



SMART SOLAR

ENGINEERING CONSULTANCY

SOLAR PHOTOVOLTAIC CERTIFIED CONSULTANCY

Smart Solar is a qualified and certified engineering consultancy company from the Saudi Ministry of Energy and the Saudi Electricity Company in the field of solar photovoltaic consultancy.

Where the company carries out the following activities:

A- Solar energy system engineering design

- 1 PV plant civil and electrical layout 2D&3D drawings including Coordination with other services drawings
- 2 Electrical single line diagram with voltage drop calculations including cables selection
- 3 PV solar energy technical calculations Report including current electrical system studies
- 4 Selecting of materials including Data Sheets
- 5 B.O.Q
- 6 Solar Steel structural detail design and studies including wind loads calculation & Coordination with buildings structural loads drawings
- 7 solar system feasibility study including the expected cost with the economic pay back
- 8 Riser diagram including Cable Tray pathing Layout

B- Solar energy system implementation supervision

- 1 Inviting tenders to approved contractors, receiving quotations, making a full analysis and making a technical and financial comparison between the offers
- 2 Nominating the appropriate contractor to implement the project & awarding the tender and negotiating prices
- 3 Drafting implementation contracts
- 4 Technical and engineering supervision on the implementation of project
- 5 Attending meetings with the contractor & owner & any stakeholders to discuss the progress of the project and Participate in finding solutions to any technical problems or difficulties
- 6 Reviewing & approval of materials according to international standards & SEC specifications & standards and metrology authority



ABOUT US

Smart Solar Engineering Consultancy is a leading creator, developer, and integrator of energy efficiency and infrastructure renewal solutions in support of economic and environmental sustainability. We know the key to sustainable success lies not only in envisioning and planning for the future but also in solving today's challenges. We are committed to helping our customers find engineering solutions that deliver immediate and long term, bottom line results.

Our combination of facility engineering, energy management and lifecycle management services enables us to deliver sustainable solutions for facilities. By combining professional know how and proven technology with an approach tailored to your specific needs, we help you improve energy efficiency and environmental performance to reduce facility operating and lifecycle costs. These savings are delivered through best practices and superior designs as a result of our wealth of knowledge, and our vast design and project experience. Our list of past projects and our combination of new and long serving employees offers an unparalleled depth of experience which results in the best solutions and practices for our clients.



OUR SOLUTION



Power Energy
Monitoring
and Reporting



Maintenance
and Asset
Management



Production
Line
Management



Solar system
Monitoring



PV
SCADA



PV
O&M



Industrial
Automation



Smart Solar Engineering Cosulatancy developed Energy & power Management System " for delivering efficient energy management through optimal scheduling of variable generation of load's in hybrid distributed generation (MW or Micro Grid) and economic dispatch of variable generation

POWER ENERGY MONITORING AND REPORTING EMS

- entire energy consumption & power parameter in the plant on the dashboard
- Easy & Quick benchmarking of energy consumption
- Easy navigation through the modules
- Excel based reports with charts
- All parameters in the device can be monitored from the software
- Multiple combinations of devices and parameters for analysis
- Specific Energy Consumption report
- Access to features defined by user levels
- Real time acquisition and processing the analog quantity, state quantity etc. information
- historical statistics, trends, alarm events, etc.
- customized design according to user s requirements.
- complete data acquisition and monitoring functions.
- Support the linkage between the local and cloud monitoring.
- Billing.

