

Mass Group Holding Ltd.(MGH)is an Iraqi company registered in Cayman Island/U.K with its head office in Amman Jordan established in 1994 but its activities are mainly in Iraq.

MGH is composed of seven daughter companies(4 for power,2 for cement and one for Iron and steel) with total number of employees of 2500 mainly skilled people of different disciplines.

MGH is registered in Cayman Islands with a capital of (4b)USD . The total cost of our projects is about (8) eight billions USD.

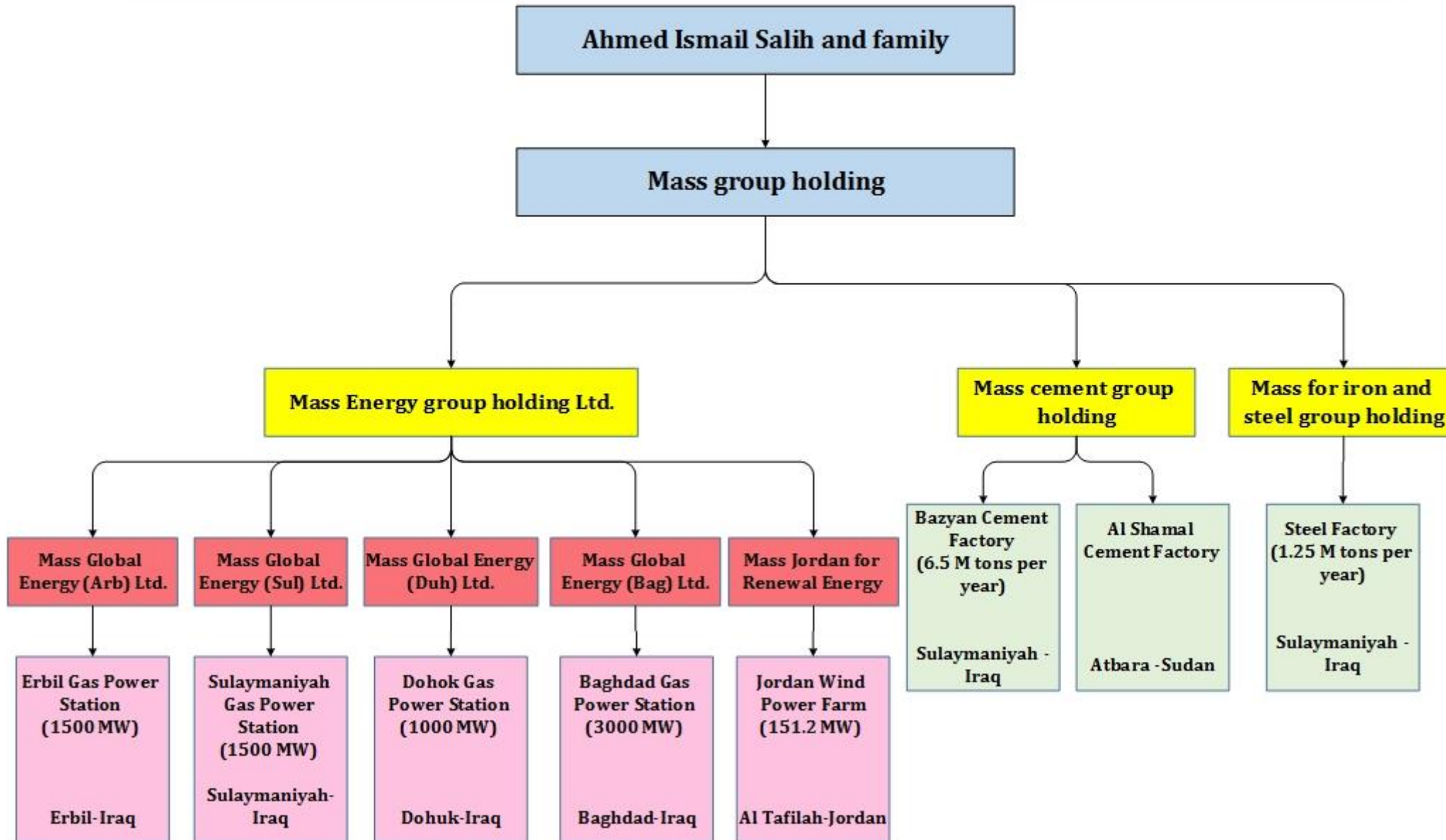
During the last 20-30 years Iraq suffered from wars, sanction and arm conflicts which affected its infrastructure seriously. We decided to contribute to the rebuilding of the country by providing some of the basic requirements of its infrastructure in particular:

