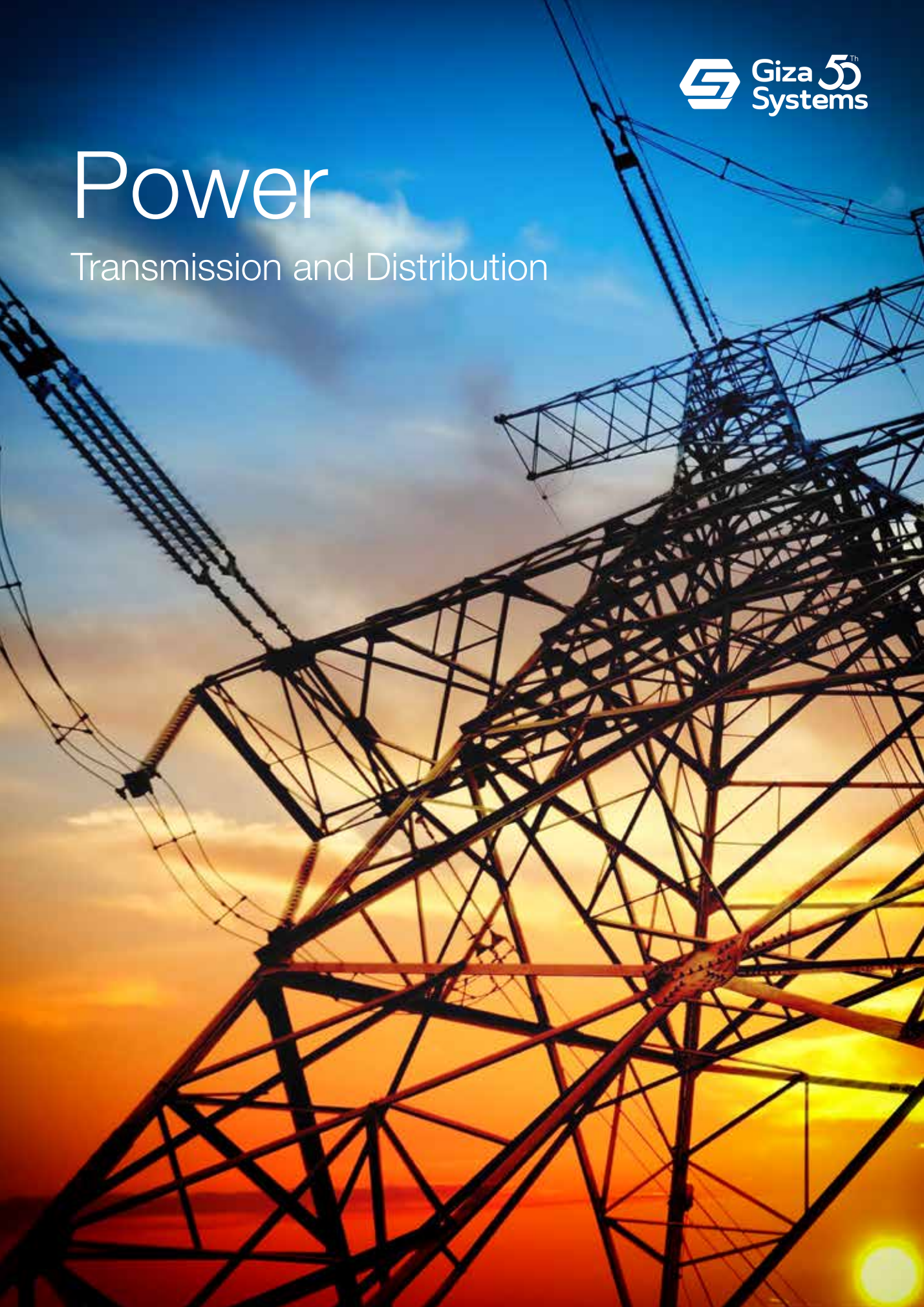


Power

Transmission and Distribution



Who We Are

Giza Systems has positioned itself as a major EPC in the MEA region, providing a holistic scope of engineering, procurement and construction services. Delivering a wide range of turnkey projects, Giza Systems has deployed comprehensive solutions in the fields of Power Generation, Transmission and Distribution, serving clients in Egypt, Gulf and East Africa.