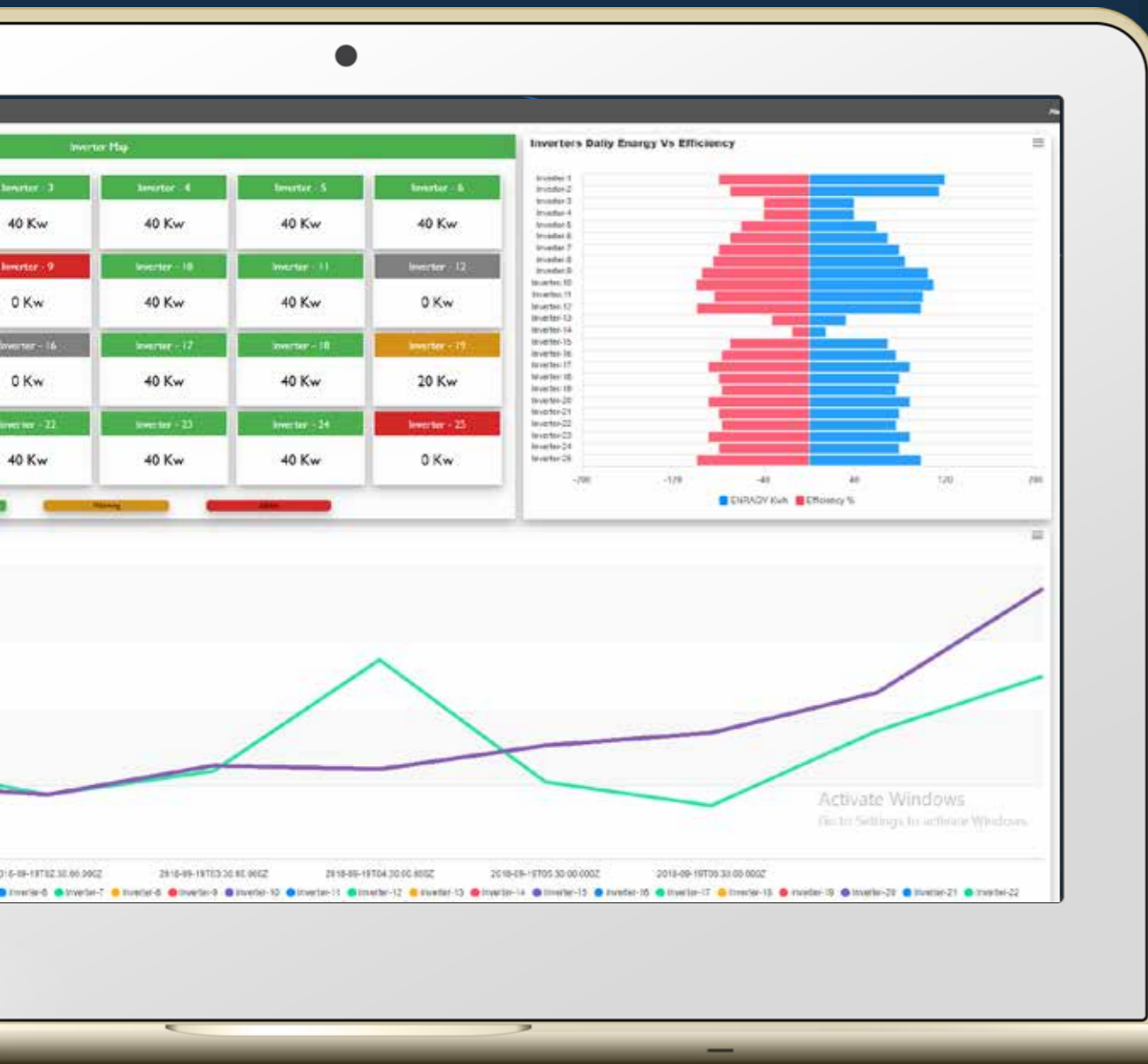


COMPUTERIZED MAINTENANCE AND ASSET MANAGEMENT CMMS

- Create work orders in CMMS easily Complete digitalization of working processes
- Faster coordination of internal and external service teams
- Personalization of service reports for stakeholders
- Manage recurring events Fully digitalized work orders.
- Direct communication with O & M
- Cost reduction in O & M for
- All relevant information available in our O & M Module.
- Upload photos and documents easily.
- Faster and more efficient processing of tasks.
- Preventive Maintenance plan schedule.



