



**MANAGE YOUR SOLUTION THE INGENIOUS WAY**

**SPECIALIZED IN PROTECTION & AUTOMATION SYSTEMS  
AND POWER SYSTEM DESIGN**



# INGENIOUS NETWORK





## ABOUT US

Ingenious Network was established in 2005 with head office in United Arab Emirates and branch offices in India and Saudi Arabia. Ingenious Network has established a significant customer base in the region and has experienced substantial growth since its formation. Ingenious Network offers a wide range of solutions designed and manufactured to meet the highest quality standards of the electric power industry.

Ingenious Network provides a wide range of solutions which includes Engineering Consultancy, Protection and Control Panels, Substation Automation Systems, Distribution Management Systems and Trading of Electrical Equipments. Solutions combine hardware, software and development capabilities with local system engineering, consultancy, project management and support services to provide full scale turn-key projects. These services are provided by certified engineers with many years of experience working on automation, protection and communication systems. Compliance with customer requirements as well as international standards is an integral part of all business processes at Ingenious Network.

### Ingenious Network – Team

Ingenious Network's rapidly growing team, comprising of engineers and technicians, is one of the most valuable assets and whose main focus leads to the successful operations of the company. Teamwork and respect for others throughout the company, both horizontally and vertically, is the core of company's values and which enables to deliver efficient services to our clients in all its forms. Ingenious Network always endeavors to update the skills of the team by training and development in order to satisfy the needs of the customer requirements.

### Mission, Vision and Values

Mission: To be the premier provider of Protection and Automation Solutions

Vision: To become one of the regional leaders for Protection and Automation Solutions

Values: • Integrity • Accountability • Customer • Excellence • Competence • Honesty • Teamwork • Equality

### Safety and Environment Policy

Ingenious Network is always committed to prevent to the maximum extent all kinds of risks and dangers to health & safety of the employees and the public as its main priority. Ingenious Network maintains an effective safety and health program monitored by the company management.

Ingenious Network acknowledges a responsibility for, and full commitment to, protection of the environment throughout all levels of the company and to ensure a safe and healthy environment for everyone.



## QUALITY POLICY

Ingenious Network FZC is fully committed to Design, Manufacture and Deliver on time High Quality, Cost Effective Electrical Control & Protection Products, Power Automation Solutions & Professional Services and will always strive to meet or exceed the Customer's Quality Expectations.



To maintain quality performance at the highest level, the following aims are pursued:

- To cultivate and maintain the commitment to continual improvement and communicate our goals and objectives to every employee
- To promote a working environment where training and tools are provided for all work to proceed in a safe and efficient fashion
- To furnish a system of procedures and policies which are periodically reviewed to ensure the ability of all groups to perform their work effectively.
- Not to make promises which can not be kept
- Actively seek the views of our customers and use this as the basis for continual service improvements.
- Treat our customers and staff with respect



## PROTECTION AND CONTROL PANELS

Ingenious Network can design and supply all kinds of Protection and Control panels for all your applications. Whether it is for a single transformer or line protection panel, or a complete turnkey package for a high voltage substation using IEC-61850 communication protocol, our engineers use the latest software tools to ensure that the drawings are produced rapidly and without errors.

Our protection and control panels are designed and manufactured to industry standards and client's specifications. We offer outdoor and indoor enclosures, custom fabricated, or off-the-shelf. Our freedom to choose from multiple manufacturers of relays and other auxiliary equipments ensures that the customer will receive a technically compliant solution at a very competitive price.

Ingenious Network has supplied, from manufacturing facility in Sharjah, several protection and control panels to various electrical industries and utilities throughout Middle East, setting the standard in quality and competitiveness. We can undertake both the design and manufacturing process, or manufacture the panels in accordance with our client's design and specifications.



Ingenious Network offers a variety of enclosure designs from metal specialists and enclosure manufacturers. We can supply swing frame, fixed frame, 19" mounting system, wall mount cubicles, freestanding enclosures and duplex walk-through panels etc. Our experience with a variety of panel designs ensures that we will be able to meet our client's requirement. Any color, size, metal thickness, accessibility requirements can be met with no compromise on cost or delivery time.