Giza Systems, a leading systems integrator in the MEA region, designs and deploys industry-specific technology solutions for asset-intensive industries such as telecom, utilities, oil and gas, and transportation, among other market sectors.

Industry Issues

The Transmission & Distribution (T&D) market is growing exponentially with the demands placed on governments and utility organizations to upgrade and develop their infrastructure for transmitting and distributing the new generated power (MW) from different sources.

On a global scale, nations are heavily investing to achieve sustainability. The growing demand for power – coupled with decades of under-investment in upgrading and replacing ageing infrastructure – has generated a need to improve transmission and distribution efficiency, grids, and security.

With long-term trends for the rise and proliferation of renewables, investments and overhauls of T&D infrastructure – including networks, rehabilitation and expansion of transmission systems – are necessary to improve efficiency, accelerate construction of distributed renewable generation, and reduce transmission losses.

Why Giza Systems

- Highly qualified engineering and installation team
- Team certified for stringing, splicing and jointing OPGW and ADSS
- Experience in OPGW installation under live-line conditions
- Partnerships with major global market players to execute the largest projects in Egypt
- Certified thermal conductor stringing contractor
- Owns sets of Tesmec stringing machines
- Extensive experience and know-how in:
 - ▶ Surveying
 - ▶ Design and engineering
 - ▶ Cable laying
 - ▶ Cable ducting
 - ▶ Splicing
 - ▶ Testing and commissioning
 - ▶ As-built drawing