- Electricity -7000 MW
- Cement – 8 million tons/year at Sulaymaniah-Iraq + 2million tons per year at Sudan.
- Steel & Iron – 1.25 million tons per year

At first, we focused on Kurdistan Region (North of Iraq) where the security issues was tolerable despite of that most of the international companies we dealt with were reluctant to come to Kurdistan and if they did they demanded very harsh security conditions and requirements. We had to live with that despite its financial impact on the project's cost.



# MASS GROUP HOLDING LTD.





# Erbil Gas Power Station(EGPS)



**ERBIL GAS POWER STATION-EGPS**



- ▶ **EGPS is located in south of Erbil (about 22 km) from city center, plant is around 750,000 m<sup>2</sup>, EGPS project was started in 18 Feb. 2007 and started operation in 2008 running on both gas and liquid fuel (Build, Own and Operate (BOO) basis), Also EGPS was converted to Combined Cycle Power Plant in 2014 to increase its capacity to 1500 MW connected to Kurdistan power grid and providing Kurdistan region with electrical power.**
- ▶ **EGPS now consists of:**
  - ✓ **8\*125 MW / GE frame 9E GTs.**
  - ✓ **2\*250 MW / GE frame C7 STGs.**
  - ✓ **8 HRSGs by CMI.**
  - ✓ **2 ACCs by GEA.**
  - ✓ **Water treatment plant by Aquamatch company**
  - ✓ **main electrical transformers by ABB.**
  - ✓ **LV transformers by ABB.**
  - ✓ **Firefighting system and protection systems by ABB.**
  - ✓ **DCS control system by ABB**
  - ✓ **132 KV & 400 KV switchyards by ABB.**



Total Power Production 1500 MW  
Simple Cycle 1000MW +Combined Cycle 500MW



# Sulaymaniah Gas Power Station(SGPS)



Total Power Production 1500 MW  
Simple Cycle 1000MW +Combined Cycle 500MW



- ▶ **SGPS is located in north west of Chamchamal (about 60 km) from city, SGPS project was started in 2008 and started operation in 2010 running on both gas and liquid fuel (Build, Own and Operate (BOO) basis), Also SGPS was converted to Combined Cycle Power Plant in 2016 to increase its capacity to 1500 MW connected to Kurdistan power grid and providing Kurdistan region with electrical power.**
- ▶ **SGPS now consists of:**
  - ✓ **8\*125 MW / GE frame 9E GTs.**
  - ✓ **2\*250 MW / GE frame C7 STGs.**
  - ✓ **8 HRSGs by CMI.**
  - ✓ **2 ACCs by GEA.**
  - ✓ **Water treatment plant by GWT company**
  - ✓ **main electrical transformers by ABB.**
  - ✓ **6.6 KV switch gear and the 400 V low voltage by ABB.**
  - ✓ **LV transformers by ABB.**
  - ✓ **Firefighting system and protection systems by ABB.**
  - ✓ **DCS control system by Emerson.**
  - ✓ **132 KV & 400 KV switchyards by ABB.**



Total Power Production 1500 MW  
Simple Cycle 1000MW +Combined Cycle 500MW



# Dohuk Gas Power Station (DGPS)



Total Power Production 1000 MW  
Simple Cycle

▶ **DGPS is located to the north of Duhok city near Sumel, on Duhok - Zakho highway around 35 km from Duhok city center, DGPS project was started in 2010 and started operation in end of 2010 running on both liquid fuel (Build, Own and Operate (BOO) basis), we have a plan to convert DGPS from simple cycle to 1500 MW combined cycle power plant in near future. DGPS is producing 1000 MW connected to Kurdistan power grid and providing Kurdistan region with electrical power .**

