

Smart Power



Who We Are

Giza Systems is the number one systems integrator in Egypt and the Middle East providing a wide range of industry specific technology solutions in the Utilities, Telecom, Oil & Gas, Real Estate, Hospitality and Manufacturing industries.

We have been shaping the IT industry and corporate agendas since 1974. Our consultancy practice provides industry focused services that enhance value for our clients by streamlining operational and business processes.

Operating in the Middle East through our offices and group of companies is focused on contributing to the local and regional development with our technology solutions, commitment and outstanding customer service.

Our team of 600 professionals enables us to extend our geographic footprint delivering diverse projects and connecting us with clients in the Middle East, Africa, Europe, Latin America and Russia.

What We Do

We deliver a comprehensive scope and range of end-to-end industry specific solutions that meet customer demand for streamlining operational and business efficiencies.

Our technical capabilities, extensive experience and knowledge of the market, as well as our partnership with global leaders in the areas of automation systems, communication solutions and metering infrastructure enable us to develop integrated solutions that can work with and build on the evolving technologies, as well as meet the dynamicity of our customers' needs.

In our pursuit to constantly enhance existing resources and create new capabilities, we drive forward the growth of our company, our customers, our people, and our communities.

Capabilities

With steady growth in our client base all over the Middle East, we have established local and regional offices to respond to the demands of our clients, as well as leverage the company's success and proven track record in the different sectors.

Target Sectors

Working with over 1,500 satisfied customers, Giza Systems is uniquely positioned to fulfill the needs of the local and regional markets due to our diversified integration and automation solutions that fulfill the various needs of the following sectors:

- Power
- Water
- Telecommunications
- Oil & Gas
- Manufacturing
- Real Estate and Hospitality
- Transportation

Offices

- Headquarters: 5th Settlement, New Cairo, Egypt
- Local Branches: Alexandria, Assiut, Ismailia
- KSA branches: Riyadh, Al-Khobar, and Jeddah
- UAE branch: Dubai
- Qatar branch: Doha

Quality

Giza Systems strives to integrate quality in all its processes to ensure adherence to the best standards and practices. Giza Systems has received the ISO 9001:2008, ISO 14001:2004, and OHSAS 18001:2007



Power Sector Offerings

The increase in the global energy demands places an exigent amount of pressure on the power infrastructure, as well as requires a higher level of complexity to ensure streamlining of operations. Whether the project at hand involves power generation, transmission, or distribution, industrial automation and control processes are critical for improving efficiency and ensuring higher productivity and output.

Efficiency, reliability, affordability, and reduction of our carbon footprint are all key elements in the delivery of power solutions and systems to the industry.

Giza Systems understands the needs of the power sector and is able to develop, support, and reinforce power delivery infrastructures. We provide a full spectrum of solutions, including smart grid solutions, which integrates the different systems in order to ensure operational efficiency, higher production rates, and improved safety.

From systems that control generation processes and communication systems, to transmission and distribution solutions, Giza Systems offers a wide range of equipment and technology solutions that enable the power industry ensure consistent, reliable, and cost effective processes.

