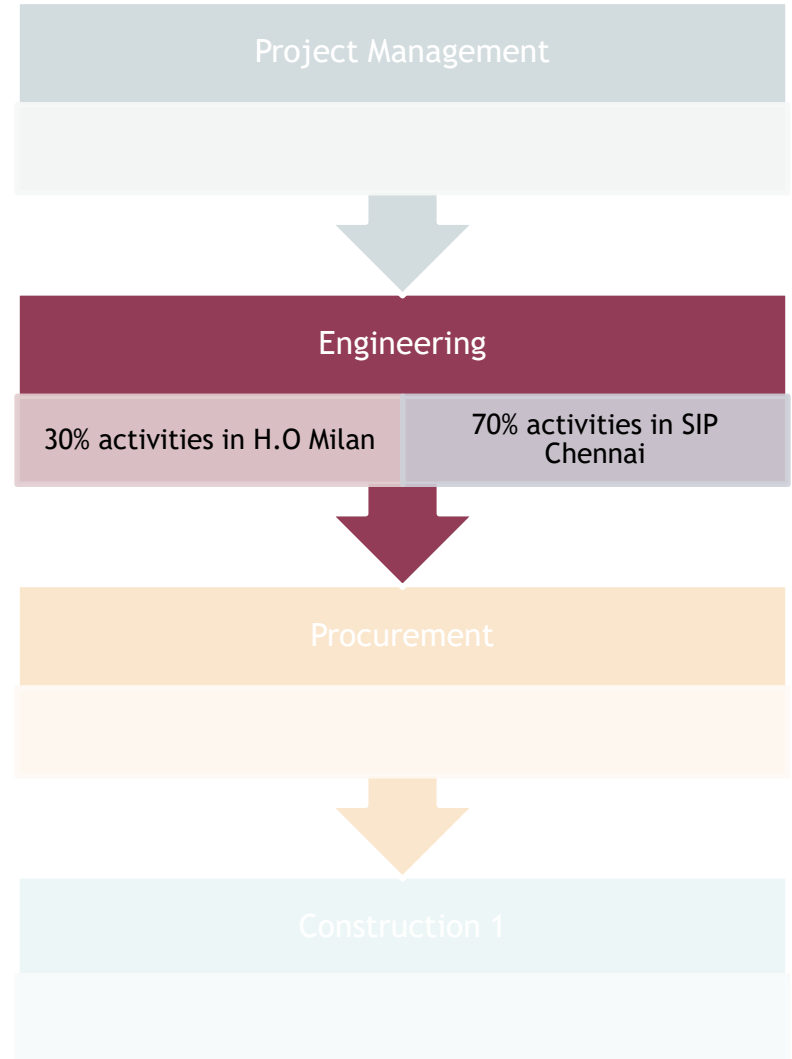
- Supply follow up (after PO) of Critical Equipment managed in Milan
- Supply follow up (after PO) of non critical equipment (e.g. pumps and static equip.) developed with support of SIP (Saipem India Projects)

##### Instrumentation, Civil, Piping, Electrical:

- Detail plant engineering, and follow-up of bulk materials developed with support of SIP.

##### Buildings

- Detailed engineering developed in Al-Khobar



# Jazan IGCC Project

## Project Execution Strategy

	SPEC	PR	RFQ (Estim. qty)	Tender	TBE	Company's Approval	Project Agreement	POs
Package 1	S-1	P-1	RF-1	●	T-1	A-1	●	P-1
Package 2	S-2	P-2	RF-2	●	T-2	A-2	●	P-2

Before RfQ is important to:

- share RVL soft Library
- freeze Vendor List
- freeze Supply Specification

Market

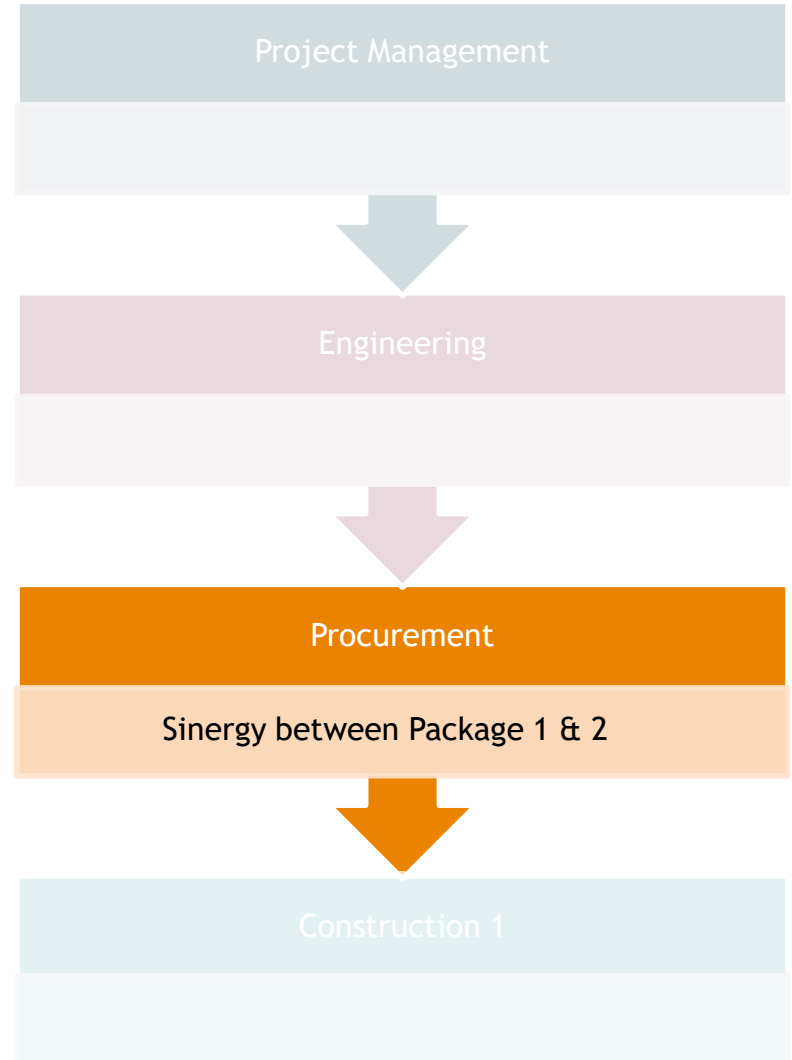


Technical Alignment

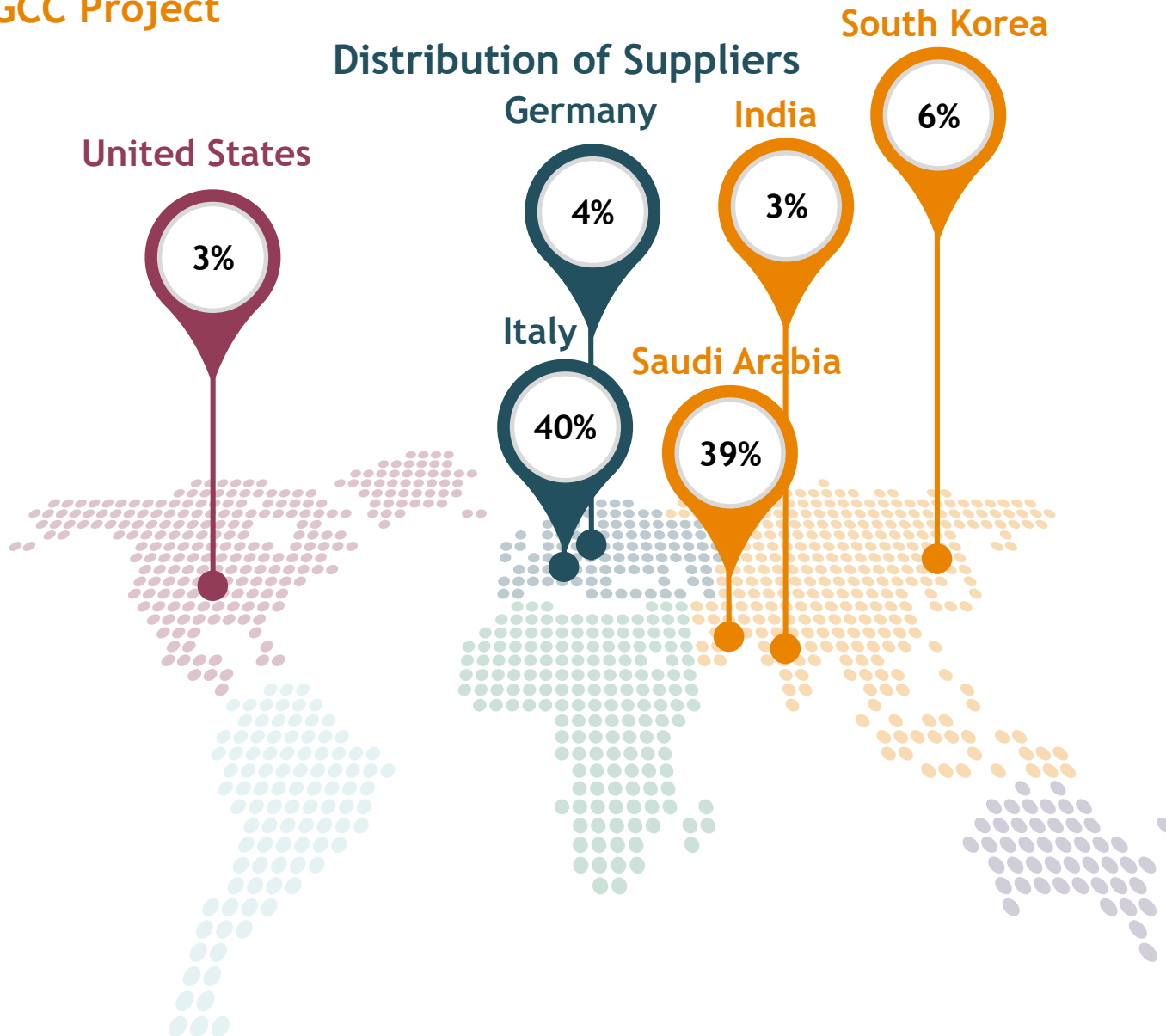
Commercial Alignment

All Post Order Activities relevant to Saudi Vendors followed-up by Saudi Office

- ✓ More than 1000 Purchase Orders placed
- ✓ Suppliers selected in 27 Countries
- ✓ Around 1.5 USD Billions of Materials Purchased



