



**2017 Seminar on
Electrification Mode
Based on Clean Energy
for Countries along the
Belt and Road**

The Egyptian seminar report

- First we would like to introduce our deep thanks to HRC (Hangzhou Regional Centre) and other committees for the kindly invitation, hospitality and good organization of this seminar.
- It is a great honor for us to be here to represent our country in this seminar.
- We consider this seminar as a good chance to have a good cooperation with the HRC in several clean energy categories such as manufactures, consultancies, development, SCADA, rehabilitation , standards ,.....etc.



Egypt overview

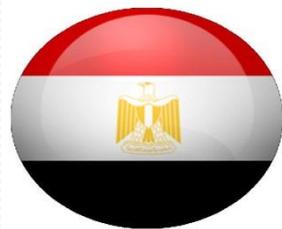
- An ancient Egypt civilization can be considered as one of the oldest civilization (about 7000 years), It is one of six historic civilizations to arise independently



Masterpieces of Ancient civilization

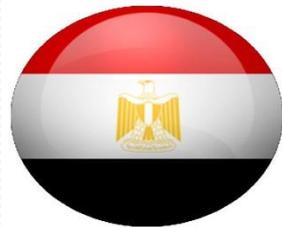


Pyramids

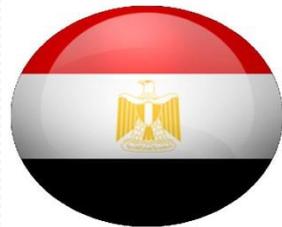


brief details about the big pyramid (KHOFO)

- The total area 13 hectares.
- Construction duration 30 years.
- The total weight about 7,000,000 ton.
- The weight of each stone about 12 ton.
- The distance between every two adjacent stones about 0.5 mm.

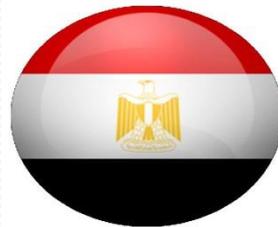
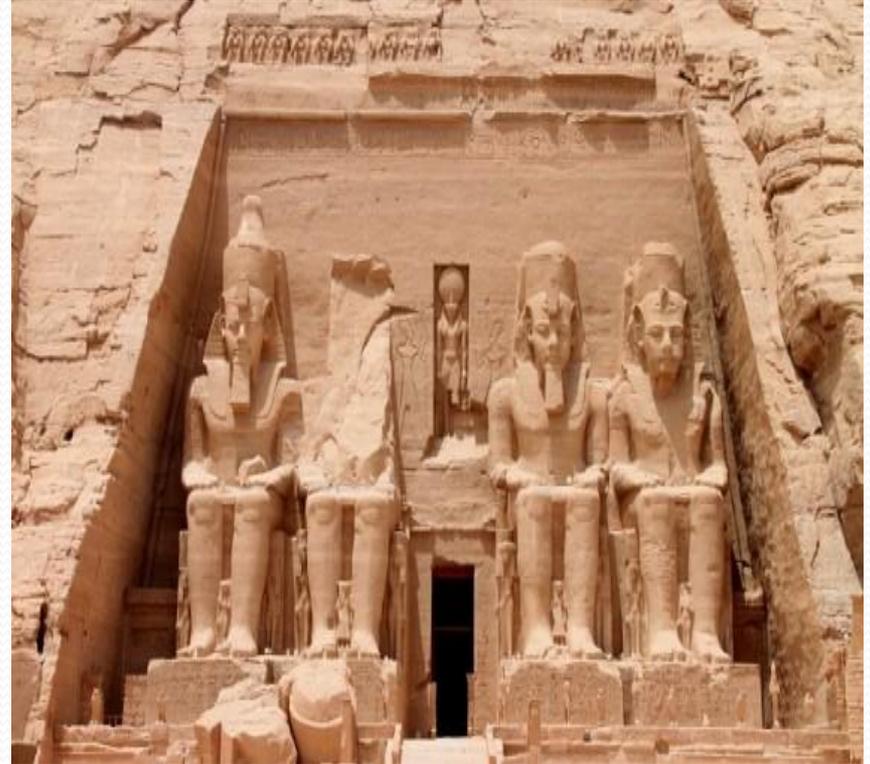


Sphinx



Abo Simble temple

Was built according to accurate and complicated astronomy system which the sun was perpendicular twice per year on king face one at king birthday and the other at king mount day.