▶ **DGPS now consists of:**

- ✓ **8\*125 MW / GE frame 9E GTs.**
- ✓ **The main electrical transformers by ABB.**
- ✓ **6.6 KV switch gear and the 400 V low voltage by ABB.**
- ✓ **Low voltage transformers by ABB.**
- ✓ **Fire fighting system and protection system by ABB.**
- ✓ **DCS control system by ABB.**
- ✓ **Liquid fuel system and gas reduction system by Rotring Germany.**







# Besmaya (Baghdad) Gas Power Plant (3000MW)





- ▶ BGPS located east of Baghdad around 25 km from the Capital, MGH sign contract with Ministry of Electricity (MoE) in Baghdad to provide the Capital with 3000 MW - construction works on site started in the beginning of 2015 and finished (phase I) producing 1500 MW in 2017, BGPS is considered as one of the very important mega projects in the region.
- ▶ BGPS consist of the following:
  - ✓ (8\*260 - 2000 MWs) / GE Frame 9FA GTs running on both natural gas and diesel oil fuel.
  - ✓ (4\*250 - 1000 MWs) / GE Frame C7 STGs (as combined cycle power plant).
  - ✓ 8 HRSGs (CMI).
  - ✓ 4 sets of cooling towers.
  - ✓ 6 Diesel fuel tanks (10000) m<sup>3</sup>.
  - ✓ 400 KV and 132 KV switchyards using multiple transmission lines.
  - ✓ Main Control System (DCS) by Emerson USA.



Phase I- 1500MW (1000MW S.C+500MW C.C) is completed.  
Phase II- 1500 MW (1000 MW S.C +500MW C.C) work in Progress



<b>Manufacturer</b>	<b>General Electric</b>
<b>Type</b>	<b>GE Frame-9E</b>
<b>Year of Manufacture</b>	<b>2009-2012</b>
<b>Speed</b>	<b>3000RPM</b>
<b>Rated Capacity</b>	<b>125 MW (designed output)</b>
<b>Air Inlet Conditions</b>	<b>TBA</b>
<b>Compressor Stages</b>	<b>17</b>
<b>Compressor Pressure Ratio</b>	<b>12.3/1</b>
<b>Combustor</b>	<b>1.2</b>
<b>Fuel</b>	<b>Natural Gas / Diesel fuel</b>
<b>Turbine Inlet Temp</b>	<b>15</b>
<b>Power Turbine stages</b>	<b>3</b>
<b>Exhaust Gas Flow</b>	<b>1410.8t/h</b>
<b>Exhaust Gas Temp</b>	<b>553.8°C</b>
<b>Starting</b>	<b>DC Electric Motor</b>
<b>Control System</b>	<b>Mark Vie</b>

