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Harbor 132kV Substation Essential to Khor Az Zubair Port, Industry Operation

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BASRAH, Iraq —The multi-million dollar rehabilitation and expansion of the 132 kilovolt substation at the port of Khor Az Zubair (KAZ) in the Basrah Province will provide a reliable power source to the port facility and to residential and commercial areas.

"The main purpose of this project is to engineer, procure, supply, construct, and commission electrical equipment necessary for the expansion and rehabilitation of the Harbor substation," said Rebecca Wingfield, Project Engineer, Basrah Area Office, Gulf Region South (GRS) district.

"One of USACE's important missions here is to improve and enhance the Iraqi electrical grid," Wingfield explained.

"The significance of the project is to strengthen the electrical grid system so there is some redundancy to prevent power outages and keep the power supply constant," she said.

According to Wingfield, the project will help correct distribution problems in the system by relieving overload on transformers and switchgears in the system. It will relieve some of the load currently carried by the Umm Qasr substation, which services about 180,000 people.

"It should allow power to be on an additional two hours a day," said Wingfield.

Iraqi local workers prepare to connect 33 kilovolt power cables to one of the two 63 megavolt transformers at the port of Khor Az Zubair in southern Iraq. [USACE Photo by A. Al Bahrani]

According to Thomas Eidson, Chief of Engineering and Construction, Gulf Region South, the project is essential to the operation of the KAZ port facility and the industry in the region, because it "supplies power to the port and the free zone, which directly influences the economy of Iraq."

"Reliable power from the harbor substation is necessary for the major industrial plants in the port area to be commercially viable. A major fertilizer and steel plant both need reliable power to bring the KAZ port to its design shipping potential. The port berthing and cargo handling equipment and storage facilities all require reliable power from the Harbor substation," Eidson stated.

Electricity is generated by huge turbine engines and fed in high voltage to substations that step down the voltage in various stages. “The major task of the 132kV substation is to take the high voltage and transform it to 33kV and 11kV for local use,” said Andrew Schmieder, a Project Engineer, Basrah Area Office, GRS.

Electrical systems are not stable in Iraq and rebuilding this substation is a step forward in the overall reconstruction of the areas electrical system to reduce and eliminate shutdowns.

The equipment used in the facility includes two 63 megavolt transformers, a building control room, a high voltage switch gear room and a guard house.

The completion of the project will increase the capacity of power which can be delivered to KAZ port facility and surrounding industry. The increased ability to deliver reliable power to local industries benefits the local community by creating employment opportunities through an expanded industrial base, said Schmieder.

Currently GRS has more than 15 similar projects in various stages across the Basrah Province which will improve the country’s electrical distribution infrastructure.

Transmission towers at 132 kilovolt harbor substation in southern Iraq are part of a larger effort to upgrade the southern region of Iraq's electrical distribution network. [USACE Photo by A. Al Bahrani]

Iraqi workers test the main switch gears at harbor 132kV substation at the port of Khor Az Zubair in southern Iraq. [USACE Photo by A. Al Bahrani]

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