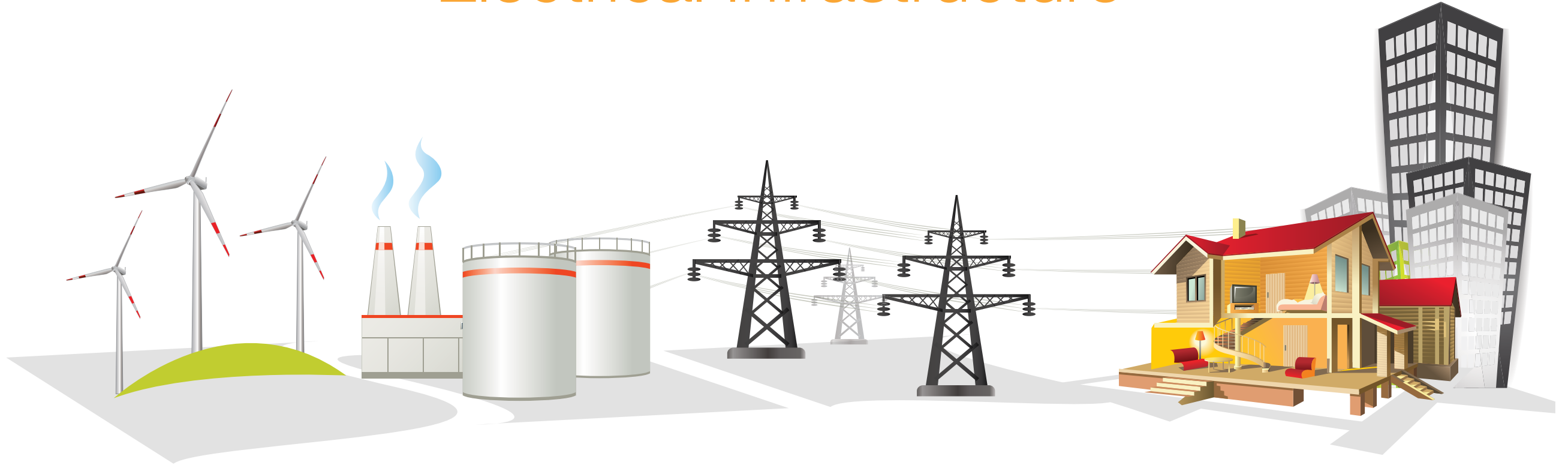
Giza Systems' solutions improve the efficiency of the power sector's operations and provide it with the sufficient infrastructure for market stabilization, and improved coordination of supply resources. We have a strong track record of understanding what drives operational efficiency and business processes in the power sector. This detailed knowledge has been used to develop our integrated systems that make up end-to-end solutions covering all vital functions within a power plant.

Our solutions for the power sector include: Distributed Control Systems (DCS), Field Instruments, Substation Automation Systems (SAS), Energy Management Systems (EMS), Distribution Management Systems (DMS), Optical Power Ground Wire (OPGW), Automatic Metering Infrastructure (AMI), Geographic Information Systems (GIS), Supervisory Control and Data Acquisition (SCADA), Billing and Meter Data Management, Control and Protection Systems, and IT back-end solutions.

We are experts in transferring both knowledge and technology to the regional power sector in areas such as: Power Generation, Transmission, and Distribution.



Electrical Infrastructure



Generation

- Distributed Control Systems (DCS)
- Field Instruments
- Environmental Solutions
- Programmable Logic Controller (PLC)
- Turbine Control & Supervision Systems
- Combustion and Burner Management Systems (BMS)
- Enterprise Asset Management (EAM)

Transmission

- Energy Management Solutions (EMS)
- Wireless Communication Solutions
- Optical Fiber Networks & Teleprotection Networks
- Substation Automation
- Analog/Digital Power Line Carrier Systems
- Optical Power Ground Wire (OPGW)

Distribution

- Distribution Management Solutions (DMS)
- Customer Relationship Management (CRM) and Billing
- Fiber to the Home (FTTH)
- Geographical Information Systems (GIS)
- Metering
- Field Force Management / Mobile Workforce Management Systems (MWMS)
- Knowledge Management

Power Generation Solutions

Distributed Control Systems (DCS)

Our Distributed Control Systems (DCS) equipped with state of the art technologies and user-friendly interfaces aid plant operators in managing industrial process through the control of all physical variables, while connected to advanced monitoring platforms.

Our extensive experience in DCS engineering has enabled us to specialize in developing and applying control technology to various power plant areas. These areas include: Boiler, Balance of Plant (BOP) and other subsystems like Turbine Supervisory Instrument (TSI), and Continuous Emissions Monitoring System (CEMS).

Giza Systems is currently employing the latest cutting-edge DCS technology. Our team's in-depth knowledge of power processes covers a complete service spectrum including project management, procurement, engineering, panel building, FAT, training, commissioning, start-up, and fine-tuning to optimize power plant operations.