## **Power Generating Units**

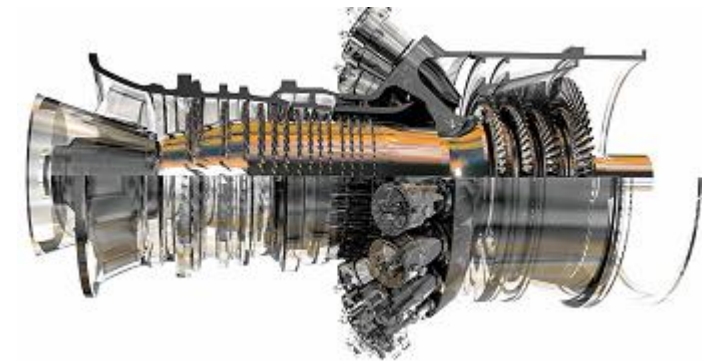
### **Gas Turbines – GE frame 9E**



<b>Manufacturer</b>	<b>General Electric</b>
<b>Type</b>	<b>GE Frame-9FA</b>
<b>Speed</b>	<b>3000 RPM</b>
<b>Rated Capacity</b>	<b>265MW (designed output)</b>
<b>Compressor Stages</b>	<b>18</b>
<b>Power Turbine stages</b>	<b>3</b>
<b>Compressor Pressure Ratio</b>	<b>16.7</b>
<b>Fuel</b>	<b>Natural Gas / Diesel fuel</b>
<b>Power Turbine stages</b>	<b>3</b>
<b>Exhaust Energy (MMBtu/hr)</b>	<b>1458</b>
<b>Exhaust Temp</b>	<b>1104 F</b>
<b>Control System</b>	<b>Mark Vie</b>

## **Power Generating Units**

### **Gas Turbines – GE frame 9FA**





<b>Manufacturer</b>	<b>General Electric</b>
<b>Type</b>	<b>GE Frame-C7</b>
<b>Year of Manufacture</b>	<b>2013</b>
<b>Speed</b>	<b>3000 RPM</b>
<b>Rated Capacity</b>	<b>250 MW (designed output)</b>
<b>Compressor Stages</b>	<b>12 HP 2 X5 LPA</b>
<b>Inlet Pressure</b>	<b>1073.2 psia / 74 bara</b>
<b>Inlet Temperature</b>	<b>964.2 #F /517.9 0C</b>
<b>Exhaust Pressure</b>	<b>2.206 in HgA / 0.0747 bara</b>
<b>Control System</b>	<b>Mark Vie</b>

## **Power Generating Units**

### **Steam Turbines – GE frame C7**



# Mass Cement



Cement Plant at Sulaymaniah Province (Kurdistan)  
Consist of THREE Production Lines, each with Two Tons Per Year  
Total Six Million Tons Per year



- Cement plant is located in Bazian district in Kurdistan Region 35 km west of Sulaymaniyah City, This mega plant (6.5 million tons capacity) was implemented by Mass Iraq for Industrial Investment Company / Sulaymaniyah and effectively participating in rehabilitation and reconstruction of Iraq.
- The plant consists of three parallel production lines with a total capacity of 6 million tons yearly, constructed successively on an area of one million m<sup>2</sup> of land, the project was implemented on three lines started on 2010 and finished, started producing in 2013.
- Civil work, construction, installation and equipment procurement activities for this project were carried out by Sinoma, a Chinese company, in a turnkey
- The plant produces various types of cement as mentioned below, and is capable of producing other types according to market demand:
  - ✓ Ordinary Portland cement
  - ✓ (OPC) type CEM I 42.5 R used in general construction.
  - ✓ Sulfate resistance cement
  - ✓ (SRC) for civil construction that needs high sulfate resistance (especially for foundations).
  - ✓ High fine grain Portland cement



Cement Plant at Sulaymaniah Province (Kurdistan)  
Consist of THREE Production Lines, each with Two Tons Per Year  
Total Six and half Million Tons Per year