El karnak temple

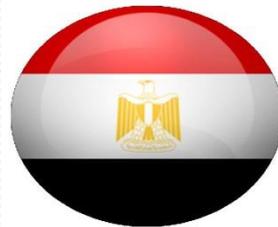




King Tut Ankh Amun

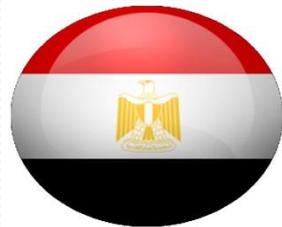


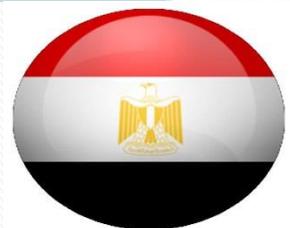
Queen Nefrtity



location

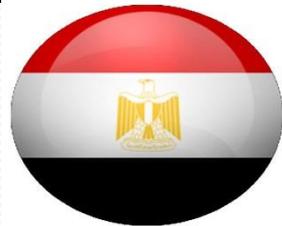
- Egypt location is the Centre of the Middle East region.
- Egypt borders: (N: Mediterranean Sea), (S: Sudan), (E: Red sea & Palestine) , (W: Libya).
- Latitude: 22 S - 31 N, Longitude: 24 E - 37 W.



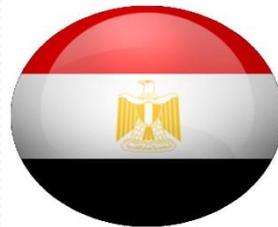


Geography

- Total area is about 1 million square kilometer.
- The capital: Cairo
- Main ports and cities: Alexandria, Port Saied, Suez , Damietta,etc.
- Rivers: the NILE is the only river in Egypt.
- Nile river: about 1200 Km (inside Egypt), Sources of Nile river (85% blue river (lake Tana) in Ethiopia and 15% white river(lake Victoria in Uganda) running from south to north which the river ends at Egypt.

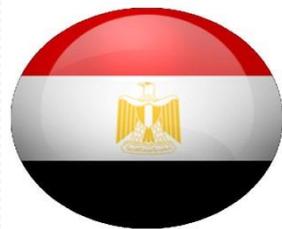


the most famous cities



Climate

- Hot and dry at summer
- warm and rainy at winter
- with rain rate extremely poor (about 50 cubic mm / 1 square m)
- Temperature varies from 20 C° (in winter) to 37 C° (in summer)



Population

- Egypt population is 90 million most of them (about 90%) live around the Nile river banks
- Average life span: 60 –70 years.
- Under 40 aged: 60%



Economy

- Type: open/free market orientation.
- The Basic sources of national income:

Tourism.

Suez Canal.

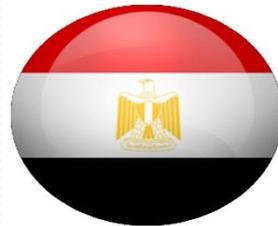
Agriculture.

industry.