Our engineers are experienced with all kinds of site installation, testing and commissioning activities; therefore, proper consideration is given to the type of arrangement needed on site e.g. front or rear access to the panel, swing frame or fixed frame, ingress protection and dust-control reasons etc. Even the selection of the minor equipments like terminal blocks, switches and the type of wires and lugs is done with proper consideration of site conditions and specifications.

Ingenious Network recognizes the impact of a poorly engineered and manufactured system on the site installation and commissioning costs. Our manufacturing team is extensively trained on International Wiring Standards and we have a fool-proof Quality Control System with five stage quality control process, which results in world class quality and hassle-free site installation and commissioning. Accordingly, we perform a full functional test of the panels as well as wiring and insulation testing before final inspection. We always encourage our customers to attend the factory testing process.

We can design and manufacture any kind of protection and control panels within challenging time-frame.

Our main products include:

- Feeder Protection Panels
- High Impedance Bus Bar Protection Panels
- Bus Section Protection Panels
- Shunt Capacitor Protection Panels
- Load Shedding Panels
- Metering and Transducer Panels
- Annunciation Panels
- Junction and VT Boxes
- Remote Terminal Unit (RTU) Panels
- Bay Control Unit (BCU) Panels
- Remote Tap Changer Control (RTCC) Panels
- Transformer Protection Panels
- Low Impedance Bus Bar Protection Panels
- Bus Coupler Protection Panels
- Series Reactor Protection Panels
- Automatic Bus Transfer Panels
- SCADA Marshalling Panels
- Interface Panels
- Fault and Event Recorder Panels
- Programmable Logic Controller (PLC) Panels
- Mimic and Mosaic Control Panels
- Battery Monitor System (BMS) Panels

We have supplied Protection and Control Panels to various utilities in the region. Specific references can be provided, if required or alternatively you can visit our website [www.ingenious-network.com](http://www.ingenious-network.com) for more details about our references.



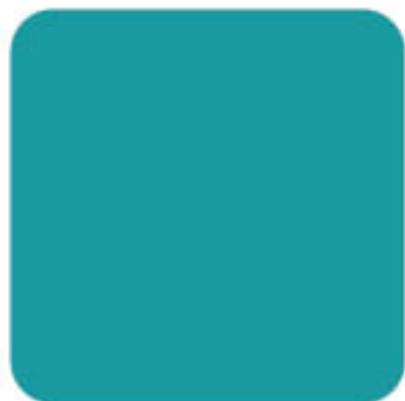
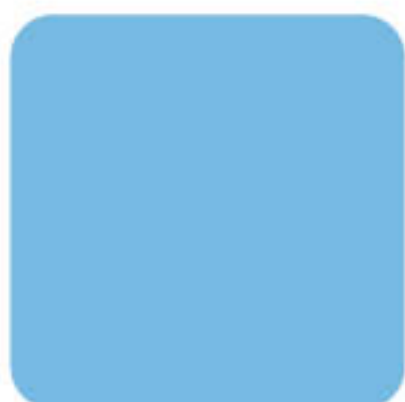
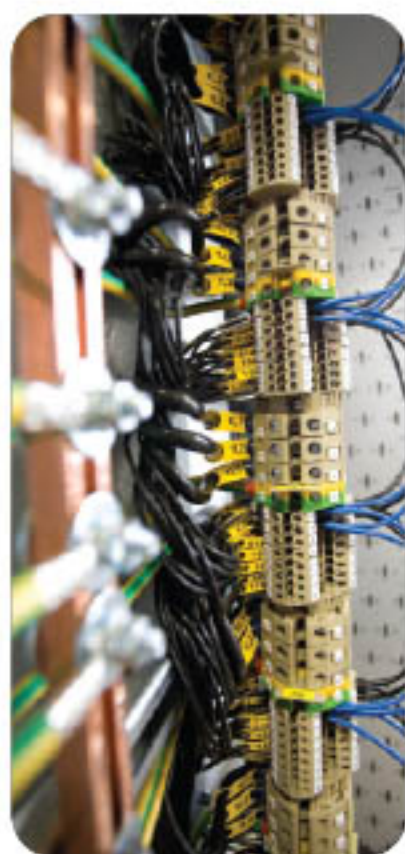