SOLAR SYSTEM MONITORING



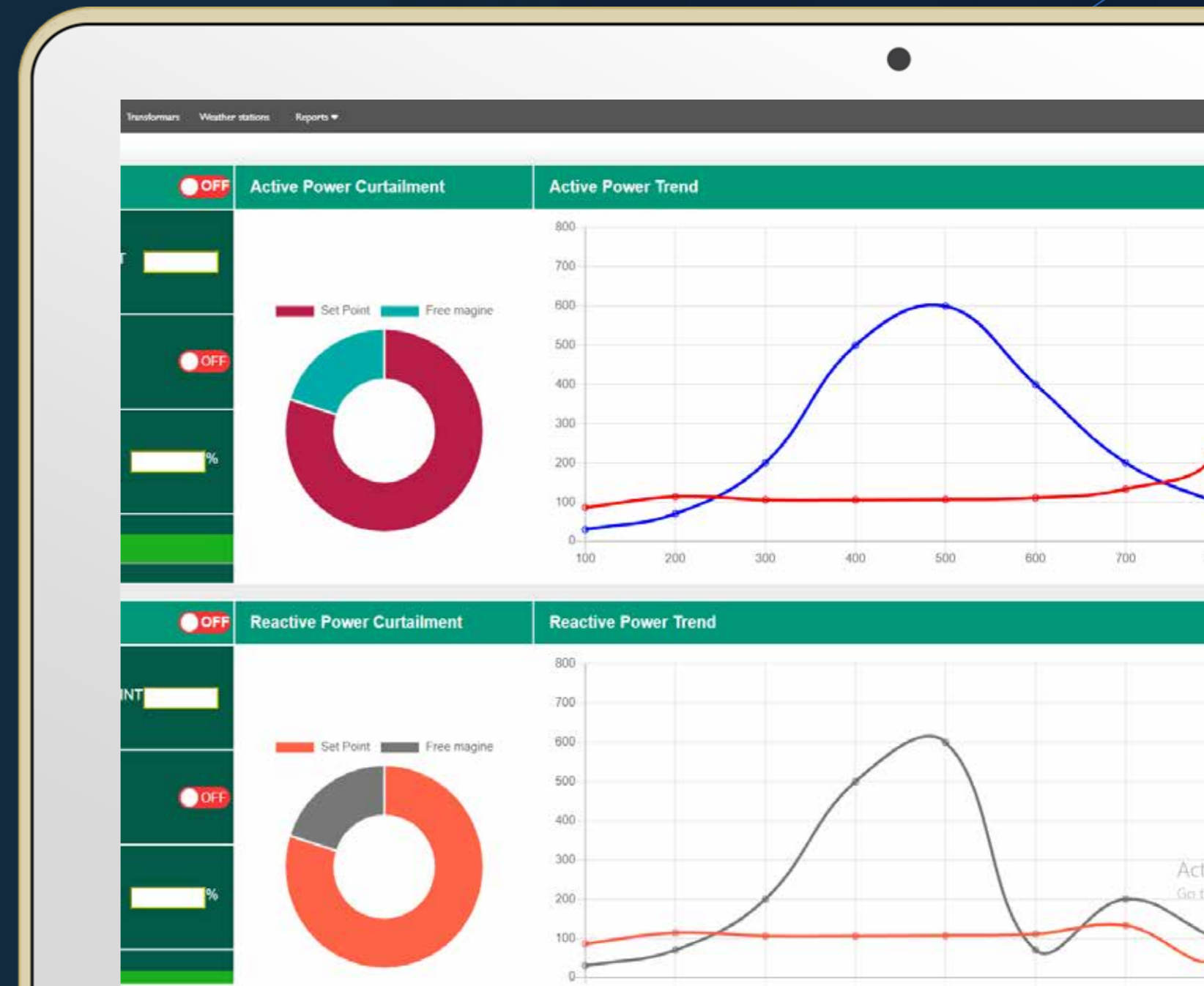
- Ready made graphics standardized inverter energy, performance ratio, heat map and many others.
- Comparison of target/actual values simulation of the target value.
- Individual reporting for each system or for portfolios
- Creation of individual analyses.
- Cockpit Dashboard for system specific overview.
- inverter performance monitoring.
- Data chart creator.
- DC string current, voltage and power.
- DC combiner current, voltage and power.
- Inverter running parameter and errors/faults.
- Main MV power meter readings.
- Main LV power meter readings.
- Power analyzers.
- MV protection relay.
- LV protection relay.
- Transformer alarm/trip status.
- Meteorological data.
- Performance indices.