Field Instruments

Field instruments are essential for measuring the different parameters on-site in order to ensure accurate monitoring and control. Reporting to the central control room, these solutions include the installation of field instruments, transmitters, and sensors, as well as liquid and gas analyzers, control valves and actuators. The aim is to monitor and measure all ongoing plant processes so that the information can be transmitted to the control center.

Our instrumentation teams are experts in programming and installing testing instruments, as well as integrating them with new and existing automation systems installed to enhance process solutions. To offer the best and most suitable solutions to meet the needs of our clients, Giza Systems has partnered with a broad range of leading companies specialized in field instruments.





Environmental Solutions

Environmental analysis is the use of analytical chemistry and other techniques to study the environment. The purpose of this is to monitor and study levels of pollutant gases such as SO₂, CO and NO_x in the atmosphere, rivers and other specific settings.

To measure the impact of the power plant emissions on the surrounding environment, a number of measuring analyzers are arranged onto a panel and placed in a protected location in the power plant. This analysis is performed both before and after the operation of the power plant. It is usually carried out within a time frame of six months.

We rely on high end analyzers in handling all the required tasks for such projects, including systems integration, maintenance and engineering. Sophisticated pollution monitoring systems are delivered to the customers to maintain a cleaner, safer and healthier environment.

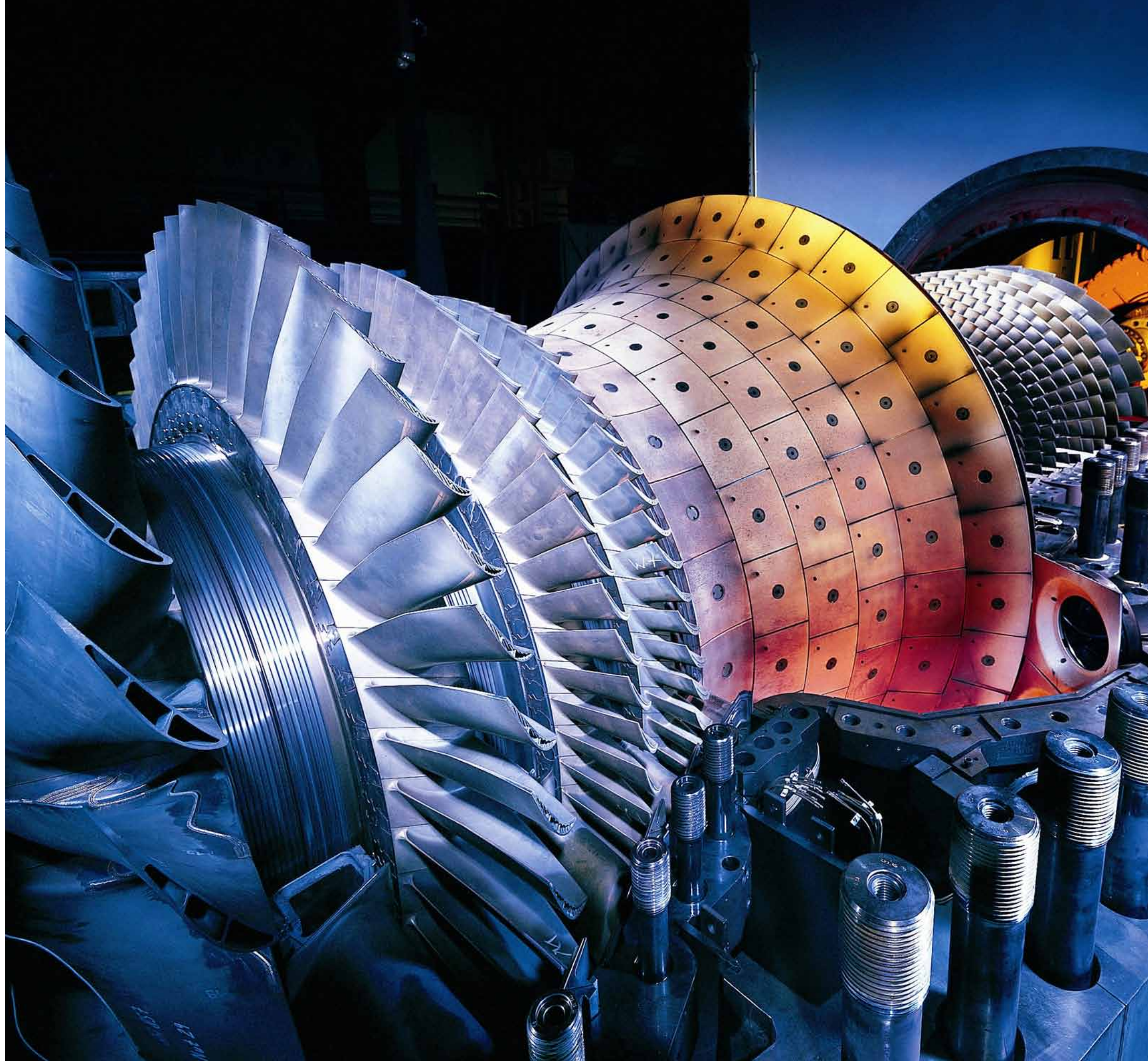
Programmable Logic Controller (PLC)