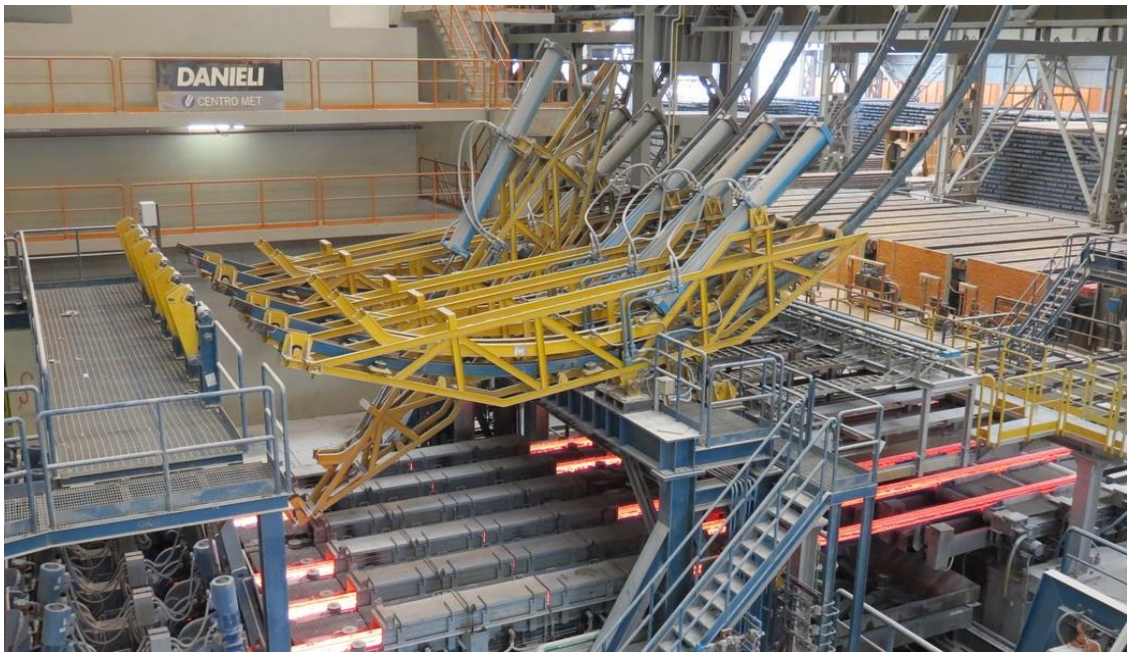
# Iron & Steel Factory at Sulaymaniah Province



**Total design Production 1.250 Million tons per year.**

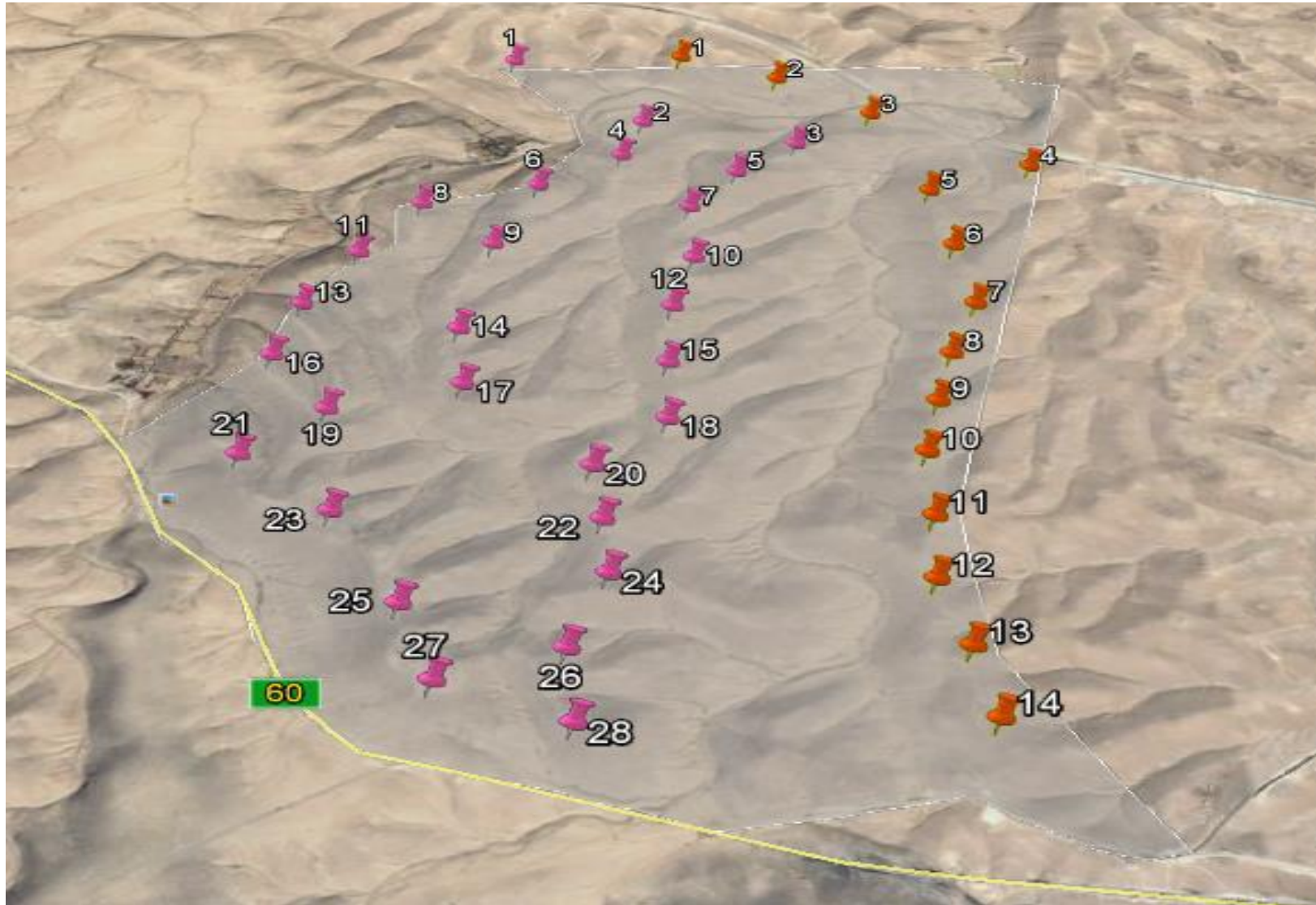
- ▶ **Our steel factory is producing 1.25 million tons per year.**
- ▶ **The project consists of a smelter for production of Pallet, continuous casting machines, Rolling mill for the production of enforcement rebar and a factory specialized in production of industrial steel of small and medium sections.**
- ▶ **The smelter includes an electric arc furnace size 120 tons, treatment furnace and continuous casting machines to produce Billet size 150X150 mm and 130X130 mm.**
- ▶ **The rolling mill factory contains heating furnace and produces enforcement rebar in different sizes from 10 to 32 Inches.**
- ▶ **MGH constructed another rolling mill specialized in producing industrial steel of small and medium sections.**
- ▶ **The plant includes fume and dust treatment unit, oxygen production plant, power substation and water treatment unit.**
- ▶ **The plant is considered as one of the mega strategic projects in Kurdistan Region of Iraq, and uses very modern and most innovative European technologies for equipment and machines, Danieli Company- Italy supplied all the equipment. The oxygen plant supplied by Siad company-Italy. The substation and SVC supplied by ABB Sweden.**
- ▶ **Mass Iraq Iron and Steel Industry Co is constructing a DRI factory to get use of the Iron-ore availability to achieve the maximum Efficiency of the plant.**