SOLAR SYSTEM MONITORING

MONITORING

1

- Ready made graphics standardized inverter energy, performance ratio, heat map and many others.
- Comparison of target/actual values simulation of the target value.
- Use of satellite data if no irradiance sensors are available.
- Creation of individual analyses.
- Cockpit Dashboard for system specific overview.
- inverter performance monitoring.
- Data chart creator.
- DC string current, voltage and power.
- DC combiner current, voltage and power.
- Inverter running parameter and errors/faults.
- Transformer alarm/trip status.
- Meteorological data.



SOLAR SYSTEM MONITORING

PPC CONTROL

2

- Plant level Generated Reactive Power Control.
- Plant level Generated Active Power Control.
- Plant level Power Factor Set point.
- MV switchgear operation.
- MDB ACB operation.
- Inverters power level control and operation

KEY PERFORMANCE INDICATORS

3

- Performance ratio as per IEC 61724 1
- Different methods for calculating system availability
- Editor for parameterizing calculations
- Data availability in real time

- Historical record of PV systems alarms and events
- Individual configuration of alarm criteria

TICKET SYSTEM AND ALARMS

4



- Individual reporting for each system or for portfolios
- Device raw data exporting.
- CSV export of all measurement data.
- key performance indicators.
- Historical logging for event, alarm, Data.
- Report as per requirement IEC 61724 1 class A,B,C

REPORTING

5



PRODUCTION LINE MANAGEMENT

SMART FACTORY

Smart Factory is a smart production line monitoring solution powered by IoT technologies, which enables you to monitor everything on the shop floor from a centralized, live dashboard. Our industrial automation solution involves highly trained machine learning algorithms that can predict machine failures and brings higher operational intelligence that your legacy system was not able to perform.



PRODUCT FEATURES

EDGE ANALYTICS

1

- Demand forecasting and capacity planning
- Suggest supply chain bottlenecks
- Predictive maintenance with advanced algorithms
- Real time demand visibility
- Moving analytics and custom business logic to IoT devices
- Detect anomalies at the edge and symptoms for equipment failures

FACTORY PERFORMANCE MONITORING AND PREDICTIVE ANALYTICS

2

- Live, interactive dashboard with KPI graph for each factory

- Collect data and improve operations with machine learning
- Data stream processing for predictive maintenance analysis
- Predict machine failure and efficiency degradation
- Monitor the progress of production, visualize product routing and identify bottlenecks

SMART TICKETING SYSTEMS FOR ISSUE TRACKING

3

- Demand forecasting and capacity planning
- Suggest supply chain bottlenecks
- Predictive maintenance with advanced algorithms
- Real time demand visibility
- Moving analytics and custom business logic to IoT devices
- Detect anomalies at the edge and symptoms for equipment failures

OPERATION MAINTENANCE SERVICES:

- Preventive, predictive, and corrective maintenance
- Long term maintenance planning with equipment manufacturers
- Creation and update of technical training and procedures.
- Emergency response
- Field engineering
- Spare parts and inventory management
- Supply chain management
- Field telemetry testing and calibration
- Nighttime scheduled maintenance for lowest production impact
- DC string testing and health analysis
- sensor validation analysis
- plant performance tracing
- DC power health performance recommendations
- Plant performance modeling and variance analysis