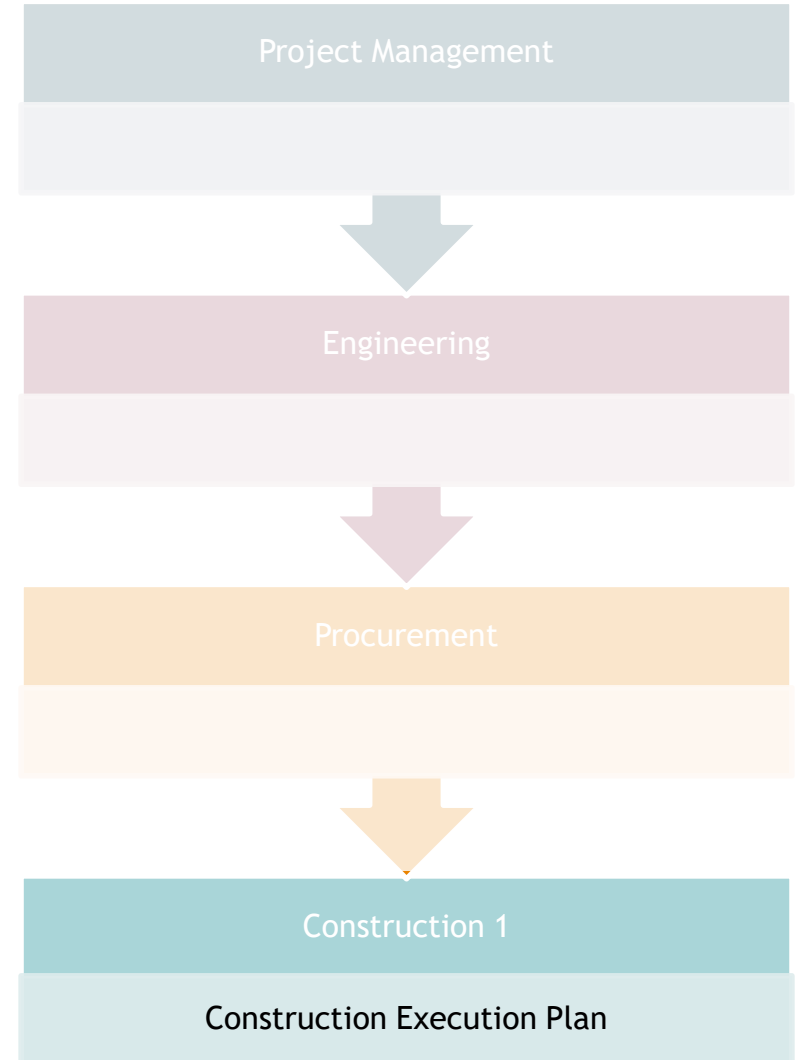
## Jazan IGCC Project



## Jazan IGCC Project

### Project Execution Strategy

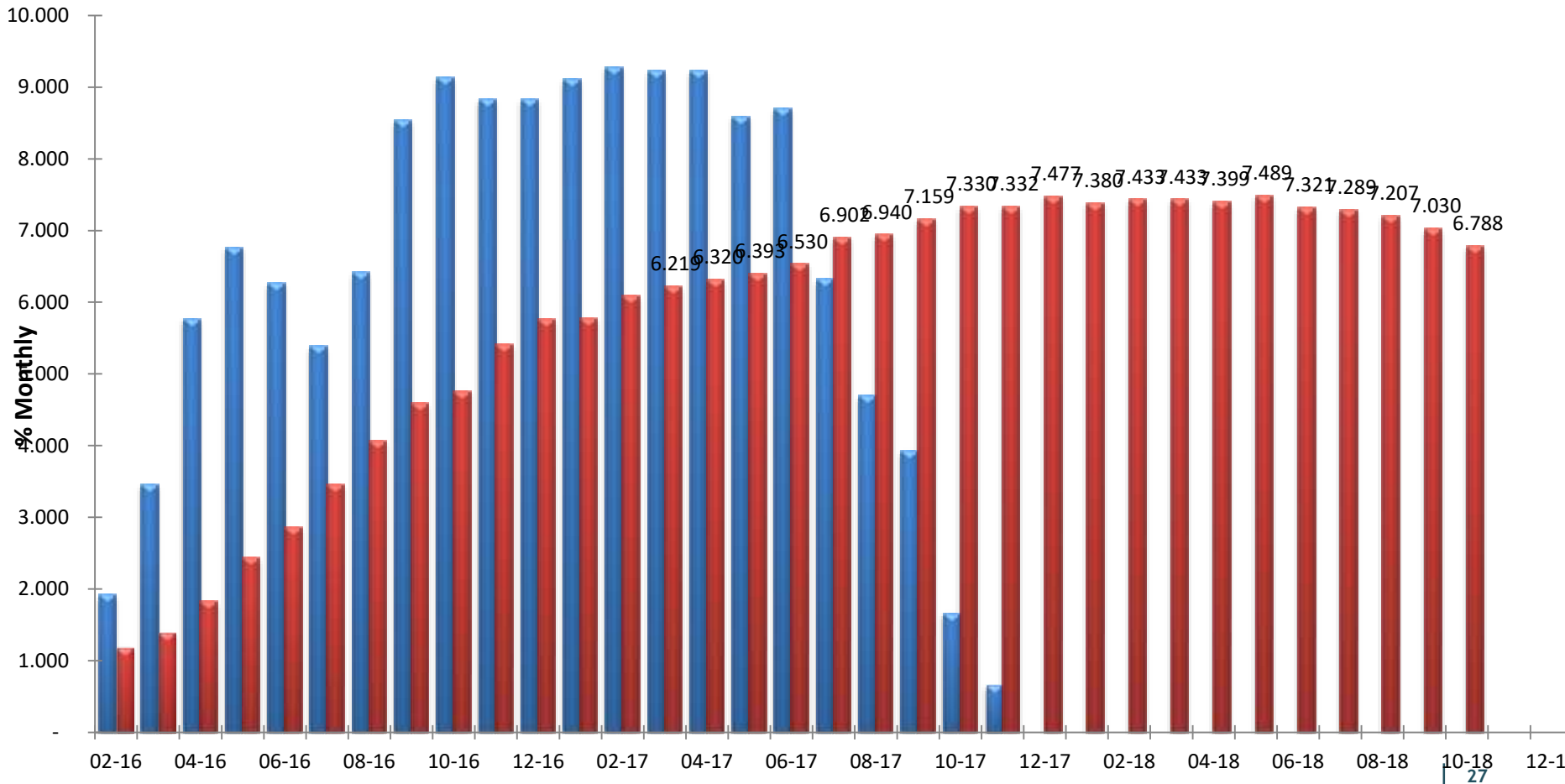
- CONSTRUCTION EXPECTED MANHOURS AT THE END OF THE PROJECT : 109.000.000
- OVERALL MANPOWER AT PEAK : 14.000