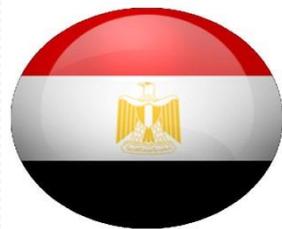


General condition of energy and power

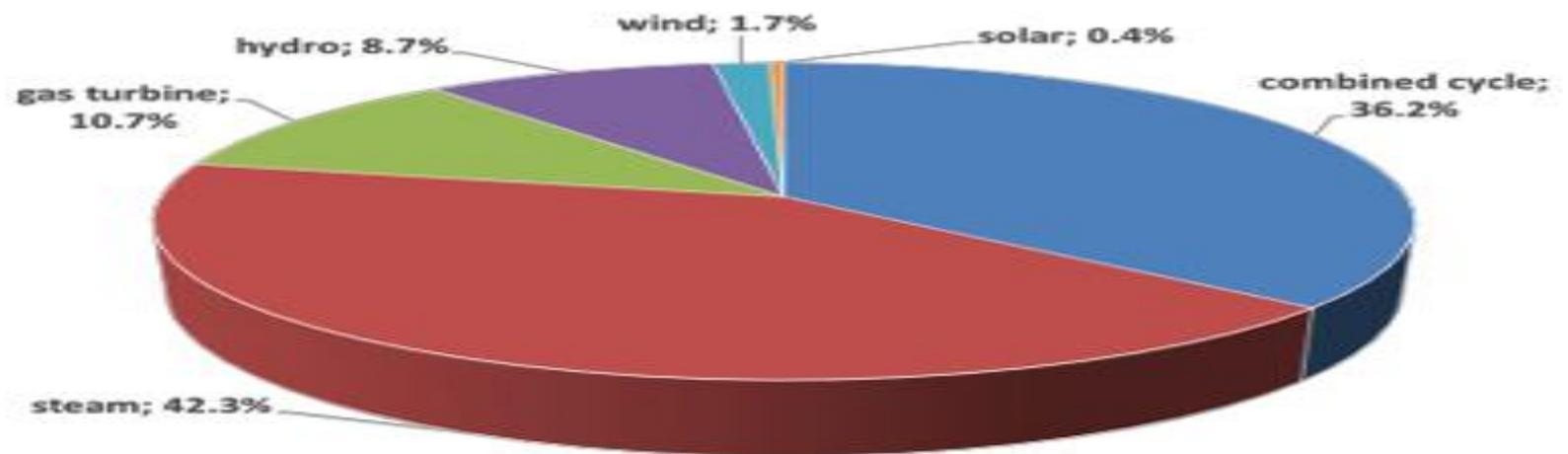
- Electricity power was introduced to Egypt in 1893.
- About 98% of Egyptian population has electricity access (including rural areas) (2016).
- Total generated energy is about 35 GW (2016) .
- Only one national /united grid 220KV. and it is owned by the Egyptian government.
- The national grid has a facility to be connected with the regional international grid with neighbor countries .



- Egyptian ministry of electricity and energy owns all of electrical power transmission, distribution and most of power generation.
- Recently Egyptian Private Sector was involved in power generation investment (establishing, operating and maintenance).



Electricity Sector in Egypt



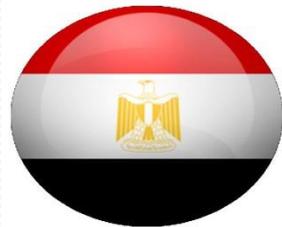
Total Installed Capacity 32,293 MW



Plan to future

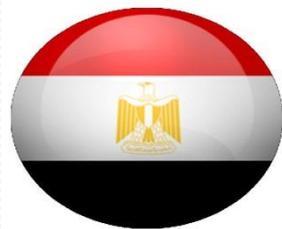
-Adding a large scale thermal /steam power generating stations with total capacity 15 GW (under construction and installation) joined contract with SIEMENS up to 2018/2019 and total about 10 B EUR.



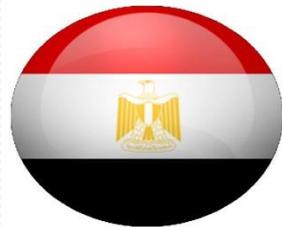




- Starting to build a large scale nuclear power station at EL DABAA in North West joined contract with RUSSIA within 4 years with estimated capacity 4.8 GW and total investment about 20 B USD.



- Extending in constructing of new hydropower plants and rehabilitation of the existing old plants.
- Extending in constructing of Solar power plants about 40 MW under planning and construction in cooperation with (JAPAN & CHINA).
- Extending in constructing of wind power plants about 600 MW under planning and construction in cooperation with (UAE , FRANCE &JAPAN).