What We Do

Optical Ground Wire (OPGW) Turnkey

Benefits

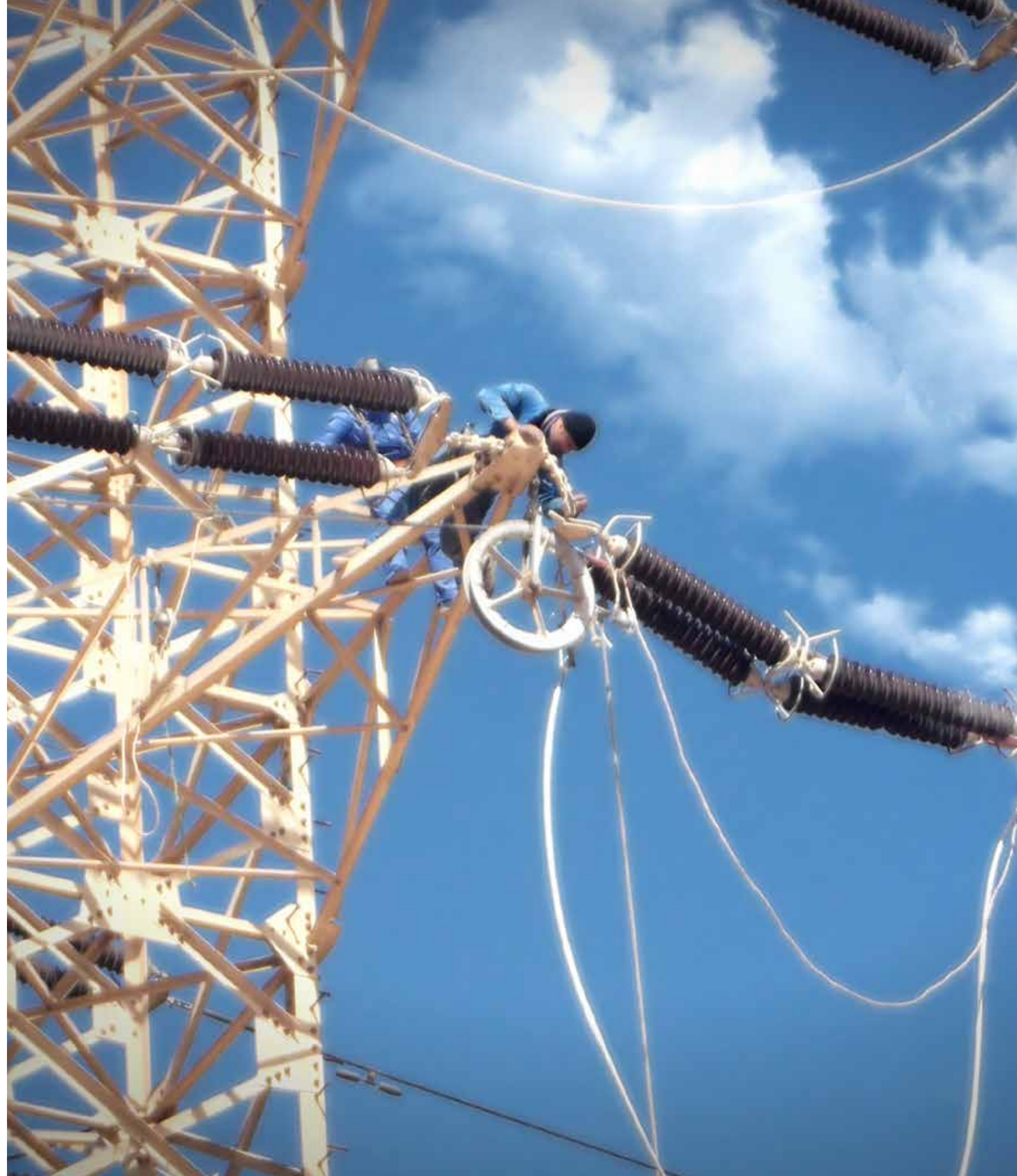
- The conductive part of the cable serves to bond adjacent towers to earth ground, and shields high-voltage conductors from lightning strikes
- Optical fibers within the cable can be used for high-speed transmission of data, whether for the electrical utility's own purposes of protection and control of the transmission line; the utility's own voice and data communication; or to be leased or sold to third parties to serve as a high-speed fiber interconnection between cities

Features

- Aluminum conductor used in the construction of electric power transmission and distribution lines
- Combines the functions of grounding and communications
- Contains a tubular structure with one or more optical fibers in it, surrounded by layers of steel and aluminum wire. The OPGW cable is run between the tops of high-voltage electricity pylons

Projects

- Tepsco, Egyptian Electricity Transmission Company: Engineering, supply, and live installation of 1000 KM OPGW on 220 KV T/Ls, on turnkey basis in Middle and Upper Egypt, (fund: JICA)
- SEC – NG, Central Area, KSA: Reverse engineering and retrofitting of 300 KM OPGW on 132 KV T/Ls (5 links)
- Egyptian Electricity Transmission Company: Over 2000 KM live/offline