## Jazan IGCC Project

# Construction Execution Plan Manpower curve

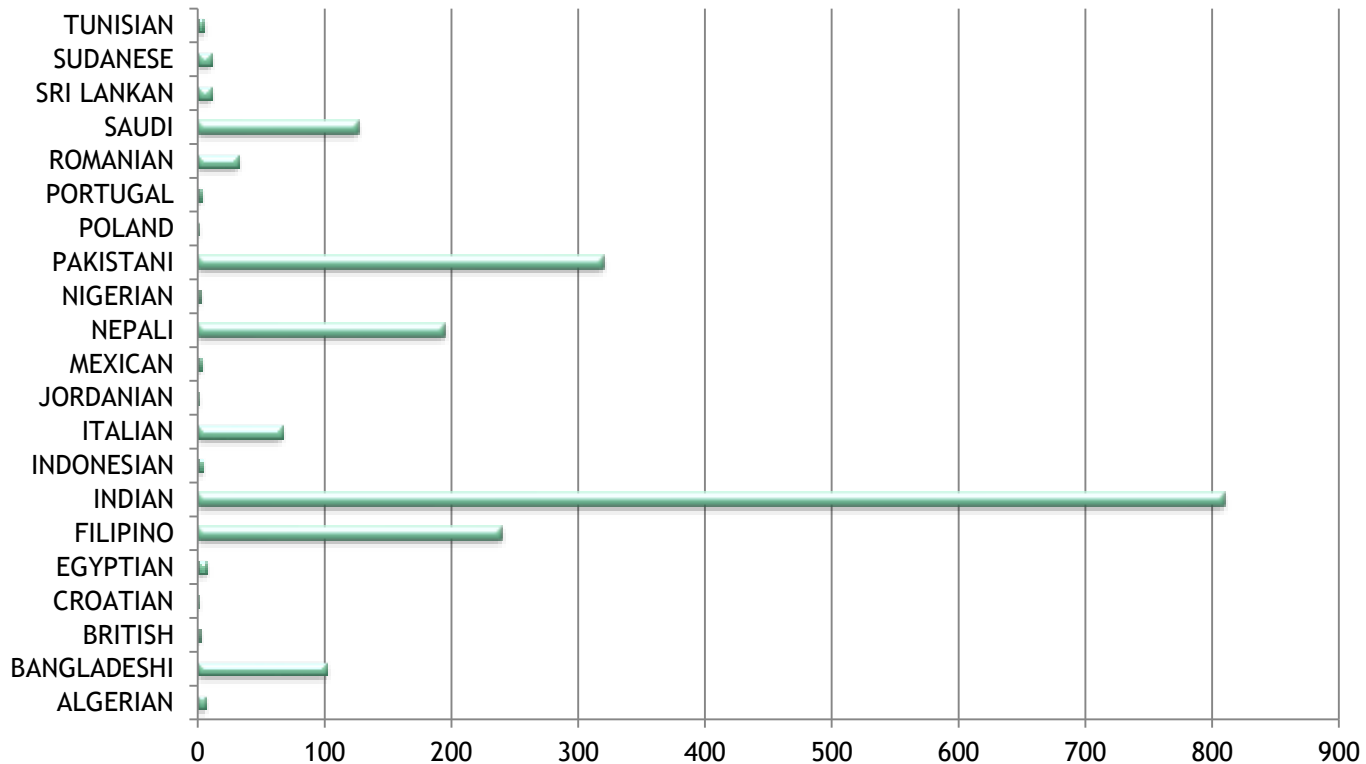
To cover both Projects



## Jazan IGCC Project

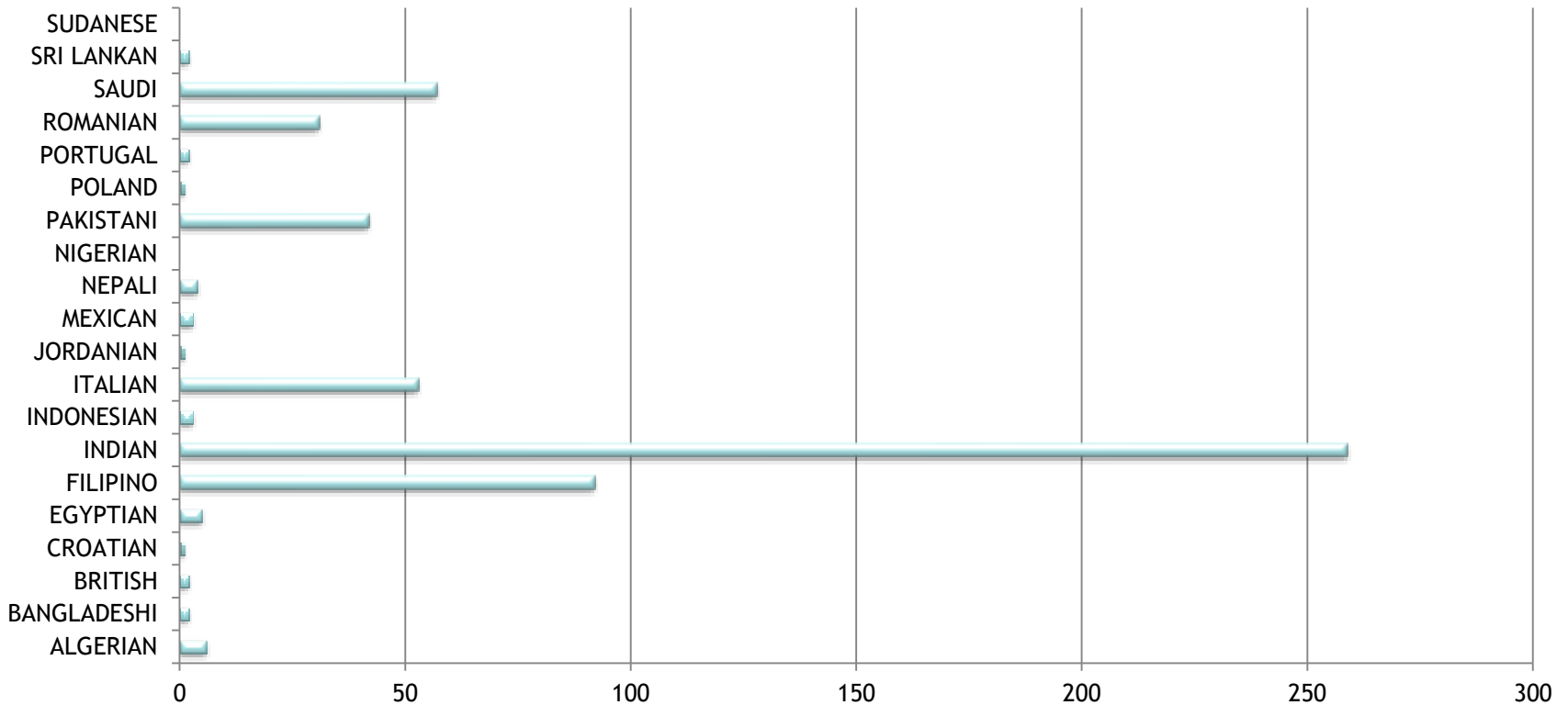
Currently on site active 1950 Saipem employees (for Pack 1&2)

### Manpower by Nationality



## Jazan IGCC Project

- Currently on site active 571 Supervision Personnel (for Pack 1&2)