- Web portal monitoring
- System performance analysis report.
- PV mechanical/ electrical Array inspection
- DC String testing.
- System inspection and calibration
- Inverter inspection and maintenance
- AC cable panels and connection inspection and testing
- PV panels thermal imaging inspection
- Tracker inspection and maintenance
- Software upgrades
- IV Curve tracing
- Isolation conductors test.
- Initial onsite system health checks up
- Vegetation management
- Recommissioning
- Cleaning

INDUSTRIAL AUTOMATION

From concept to production, we are committed to developing, building and maintaining quality automation systems that help you reach your goals. Whether your aim is reduced downtime, improved quality, increased efficiency and productivity, enhanced safety, or reduced energy costs, we're here to help with professional service and expertise you can rely on.

- Industrial SCADA software integration
- PLC & Motion controllers
- Control panels
- Instrumentation and measurement
- Fiber optic network and communication
- switches & industrial switches
- Panel Building
- Site Testing and Commissioning





OUR VISION

Our vision is to elevate our company to become the most reliable and the most reliable locally and globally and to keep pace with the Kingdom's vision for the sustainability of natural resources through the development and implementation of renewable and clean energy sources.

OUR MESSAGE

Our mission is to spread awareness of the importance of clean and renewable energy sources and their economic feasibility, and to provide all energy-related solutions through solar energy systems.

WHY SOLAR ENERGY

- Reducing the electricity bill by up to 100% if the photovoltaic system is connected to the electrical network.
- A clean and sustainable source of electricity generation, and it is considered the most growing source in recent years.
- Achieving energy security by building your own electric power generation system and avoiding any increase in electricity tariffs in the future.
- An economically feasible long-term investment, as the capital recovery period does not exceed a quarter of the project's lifespan.
- Contribute to preserving the environment and reducing the percentage of pollution resulting from the generation of electricity with conventional energy, which exacerbates the problem of climate change.



OUR SERVICES



On-Grid
System



Off-Grid
System



Solar Water
Pumping
System



Hybrid System



UPS
System



Solar Lighting
System

ON GRID SYSTEM

A solar system connected to the public grid, the Saudi Electricity Company, which contains solar panels and a photoelectric converter, a system that operates your entire home or facility on Solar energy during the day.



SYSTEM FEATURES

- An economically feasible investment, as the capital recovery period does not exceed a quarter of the project's lifespan (25-30 years).
- You will get to save 50-60% of the value of your monthly bills, and the savings may reach 100% if the photovoltaic system is connected to the B grid.
- It is easy in procedures because it is supported by the Saudi Electricity Company.

OFF GRID SYSTEM

A system completely independent of the Saudi Electricity Company's network. It contains solar panels, batteries and a transformer, in which sunlight is received by the solar panels and converted into electricity that is stored in the batteries for the possibility of using it at night.



SYSTEM FEATURES

- Independence in the production of electricity.
- A replacement for diesel generators.
- An ideal system in places where the electricity network is not connected and difficult Where to get a power source.

SOLAR WATER PUMPING SYSTEM

A system independent of the electricity network, as it operates all types of water pumps directly during the day without the need for storage batteries.



SYSTEM FEATURES

- Run the plunger entirely on solar energy in the daytime period.
- A successful and long-term investment, as the life of the system is 25 years.
- The system is independent of the electricity grid and does not require batteries.

HYBRID SYSTEM

It is a solar energy system connected to batteries as well as to the public grid of the Electricity Company. It is a mixture between the first and second systems and contains a special photovoltaic converter in it.



SYSTEM FEATURES

Provides several options to save electrical energy, including them

- Solar Panels
- batteries
- diesel generator
- electrical network

It is possible to cover your need for electrical energy by solar energy day and night, in addition to the possibility of switching to an alternative source if necessary.

UPS SYSTEM

It is a power supply for sensitive computer, industrial or laboratory devices that do not accept electrical power interruptions and that can lose important information in the event of a sudden power outage.

SYSTEM FEATURES

- Uninterruptible power supply.
- Intelligent and distinctive emergency system.