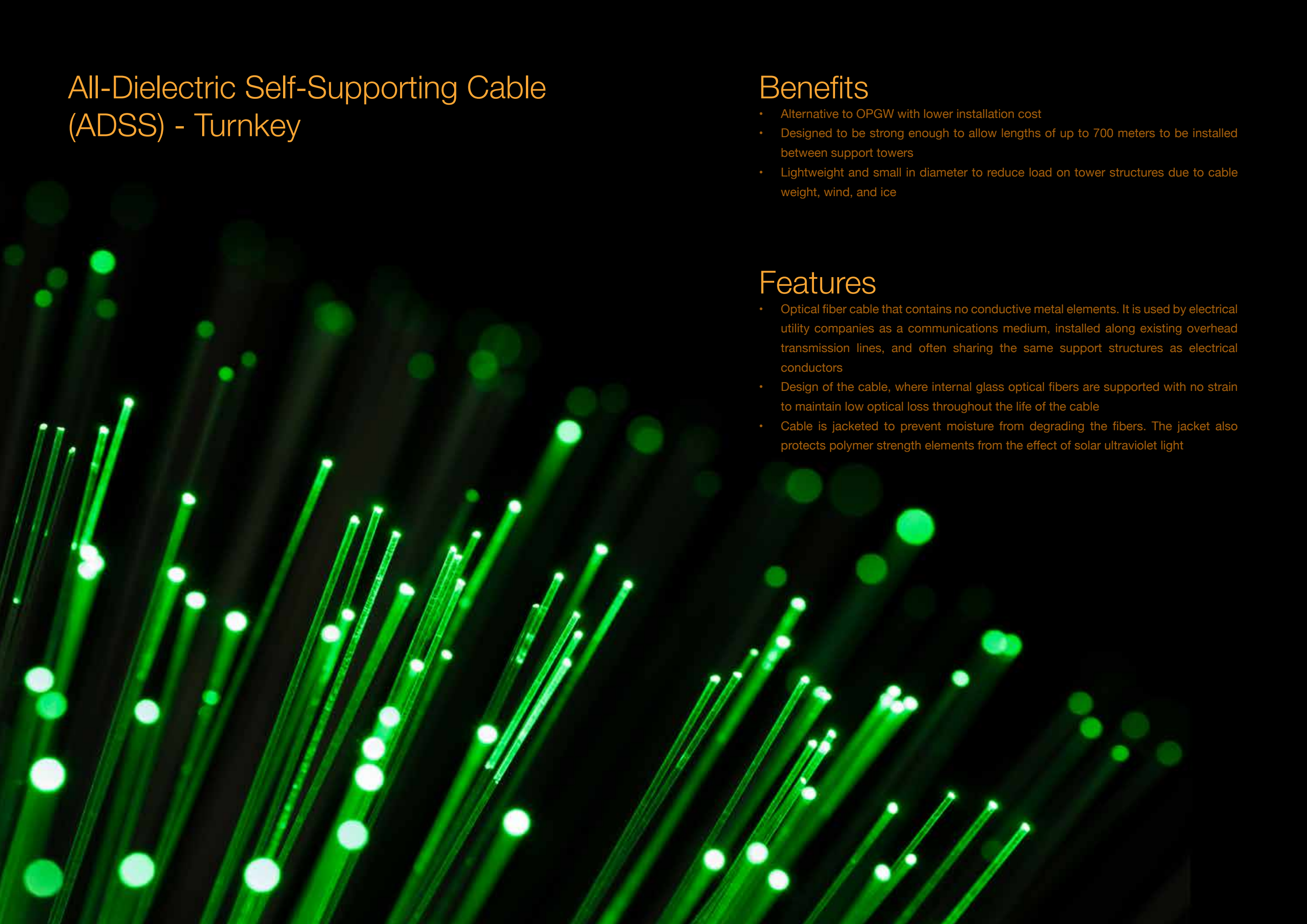
All-Dielectric Self-Supporting Cable (ADSS) - Turnkey

Benefits

- Alternative to OPGW with lower installation cost
- Designed to be strong enough to allow lengths of up to 700 meters to be installed between support towers
- Lightweight and small in diameter to reduce load on tower structures due to cable weight, wind, and ice

Features

- Optical fiber cable that contains no conductive metal elements. It is used by electrical utility companies as a communications medium, installed along existing overhead transmission lines, and often sharing the same support structures as electrical conductors
- Design of the cable, where internal glass optical fibers are supported with no strain to maintain low optical loss throughout the life of the cable
- Cable is jacketed to prevent moisture from degrading the fibers. The jacket also protects polymer strength elements from the effect of solar ultraviolet light





Thermal Conductor (INVAR/ GAP) - Turnkey

Benefits

- Thermal conductors are used where high dimensional stability is required, such as precision instruments and cable conductors
- High thermal conductivity is widely used in heat sink applications, and materials of low thermal conductivity are used as thermal insulation

Features

- Excellent conductor; carries double the capacity of ACSR aluminum conductors
- Low sag