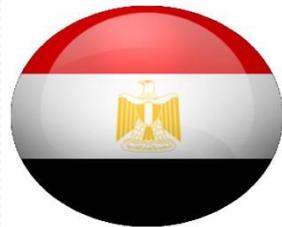


Condition of hydropower development

-The majority of Egypt's hydropower generating comes from main six projects all of which are located at upper

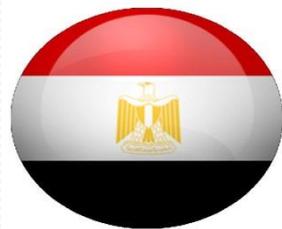
Egypt :

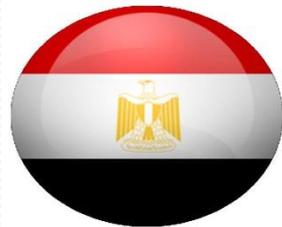
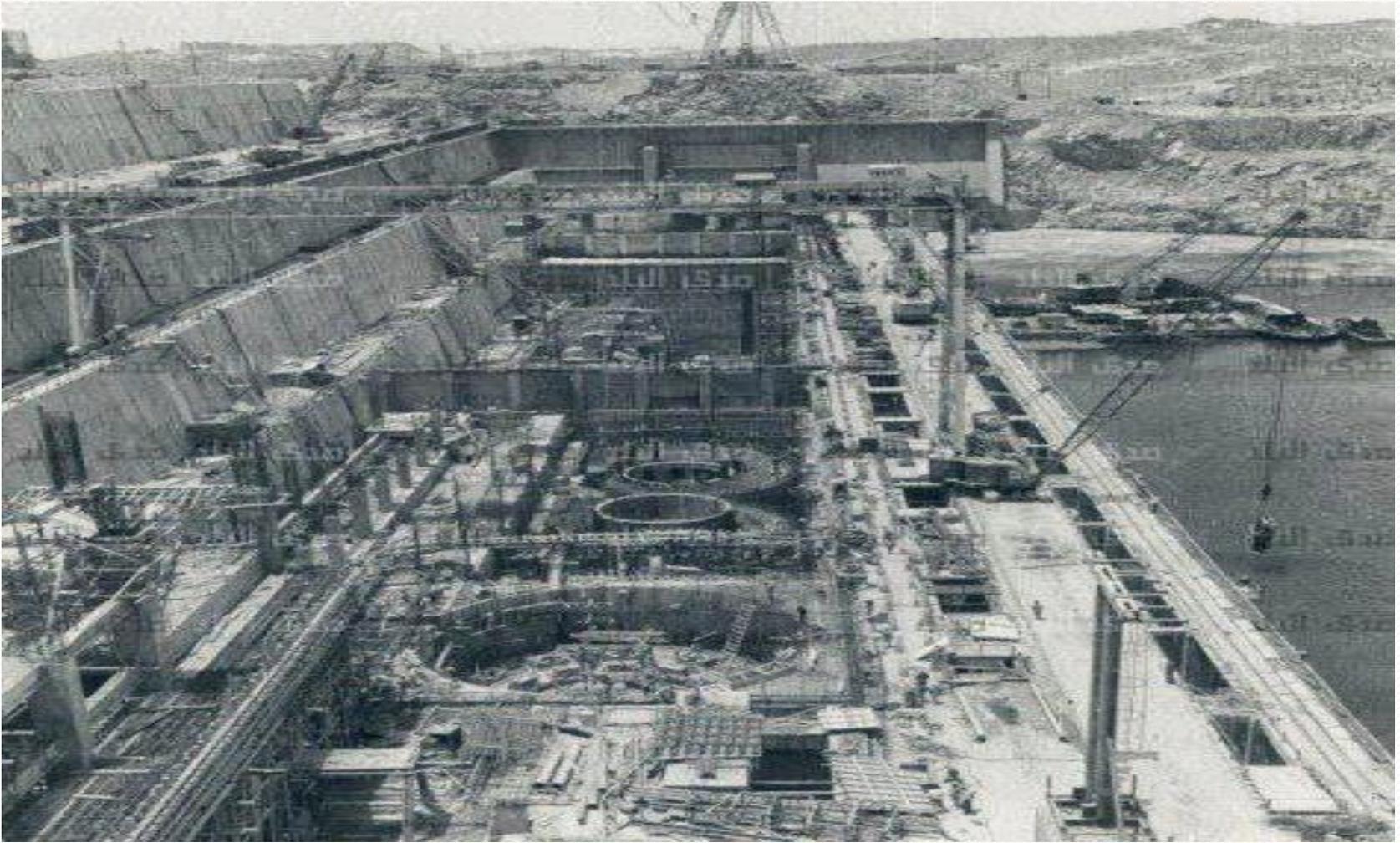
- Aswan high Dam.
- Aswan Low Dam station 1.
- Aswan Low Dam station 2.
- Esna hydropower station.
- Naga hamady hydropower station.
- Assuit hydropower station .