# ENERGY AUTOMATION SOLUTIONS

## Substation Automation & Integration Services

Ingenious Network offers highly reliable and flexible turnkey substation automation solutions. Whether it's about upgrading existing substations or delivering complete substation automation solutions for new substations, Ingenious Network provides technically compliant solutions based on open standards to simplify future expansion. Our solutions range from complete IEC-61850 based systems to non IEC-61850 IEDs and combinations of both, allowing utilities to move to new technologies without discarding the existing system. We provide a full range of services including control, protection and communications design, installation, commissioning and support. Solutions include compact medium voltage systems to large sophisticated systems at high voltage with multi-user workstations, remote fault file access and diagnostics, full redundancy and both hardwired & soft interlocks.

Our solutions enable clients to comply with the new IEC-61850 Standard for substation integration and automation. The solutions are designed to achieve interoperability and interconnectivity of IEDs with a wide range of supported protocols.



## Services Offered

- Substation Automation System Design
- Network Management
- Distribution Automation and Management System
- SCADA & IED Protocol Expertise
- RTU and IED System Design & Programming
- Retrofit Applications
- HMI Design & Implementation
- Multi-Vendor HMI Protocol Expertise
- Installation, Testing and Commissioning
- End-to-End Testing
- System Maintenance and Operator Training

## Typical System Features

- Data and Record Management
- Network Management and Security
- Integration of Legacy Equipment
- RealTime Access to System Data
- Energy Metering and Power Quality Monitoring
- Automatic Retrieval of Events and Alarm Monitoring
- Relay Setting Management
- Remote Access and Control
- Reduction of Outage Times
- Efficient Power System Management
- Trend Forecasting and Reporting
- Load Shedding and Load Management

## SCADA and Telemetry Solutions

Leveraging a proven track record among wide range of customers and expertise in the areas of automation, control and data acquisition, communication and information technology, Ingenious Network's SCADA and Telemetry Solutions can help to make the most of your remote operations. Ingenious Network is specialized in design, supply, installation and commissioning of SCADA and Control Systems for Electric Utilities, Process Industries and Municipality Companies. We have experience in providing various system sizes, ranging from simple standalone to complex networked systems. Our knowledgeable engineers will work with your operations requirements, preferred software, and existing equipment to create a SCADA solution.