PLC technology is generally employed for some applications, which are necessary in many areas of the power plants, such as water treatment for thermal power plants and Burner Management System (BMS). It controls and monitors specific areas in the process and transfers the collected information and actions to the Balance of Plant (BOP) DCS. Our programming varies based on the requirements needed for the application, testing, commissioning, and start-up. We also offer a wide range of services for already installed systems in power plants.

Turbine Control & Supervision System

A turbine consists of a rotary engine that extracts energy from a fluid flow and converts it into useful output. The operation is critical as it requires a very high speed control system able to fulfill the safety and availability aspects in the plant.

Giza Systems provides efficient digital turbine control solutions for gas and steam turbines capable of controlling the turbine process in terms of speed, temperature, power, and safeguarding measures. In addition to our control solutions for the turbine process, our expertise extends to turbine supervision instrumentation systems that supervise and monitor the turbine speed, vibration, and displacement.



Combustion and Burner Management Systems (BMS)

The process of combustion or burning is the underlying operation in the conversion of chemical energy into heat, which in turn is used to produce electrical energy by relying on steam turbines and generators. Giza Systems has a unique positioning in the combustion business line, as we offer end-to-end solutions including both mechanical (Burners, Flame Scanners, Igniters, etc.) and control (Burner Management System) systems.

By providing our customers with diversified products, such as a wide range of Low NOx Burners and Burner Management Systems that rely on PLC- SIL3, we are able to cover the whole arena, including ignition systems and flame monitoring systems.

Our teams carefully select the optimal solution based on the application and integration aspects of the required equipment to ensure compatibility with the already installed equipment. By capitalizing on our know-how and our track record in combustion and control design, we are able to provide solutions and enhance operational efficiencies to meet the power industry needs.



Enterprise Asset Management (EAM)

Utilities deliver electricity to their consumers through a large number of network assets that are geographically dispersed. With the wide spread of assets, the key challenge for the power sector is to locate, track, and maintain their network assets in a timely manner so that quality and reliable energy supply is achieved. Our Enterprise Asset Management solution allows utilities to define and track all of their assets, including stationary, mobile, and dispersed assets, as well as establish preventive, predictive and condition-based push maintenance programs to extend asset life and improve reliability.

EAM manages all aspects of the asset portfolio, including tracking its history, creating detailed bills of materials, managing all work-order planning and scheduling, as well as deploying the service workforce.

Power Transmission Solutions

Energy Management Solutions (EMS)

SCADA is utilized to monitor and control all substations, as well as entire high voltage networks. Regional Control Centers or the National Control Center are built and equipped with EMS to manage national electricity grids.

Giza Systems has the capabilities and in-depth knowledge to fulfill EMS needs based on our core understanding of the significance of operational efficiency and integrity, as well as the necessary reliability measures, for the implementation of such projects.