Projects

- Egyptian Electricity Transmission Company: Sadat - Cairo 500 thermal conductor (INVAR type), turnkey project, 60 KM 220 KV, double circuit, single conductor OHTL
- Egyptian Electricity Transmission Company: Tebbin - Wadi Houf thermal conductor (GAP type), turnkey project, 30 KM, 220 KV, double circuit, single conductor OHTL



Underground Fiber Optic Cable - Turnkey

Benefits

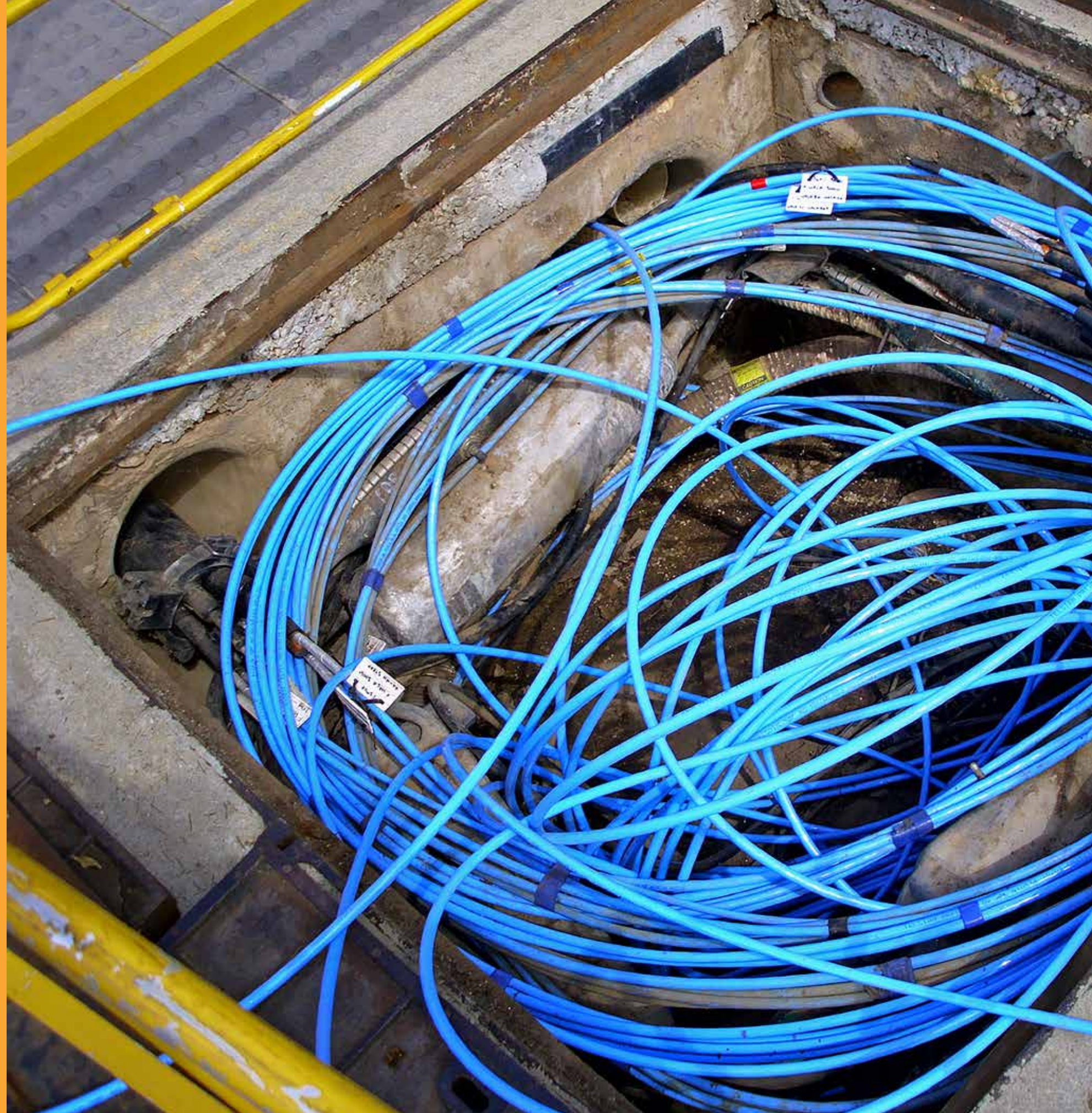
- Underground cabling
- Affording transmission medium