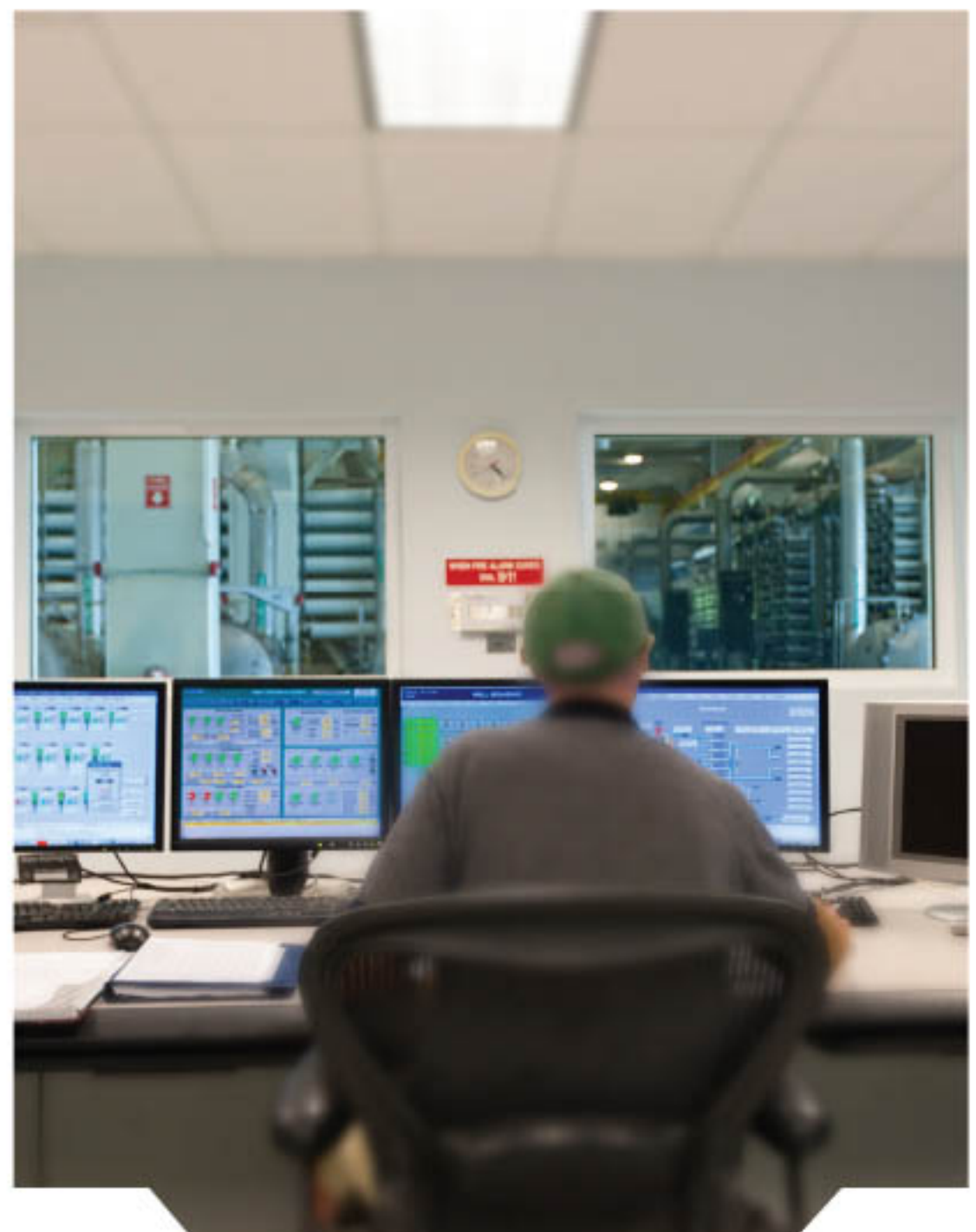
Our solutions include SCADA System, Turnkey Solutions for Load Despatch Centers (LDC), Remote Terminal Units (RTUs), Field Instrumentation, Tele-control Systems, SCADA/HMI Software Applications, Engineering, Project Management and Training.

We provide SCADA software from internationally reputable manufacturers. We are adaptable with a large number of market specific third party protocols in addition to the standard protocols. The SCADA systems are based on an open system concept and fully redundant architecture for critical applications.

## Human Machine Interface (HMI) Programming and Designing

Ingenious Network designs and develops custom HMI applications for small to large scale systems. We can provide HMI screens for the control center and remote locations. This service includes HMI screens, settings programming, schematics, and connection diagrams. We can program various HMIs, including screens for monitoring the communications lines and IEDs, power system data and interfacing with settings for power management and remedial action schemes.

Our team has the experience and knowledge to meet your HMI requirements. Working with you from start to finish our team will create items such as background design, symbol standardization, CAD file importing and database importing or exporting. Some of our services also include IED control panel development, database & graphics for one substation or complete system implementation.





## DESIGN AND ENGINEERING

The design and engineering consultancy services we provide at Ingenious Network are built on several years of utility experience and expertise. We have successfully executed some of the most complex substations and protection systems up to 400kV level with most of the utilities in Middle East.