SOLAR LIGHTING SYSTEM

Providing lighting devices that run entirely on solar energy



ADVANTAGES OF SOLAR LIGHTING

- Power outages do not affect street lighting
- Reduce daily operating and maintenance costs
- Better light source

MECHANISM THE WORK

Wave Energy is working hard to provide the best services with high quality and competitive prices compared to other competitors, where all technologies and services required are used to gain customer satisfaction and implement successful projects through several stages, the most important of which are:

1 THE DESIGN:

- Visit the customer's site and take all required surface measurements.
- Complete study of the solar system.
- Making a 2D drawing showing the design of solar panels on the roof of the house.
- 3D drawing of the whole house.



2

INSTALLATION:

- Installation of aluminum bases for solar panels.
- Supply and installation of solar panels and photovoltaic converter.
- Connect all cables and protection devices, make a 3D drawing for the whole house.



3

EMPLOYMENT:

- Check the solar system according to safety standards.
- Start up the solar system.
Install an application on the customer's phone to monitor system productivity.
- Delivery of the system, with care to remind the customer of the importance of cleaning the solar panels from time to time to ensure obtaining the best productivity from the panels.



ABOUT POWER FIELDS:

- | Power Fields is an electrical company that offers: electrical supplies, installations, and testing commissioning .
- | Our company has successfully completed larger contracts with electrical consultants in all over Saudi Arabia.
- | We constantly work on to keep our quality workmanship and service excellence.
- | Power Fields company looks forward to provide our services and products to you.



SUCCESS STARTS HERE:

- RESULTS
- SIMPLICITY
- ACCOUNTABILITY
- PASSION
- INTEGRITY

RESULTS

Assume positive intent.
Committed to integrity and ethics.
Show respect.

SIMPLICITY

Show pride in our company.
Promote positive environment.
Serve our clients with high quality products.

ACCOUNTABILITY

Keep promises.
Focus on finding solutions and achieve results.
Take personal accountability for our action results

PASSION

Break down internal barriers.
Improve process.
Deal with people openly.

INTEGRITY

Have a "Can Do .." positive attitude.
Achieve results and celebrate when we do.
Make people feel valued and appreciated



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QUALITY STATEMENT:

“Our company takes pride in the professional quality of work and high level of service we provide to our clients, ensuring that their needs are clearly understood defined and met throughout the project”

Power Fields is committed to the timely completion of all our services ensuring we meet your requirements on time and within the specified budget as well as committed to providing our customers, suppliers and employees with the highest quality of service and professionalism



SAFETY POLICY:



Health, Safety & Environment

The safety of our workforce is the most important aspect of our business, no exception.

We aim to minimize the number of health & safety and environmental incidents and ultimately to achieve an incident-free working environment.

Also we recognize and accept our duty to protect the health and safety of all visitors to the company, including sub-contractors and temporary workers, as well as any members of the public who might be affected by our operations.

Our health, safety and environmental policy will be continually monitored and updated to ensure continual improvement of the management systems.

The policy will be updated at least every 12 months.

SERVICE:

We are able to offer a complete range of electrical installation, testing and commissioning, electrical supplies, and electrical maintenance.

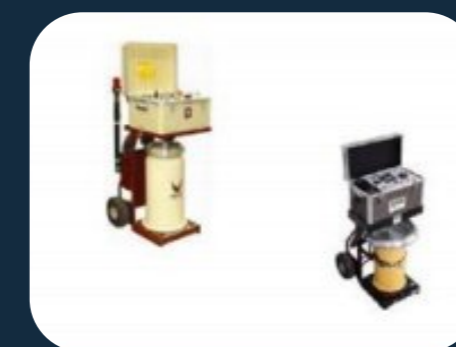
OUR EQUIPMENTS:



TRANSFORMER TESTING INSTRUMENTS



RELAY TESTING INSTRUMENTS



HIGH VOLTAGE INSTRUMENTS



METERS



SUBSTATION TEST INSTRUMENTS



OTHERS



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THANK YOU



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