Features

- Serving gas, electricity, and water networks

Projects

- Enppi and Gasco: 400 KM underground FO for Fajr gas pipeline between Egypt and Jordan
- SWCC, KSA: 120 KM underground FO among 6 sewage stations (Farasan, Rabegh, Qunfudah, Al Lith, Masturah, and Thula)





Turnkey High-Voltage Substations

Along with high project management capabilities, as well as an experienced execution and engineering team, Giza Systems offers complete turnkey projects including engineering, procurement, installation, testing and commissioning on turnkey basis for air-insulated substations and gas-insulated substations.

Features

- The HV substation assembly comprises one or more busbar assemblies and a number of bays (circuit breaker, disconnector switch, current transformer, voltage transformer) each connecting a circuit to the busbar assembly, in addition to power transformers

Benefits

- High-voltage substations are the node points of the increasingly complex power transmission infrastructure
- A substation performs switching of circuits, transforming of voltage, and several other important functions in a power system

Projects

- Sulaihi, KSA: 33/13.8 KV turnkey substation including 3X30 MVA transformers, 13 & 13.8 GIS switchgears, SAS, protection, communication, and civil work
- Tanesco, Tanzania: 33 KV skid mounted, 11 KV containerized substations, and 15 MVA transformer
- Kenya Pipeline Company Ltd., Kenya: Rehabilitation of Manugu power station
- Deba Port, KSA: compact substations



Substation Protection & Automation Systems

With its highly qualified and trained team of engineers, Giza Systems employs great experience in the implementation of substation automation and protection systems for high-voltage substations' rehabilitation, as well as new substations.

Benefits

- Trip a circuit breaker when a fault is detected, such as over-current, over-voltage, reverse power flow, over- and under- frequency

Features

- A single microprocessor relay that provides more than one protection function
- Numerical relays that provide lower capital and maintenance costs
- Easy communication with substation automation, SCADA, and communication systems

Projects

- Saudi Electricity Company: Tabuk power plant, upgrade of generator and auxiliary protection system – 6 units
- Saudi Electricity Company: Al Wagh power plant, upgrade of generator and auxiliary protection system – 5 units
- SWCC: Al Shuqaiq desalination plant, upgrade of generator and auxiliary system – 2 units
- PGESCo and East Delta Electricity Production Company: Ain Sokhna 500 KV gas-insulated substation and substation automation system

On-Grid and Off-Grid Solar Projects

Benefits

- Used specifically to generate electricity, or for heating water using sunlight
- Mainly crucial in remote areas like oil and gas sites, telecommunication power sources in isolated areas, etc.
- On-grid system is used to feed the national grid with electricity during daytime

Features

- Electrical device that converts the energy of light directly into electricity through the photovoltaic effect. The systems consist of PV panels, inverter, charger, and batteries

Projects

- National Water Company, KSA, Central Area: El Wasia water wells, 7 off-grid systems
- Agiba Petroleum Company: Meleha gas wells, 9 off-grid systems





Panel Building (Type-Tested Panels)

Giza Systems builds low voltage type tested panels up to 6000 Amp under license from General Electric. The main models of the panels are the SEN+ and the Quixtra 4000, as well as non-type tested panels tailored to suit clients' requirements. Giza Systems' facility in Ismailia Free Zone aids in exporting the panels to Africa and the Middle East.

Projects

- Agiba Petroleum Company: Meleha wellhead, low voltage switchboards
- Rotana Centro Hotel, Riyadh, KSA: 4000 Amp