Ingenious Network employs an in-house design team of certified and trained design engineers to carry out the detailed electrical design and calculations. Our dedicated team of engineers and designers is committed to presenting a fresh cost-reduction perspective while maintaining a commitment to superior quality, and short lead times. We deliver a wide range of services and capabilities related to our core design and engineering expertise. The team is supported by experienced drafters to execute design services to any form of specification.

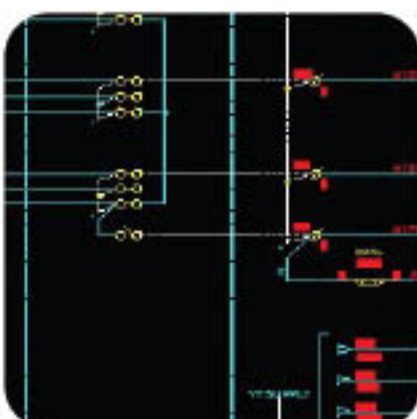
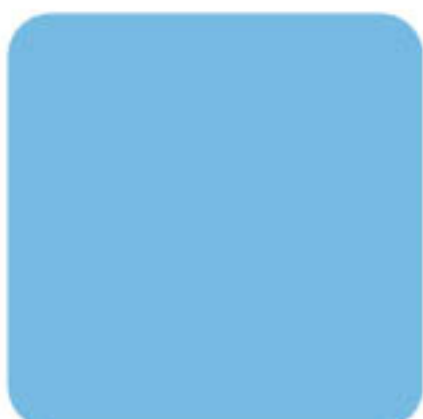
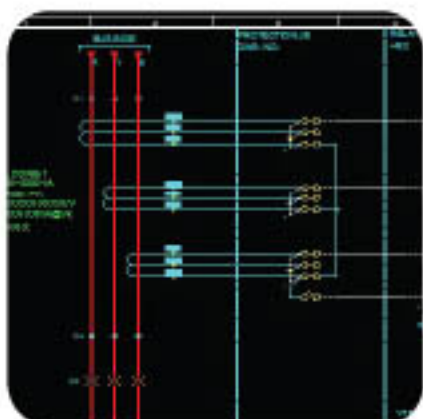


### Benefits of working with us

- Economical and Cost-effective
- Experience in producing Standard and Prototype Panels
- Experienced and skilled workforce
- Proficiency in working with state-of-art technology
- Following International Standards
- In-house Library for all manufacturers
- Latest computer software applications
- AutoCAD, Eledes, Microstation, Promis-E and ETAP

### Primary Engineering

- Operational Single Line Diagram
- CT/VT Sizing Calculations
- Protection Logic Diagrams
- Interlock Logic Diagrams
- Meter and Transducer Schedules
- Alarms, Events, Fault and SCADA Point List
- Cable Sizing Calculations
- Cable Selection and Cable Schedule Design
- Control Room Equipment Layout
- Switchgear Room Equipment Layout
- Trench, Duct Bank and Cable Tray Layout
- Equipment Earthing Layout
- Reinforcement Earthing Layout
- Earthing Calculations
- Shielding Layout
- Outdoor and Indoor Lighting Layout
- Equipment Rating Selection and Specifications
- Sections and Elevations





## Secondary Engineering

- Protection and Control Systems Design
- Bay Control and Protection Unit Panels Design
- Medium Voltage Switchgear Design
- Low Voltage Switchgear Design
- Local Control Cubicles and Marshalling Kiosks Design
- Protection Single Line Diagram with CT/VT data
- Interlocking and Protection Logics
- CT and VT Calculations
- AC and DC Load Calculations
- Relay and Alarm Lists
- Interfacing Drawings for New Equipments
- Modification of Existing Systems
- Cable Laying and Terminal Schedules
- ACDC and DCDB Design
- Relay Setting Calculations
- Interface Engineering between Protection and Plant
- Panel Wiring Diagram and Cable Selection

## Power System Consultancy Services

- Short Circuit Analysis
- Arc Flash Calculations
- Relay Coordination Studies
- Load Flow Analysis
- Harmonic Analysis
- Power Factor Correction

All above technical services are provided using etap software.