Wireless Communication Solutions

These types of solutions include Microwave, Radio solutions, as well as WiMax and GPRS. They are employed as wireless media in order to provide and relay control and monitoring information to control centers.

In addition to the tremendous relevance of Radio for the operation and maintenance of crews, these solutions become essential for the power industry. When confronted with rough terrain, such as mountain-like areas, wireless communication solutions are the main resort due to the difficulty level of cabling.

Our competitive advantage in fulfilling the dual functions of IT-based & engineering services geared towards the Utilities and Telecom industries enable power providers to benefit from our competence and our experience in vertical integration. We enable utilities to meet their needs by providing them with the most advanced, cutting-edge solutions.



Optical Fiber Networks & Teleprotection Networks

Whether it is working with Optical Power Ground Wire (OPGW) or Optical Underground Wire (OPUG) Fiber Networks, Giza Systems is an expert in achieving Line Terminal and Multiplexing capabilities by applying PDH/SDH.

Teleprotection networks entail the transmission of substation protection signals, through either SDH/OPGW or DPLC networks, to ensure that both regional and central control centers can operate and maintain remote substations within their transmission network. For the creation of optical fiber and teleprotection networks, Giza Systems deploys a number of solutions to ensure that operational efficiencies are achieved and remote operations for transmission networks are streamlined.

Substation Automation

Control, monitoring, and relay are the key factors in the process of substation automation projects. Substation automation involves the reliance on control systems for the control and monitoring of feeders and switch gear transformers. By having this process set in place, the control systems are able to connect the substation bay control units with the regional control center through gateways.

Substation automation systems supersede the conventional control and traditional RTUs in the AIS and GIS substations due to their ease of maintenance, reduction of project cost and time, high communication capabilities with several control layers (Local, RCC, NCC), as well as integration with the protection relays for monitoring and relay setting purposes. Our successful implementation of substation automation projects has enabled us to ensure the design and delivery of the most efficient solutions for new and/or already existing power infrastructures and platforms.

Analog/Digital Power Line Carrier Systems

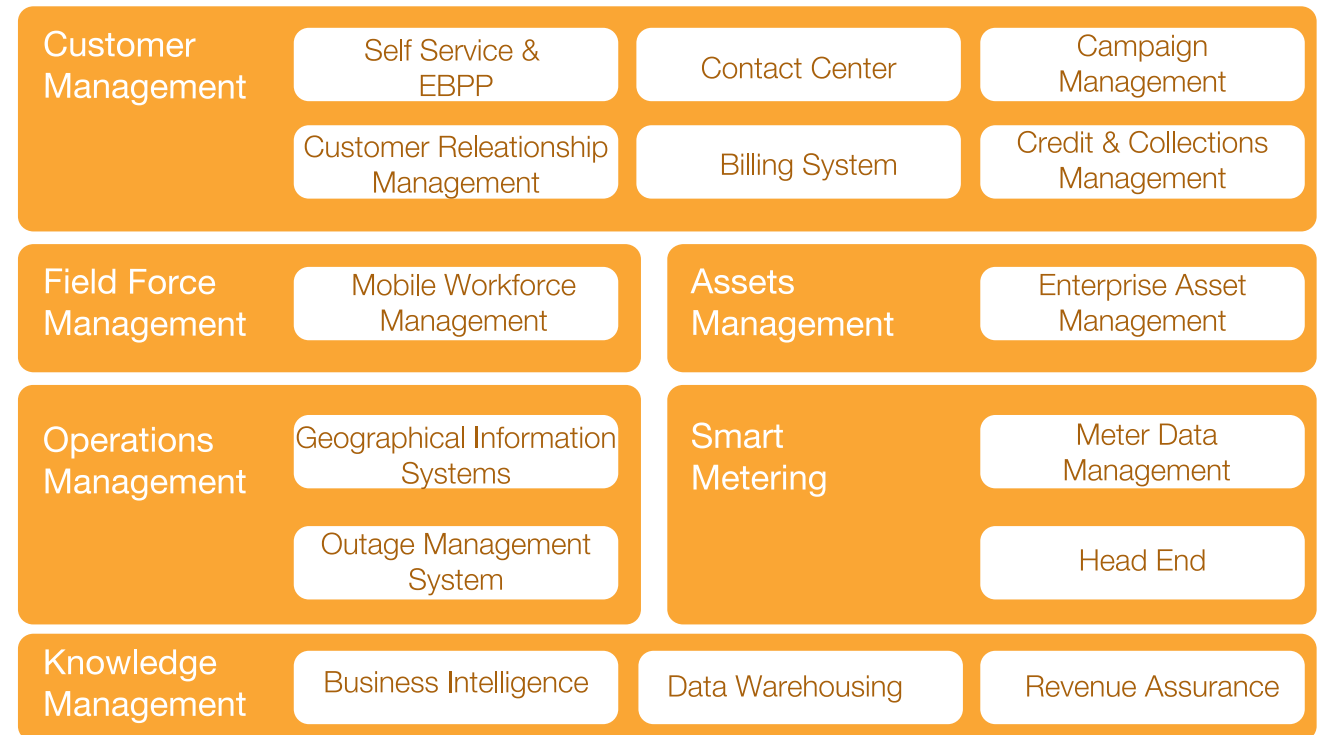
Analog/Digital Power Line Carrier System utilizes the existing OHTL conductors as a transmission medium (50-60Hz electrical line frequency) to act as a carrier signal. This type of system includes outdoor telecom equipment such as coupling capacitors, line traps, line matching units, and coaxial cables. This solution is crucial for transmitting data, voice, and teleprotection signals. To deliver only the highest quality to our clients, Giza Systems collaborates with strategic partners to provide both indoor and outdoor equipment for the execution of power industry projects