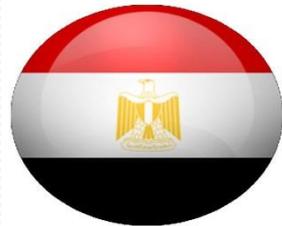


Aswan High dam

- Large scale hydropower plant
- In service since 1971
- Located at Asswan –Upper Egypt
- Number of units 12
- Unit capacity 175 MW
- Turbine type: FRANCIS type

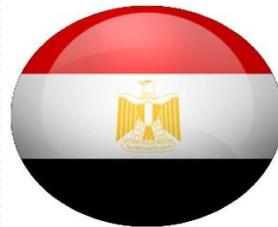


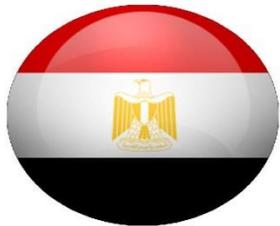






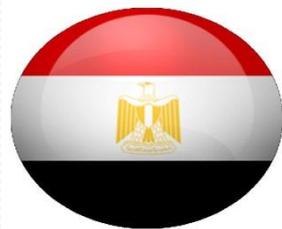
Total span 520 meter and height 181 meter





Aswan Low Dam station 1:

- large scale hydropower plant
- In service since 1960
- Located at Aswan –Upper Egypt
- Number of units 7
- Unit capacity 40 MW
- Turbine type: KAPLAN type

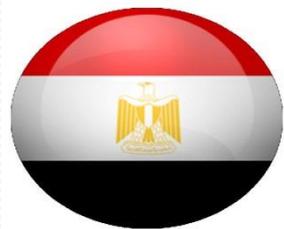




Aswan Low Dam station 2:

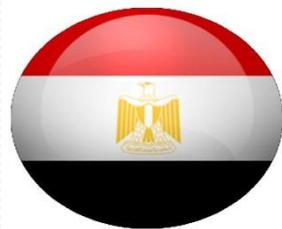
- large scale hydropower plant
- In service 1985
- Located at Aswan –Upper Egypt
- Number of units 4
- Unit capacity 67.5 MW
- Turbine type: KAPLAN type





Esna hydropower station

- medium scale hydropower plant
- In service since 1993
- Located at Qena –Upper Egypt
- Number of units 6
- Unit capacity 14.28 MW
- Turbine type: KAPLAN type

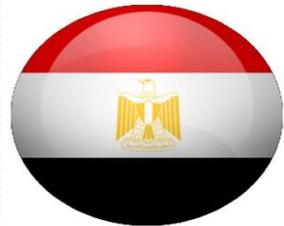




Naga hamady hydropower station

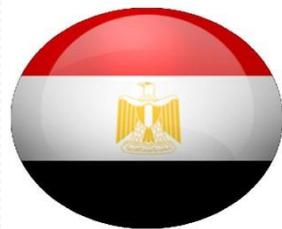
- medium scale hydropower plant
- In service since 2008
- Located at Qena –Upper Egypt
- Number of units 4
- Unit capacity 16 MW
- Turbine type: KAPLAN type