## Civil and Structural Engineering

- Structural Analysis
- Switchgear Room Design
- Steel Support Structure
- Layouts and Foundation Design
- Control Building Design
- Lighting Pole Foundation Design
- Cable Ducts and Manholes Design
- Fencing and Plot Plan





## PROCUREMENT AND SUPPLY-CHAIN

To compete in today's cost competitive, high quality, and just-in-time environment, companies must constantly monitor not only their internal processes but also their external trading partner relationships.

We have strategic alliances with leading vendors for the supply of Protection Relays, Control and Instrumentation Products, Automation Products and SCADA Solutions. Drawing on this alliance, we provide services based on either loose supply or packaged supply with most competitive prices and shorter delivery time. Committed to helping clients achieve their requirements through our supply-chain, we combine our global experience and skills in sourcing and procurement and to help our customers transform their requirements. We collaborate with customers to implement outsourcing solutions that align operating models to support business strategies.



- Global Procurement and Alternative Source
- Supplier Inspection and Prequalification Process
- Technical and Commercial Evaluation
- Bill of Quantity (BoQ) Preparation and Purchase Order Placement
- Custom Documentations and Clearance
- Import and Export Handling
- Transportation and Logistic Handling

## PROJECT MANAGEMENT

Our project management experts identify our customers' strategic options and provide them with the best and smooth project execution solutions. We have the experience to deliver a course of action that manages risk, time, cost and quality; the leadership to maintain complete control and transparency across the process; and the passion and enthusiasm to drive value at every turn. We provide a full spectrum of project management services from the preparation of business cases and the development of organizational frameworks to straightforward procurement, design, construction, delivery and operation.



Regardless of the scale or complexity of a project, we employ and refine our systems and processes to provide control, governance and transparency from inception to completion. At the point of every decision we make on behalf of our customers, we work diligently to find the smartest, most efficient and most cost effective solution.

- Project planning, costing and management
- Product prototyping, including design, testing and manufacturing
- Provide advice in maintaining cash-flow
- Identification and management of suitable contractors / collaborators



## TESTING AND COMMISSIONING

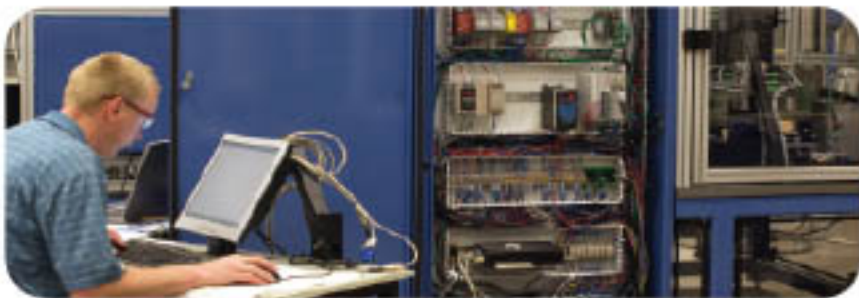
We are experts in substation testing and commissioning, site-modification works, switchgear testing and protection relay testing. Our testing engineers have an extensive experience with all the main manufacturers and we offer the following services:



- Pre-commissioning Activities
- Point-to-point Wiring Checks and Insulation Tests
- Secondary Injection and Scheme Tests
- Factory Acceptance Tests
- Site Acceptance Tests
- Commissioning support

## RELAY CONFIGURATION AND PARAMETERIZATION

Our expertise in relay configuration also permits us to offer specialized solutions for your transmission and distribution system. Smart relay programming minimizes interconnection wiring, making for more reliable and flexible systems and allows for future expansion and changes at lower cost. With our expertise in the control and protection of substations, Ingenious Network is well qualified to parameterize the relays for variety of applications and develop the control logic for several applications. We are experienced with the relays from all manufacturers.



- Configuration of Protection Relays
- Configuration of Bay Control Units
- Configuration of I/O Modules and Logic Controllers
- Programming of SCD/CID files for IEC-61850





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