Optical Power Ground Wire (OPGW)

The distinctiveness of this solution is its functionality and applicability for both grounding the OHTL, as well as providing the optical wide band transmission medium, to serve and cater to electricity control centers.

Giza Systems has capitalized on its technical know-how and its employment of the latest cutting-edge solutions to meet with agility the needs of the power industry. Having executed a number of projects on turnkey basis including work for the EETC transmission network, Giza Systems has extended OPGW for over 1500 Km, positioning it as a leading systems integrator in the power industry.

Power Distribution Solutions



Distribution Management Solutions (DMS)

SCADA is utilized to monitor all substations and distribution points, as well as the whole medium and low voltage network. Distribution Control Centers are built and equipped with DMS to manage electricity grids. By deploying our DMS solutions, higher efficiency in management and control is attained to ensure the safety and reliability of the electricity grids.

Customer Relationship Management (CRM) and Billing

CRM and Billing systems orchestrate and manage the meter-to-cash process. Our solutions allow utilities to differentiate themselves on the grounds of customer service, accurate billing, and efficient collections activities. Management of customer applications, meter work orders and installation activities, regular meter reading, readings validations and estimations, billing, payments and aging of debts constitute the high level mandates of billing and revenue management systems.

Fiber to the Home (FTTH)

This transmission solution consists of an optical fiber passive network that replaces the standard copper wires of the local telcos. It is used as a transmission medium that complements the active network. FTTH is an attractive solution due to its ability to carry high-speed broadband services integrating voice, data, and video signals, in addition to directly running to the junction box at the home or building. For this reason, this solution is also known as Fiber to the Building, or FTTB. Based on our expertise in the different verticals and in-depth know-how, we have the capabilities to achieve the highest efficiency in fulfilling the needs of our clients and executing our projects.