## TAFILA WIND FARM 151.2 MW LAYOUT (28 + 14 units 3.6-103 HH 110mt)





- ▶ The power purchase agreement (PPA) for the power produced by a wind power plant with a capacity of 151.2 MW to be established in Tafileh Governorate, contract signed by Jordan government & Mas Jordan Renewable Energy Company on 2016.
- ▶ The project area is located in Al-Tafila governorate within Al-Halsa district about 130 km south of Amman.
- ▶ Components of the project:
  1. Wind turbines (GE): The initial design of the distribution of air fans within the project area was determined. This distribution was based on technical criteria such as the wind characteristics of the site, Each turbine will be connected by underground cables to a high-voltage switching station. The voltage is converted to a suitable voltage to connect to the national high voltage (132 kV) network.
  2. Buildings, which include offices and warehouse to store equipment and machinery.
  3. A road network that includes internal routes between turbines for easy access for maintenance purposes.
- ▶ MASS Energy / Mas Jordan Renewable Energy Company has selected the world's leading and specialized companies to implement this project, including:
  - ✓ Barlvento (Spain) to supply and install wind speed measuring tower for wind speed study in the region for one year.
  - ✓ ECO Consult to conduct environmental and community studies for the project area and according to the specifications of the World Bank IFC for one year.
  - ✓ Italian company CESI-Italy to conduct the study of electrical linkage
  - ✓ An international company will be selected as the main contractor for the implementation of the key turnkey project, including a contract for the operation and maintenance of the plant.