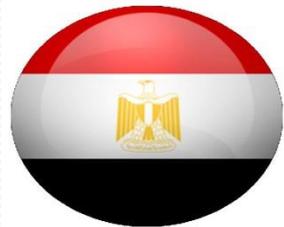


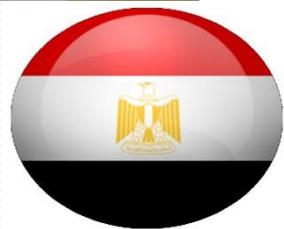


Assiut hydropower station

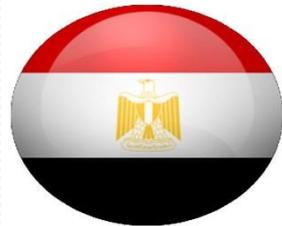
- small hydropower plant
- Under commissioning
- Located at Assiut –upper Egypt
- Number of units 4
- Unit capacity 8 MW
- Turbine type: Kaplan type

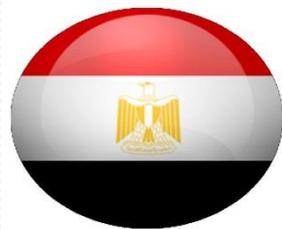














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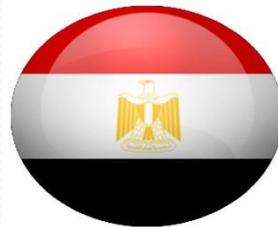






Difficulties and barriers in hydropower development

- The Nile River was running only in one route without any branches.
- The source for Nile River is not at Egypt.
- The difficulty to establish artificial route / branch of Nile River due to hard topography around NILE banks.
- Establishing of hydropower depending on rain is not applicable due to Egypt location at extremely poor and seasonally rain area/region.



Condition of wind power development

- since 1992 the total wind capacity in service was 970MW:
 - Hurrgada project 5MW.
 - Zafrana projects 545 MW.
 - Gulf of el zait projects 420 MW.



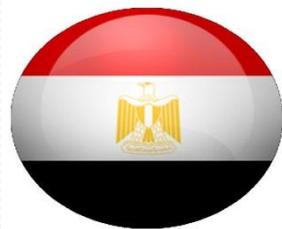
Condition of solar energy development

- The total solar power capacity is 140 MW

koraymat project include two parts:

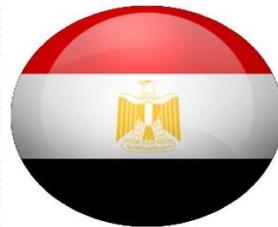
A- CSP plant with capacity 20MW based on parabolic technology.

B- combined cycle with capacity 120 MW.

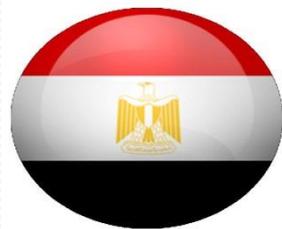




Renewable energy



Egyptian participants



Mr. Ismail Abdelbaky

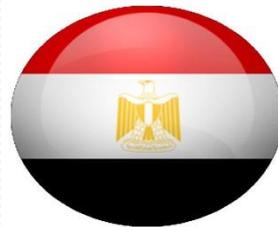
G.M. (Operation & Maintenance), MED, Ministry of water resources & irrigation.

Mr. Shabaan Moussa

G.M. (Maintenance), NREA, Ministry of Electricity and renewable energy .

Mr. Ahmed Semary

G.M. Elec. (Test & Protection), MED, Ministry of water resources & irrigation.



Mr. Mohamed Nemr

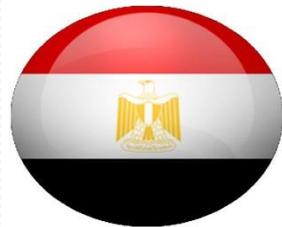
M.D. Elec.(Test & Protection), MED, Ministry of water resources & irrigation.

Mr. Ashraf El Fekky

M.D.(Operation & Maintenance), MED, Ministry of water resources & irrigation.

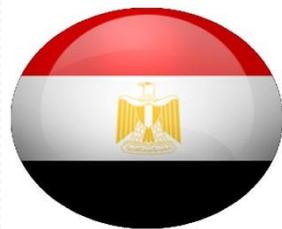
Mr. Hossam Talat

M.D.(Operation & Maintenance), MED, Ministry of water resources & irrigation.



Mr. Mostafa Rohaim

M.D. Elec.(Test & Protection), MED, Ministry of water
resources & irrigation.



Thank you