Geographical Information Systems (GIS)

Geographical Information Systems are capable of capturing both spatial and non-spatial information of the network assets, thus solving the problems relating to selecting the best locations for laying new pipes/lines, optimizing travel routes of the field crew for efficient operations, and visualizing volumes of data with respect to the location of corresponding assets on field. These solutions keep track of the network and update information of transformers, switch gears,

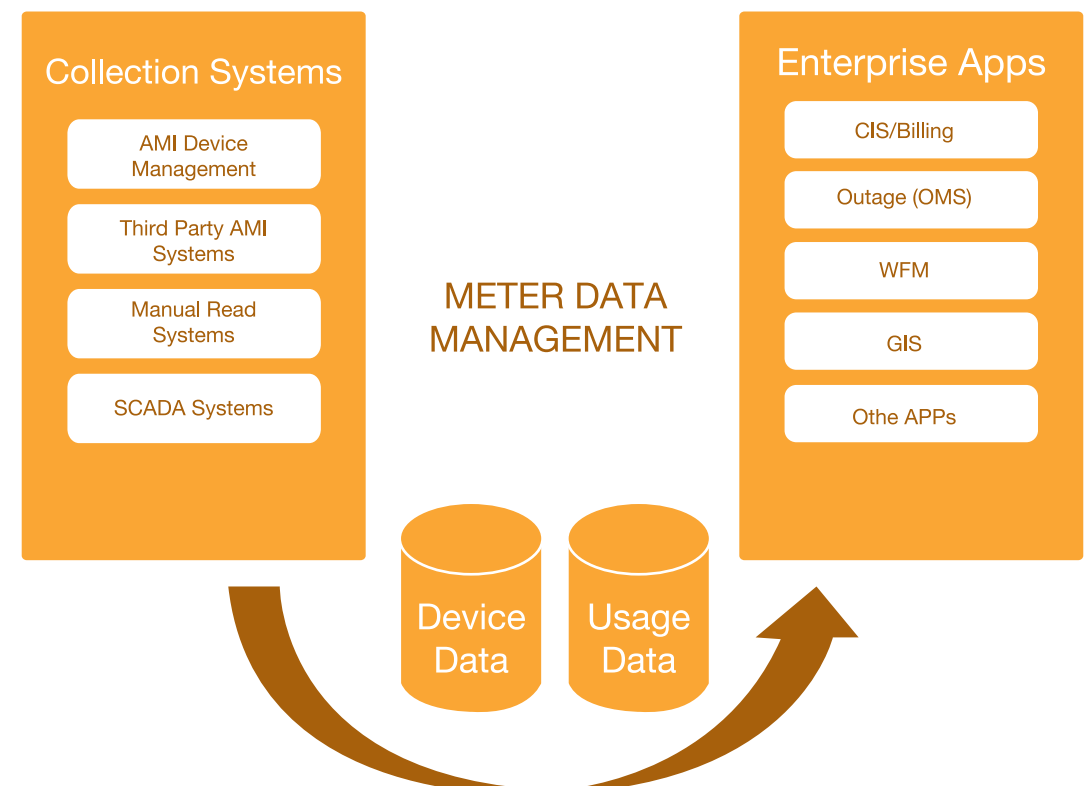
cables, etc. They are also used to design and plan future network expansions. To ensure that power providers achieve operational and business efficiency, our GIS solution will ensure high quality and reliable information to assist in better operational and business decision making.

Metering

Meter Data Management System (MDMS) is the core system for successful smart metering programs. MDMS supports all aspects of smart meter deployment including rollout support, validation, analysis, balance reports, settlement, and preparation of data for billing. It decouples the handling of meter data from other mission-critical utility operations. As utilities increasingly move toward interval billing, MDMS permits all applications to receive the metering information they need in the format that suits their unique requirements.

Many utilities struggle today to reconcile their traditional organizational structures with the prospects and possibilities of smart metering. On the one hand, the organization's metering division is adept in measuring consumption, but relies on a manual process consisting of one-at-a-time readings. On the other hand, their IT division understands data and meter management; however, has not needed to handle communications to millions of consumer devices.

Our expertise and technological know-how in communication networks and IT systems, as well as our experience with utilities and meter manufacturers, enables us to fully assist internal teams to effectively engage with the new smart metering reality.



Field Force Management / Mobile Workforce Management Systems (MWMS)

Day-to-day maintenance, repairs of existing assets and installation of new equipment are carried out by utility staff. These mobile personnel who manage the assets dispersed across vast areas are generally referred to as the 'Field Force.' The IT system that helps utilities to schedule and dispatch work orders to such engineers is known as the Mobile Workforce Management System (MWMS).