## Jazan IGCC Project

### TCF designed by Saipem team and constructed in Direct Hiring

Camp Area View



SAIPEM CAMP AREA

Laydown Area and Warehouse View



## Jazan IGCC Project

### Project Execution Strategy

**Construction Execution has been a mix of:**

#### **DIRECT HIRING (20%)**



- HRU (A02) Mechanical Works
- A51 Interconnecting Piperack Mechanical Works

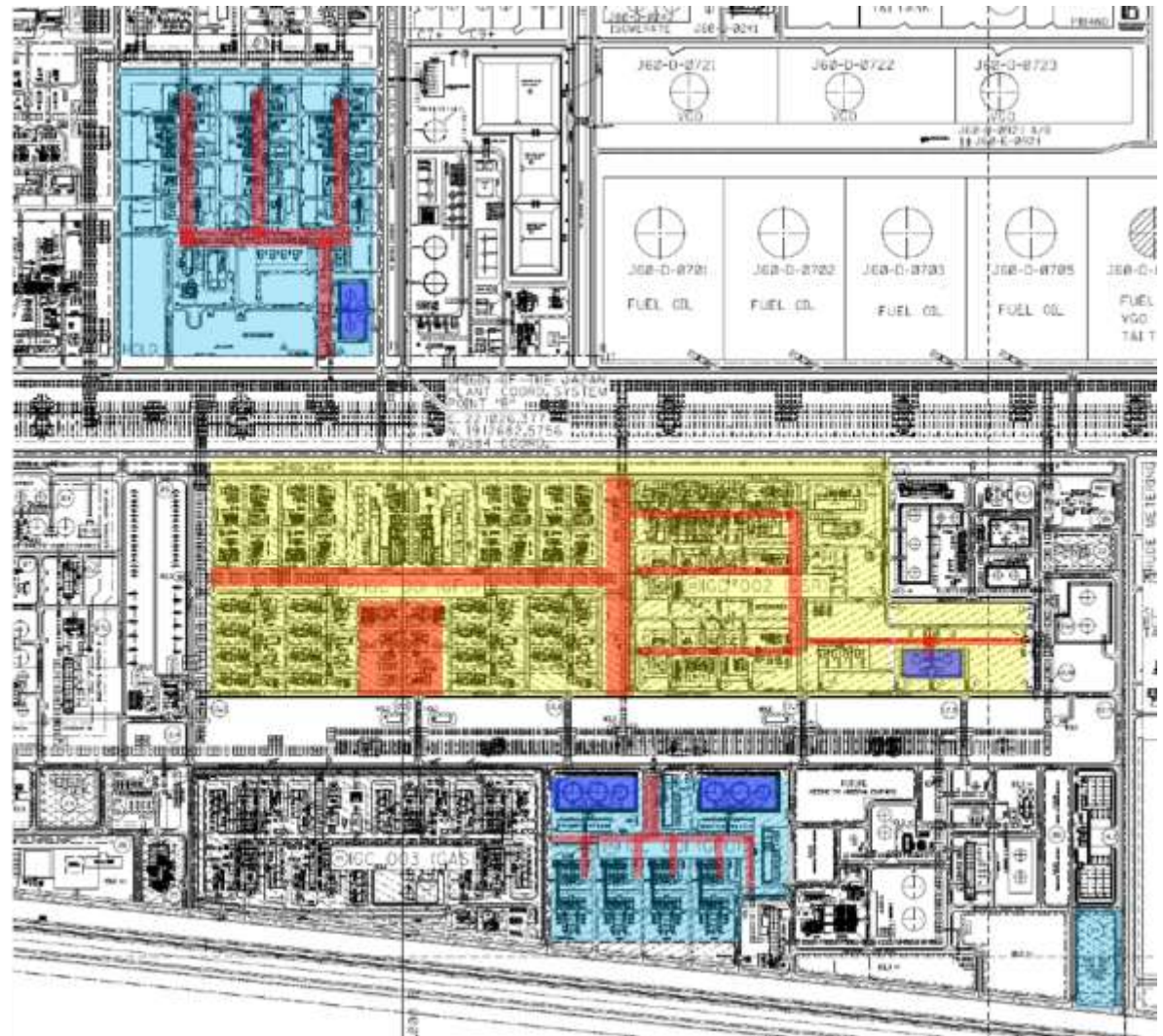
#### **SUBCONTRACTING (80%)**



- Other areas, A01, A03, A06
- General subcontractors (NSH / CCC)
- Specialized subcontractors (CBI / OLAYAN)

## Construction Execution Strategy - Subcontracting Plan

- SAIPEM DIRECT CONSTRUCTION
- Nasser Al Hajri (NSH)
- CCC
- EPC TANKS Subcontractors



## Jazan IGCC Project

**The first year of Construction**

[Aerial Video 2016 - 2017](#)