Our MWMS optimizes and automates processes and information needed by companies that sends engineers to the field. Moreover, it assists utilities in the following:

- Routing, dispatch tracking, and reporting the status of utility field personnel
- Managing installations, service or repairs of equipment and meter reading
- Carrying out planned maintenance, unplanned maintenance and resolving service outages



Knowledge Management

Knowledge management efforts focus on organizational objectives such as improved performance, customer satisfaction, quality of service, cash flow, and other performance metrics.

Business Intelligence technologies provide historical, current, and predictive views of business operations. Common functions of business intelligence technologies involve reporting, online analytical processing, analytics, data mining, business performance management, and predictive analytics.

The aim of knowledge management is to support better business decision-making through the transformation of raw data into meaningful and useful information. Such information is imperative to enable organizations attain more effective, strategic, tactical, and operational insights, as well as make informed decisions.

Smart Grids

Automatic Metering Infrastructure

With the increasing global demand in energy, the aging electrical infrastructure, and the need to integrate renewable energy sources, a new approach is essential to ensure that the power industry and national grids are equipped to handle these new demands, as well as drive utilities forward to the next level.

Smart grids are the new approach to optimize the already existing infrastructure while achieving interconnectedness, interoperability, higher operational efficiencies, reduction in energy consumption, and increase in reliability. Simply, smart grids enable optimal efficacy in the management of power to allow for the most efficient and economical use for utilities, as well as consumers. Smart grids utilize and build on most of the existing power solutions with the incorporation of communication and control technologies. It also allows for the integration of new capabilities and advanced applications.

Transforming the current power platform from a manual network centric business to an automated centric business requires an open architecture to infuse the process and system with added monitoring, analysis, control, and communication capabilities to attain higher efficiencies. Backed by our in-depth know-how, expertise, and superior integration capabilities, Giza Systems is positioned to assist the power industry in making the transformation to smart grids for the attainment of efficiency, reliability, safety, and sustainability.

Our years of experience in the utilities and telecom sectors allow us to leverage our proficiencies to guide the industry through the different levels in order to achieve a smooth transition towards a truly smart grid. Giza Systems identifies smart metering, or advanced metering infrastructure, as the enabler and driver for the Smart Grid resulting in the advancement of a technology today that is both future-proof and competitive in price.

“The Next Logical Step for Tomorrow”



Smart Metering

The role of meters in the smart grid is much more than just a register for energy consumption. It is the sensing device at the edge of the grid that is able to convey a comprehensive picture of what is happening on this crucial part of the grid, as well as contribute to every aspect of a utility's operation. This is the reason that it is called smart metering or advanced metering infrastructure. Partnering with smart metering market leaders has provided Giza Systems with a competitive advantage in the smart technology. We offer our customers our know-how and a proven smart metering technology that is incorporated today in more than 30 million operational electricity meters all over the world.

The system employed utilizes an open, bidirectional and extensible infrastructure to enable a comprehensive range of utility applications. Unlike traditional AMR systems that provide limited functionality over proprietary, often one-way networks, the adopted system benefits every aspect of a utility's operation, from metering and customer services to distribution operations and value-added business. The system is characterized as a substation/transformer centric AMI solution. This means that part of the intelligence driven by data flow from connected devices can be distributed to every low voltage distribution transformer. This allows the grid to intelligently and proactively react to system conditions before they take effect, such as transformer overload conditions, voltage problems, and faults that adversely affect the network. Deploying any other AMI solution on a per-meter basis and perspective prevents a cost effective integration of AMI and smart grid applications including demand response, distributed generation, EHV services, volt/VAR control and many other applications.

As the leading systems integrator in Egypt and the Middle East, Giza Systems understands the requisite planning and deployment systems needed for the transformation towards smart grid technologies. This significant investment in power grids promise to translate into higher operational efficiencies and cost-cutting measures, increased reliability and customer choice, as well as sustainability of our resources.

