

Solutions Profile – August 2023



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Silver Distributor Award

2003 - 2023



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Deep Sea Electronics – UK

2003-2023

Pyramid Automation has completed 20 years of Successful Distribution with Deep Sea Electronics in Pakistan. Complete Range of DSE Synchronization and load share controllers with DSE SCADA. Wide Range of Genset controllers, AMF, ATS and AS controllers. DSE WEBNET based gateway devices for Remote Monitoring and control. Following with Turn key solutions, Commissioning, installation and Remote monitoring solutions. We have well equipped Testing lab and Team of Engineers which provide 24/7 customer support.

Range of Deep Sea Electronics Products:



Key Product Features:

- Synchronization and Load share controllers
- Auto Mains Failure
- Auto Start
- Auto Transfer Switch
- Single and multi Genset Synchronization modules
- Single and Multi Mains Synchronization modules
- Bus coupler modules
- Multi Communication ports RS485/RS232
- Ethernet communication ports
- WEBNET online server for Remote monitoring
- DSE Gateway devices based on WEBNET
- SNMP based controllers and Devices
- LCD Display for Alarms indication
- LED available for Breaker status
- Datalogging (USB stick option)
- Event logs counter built-in
- Remote Monitoring
- DSE - SCADA

Power Quality Analysis

Natural phenomena such as lightning strikes, poor load distribution, improper wiring and in correct grounding issues are a few examples of the causes of power quality problems. Inverter-based technology has become more common in recent years, plus grid-tied renewable energy sources such as solar. These make the power network more complex and have a significant negative impact on power quality.

Power supply network problems caused by poor power quality is a common problem for both electric power suppliers and users. However, it is not easy to identify whether the cause of poor power supply quality is at the supplier's system or the user's system. Because of this situation, power quality measurement is necessary to understand the actual cause of power quality problems as well as to consider and analyze for effective countermeasures.

Poor power quality causes trouble in receptacle/transmission equipment and electronic equipment malfunctions. For example, harmonics are known to cause burn-out in reactors and generate defective noise in capacitors. Also, impulse or transient noise and voltage drops stop control systems that are dependent on a computer.

To minimize the risk of lost production and damage to electrical equipment, power quality analysis is used to monitor a system for problems, find the cause, and initiate corrective action. After system data is collected in the field following EN 50160 Standard, a power quality engineer will look for unusual events and determine the proper power conditioning equipment or other steps needed to resolved.

Parameters covered and Instrument Representation:

Analysis Covering Parameters

- Voltage Variations
- Voltage Unbalance
- Rapid voltage change
- Frequency variations
- THD-I and THD-V
- THD individual order
- Flickers
- Voltage Dips
- Voltage Swells
- Power Factor

Data Collection Activity



Key Benefits:

- | | |
|--|---|
| <input type="checkbox"/> Current system Harmonic level | <input type="checkbox"/> THD-I values and level in system |
| <input type="checkbox"/> Power factor and Vector diagram | <input type="checkbox"/> THD-V values and level in system |
| <input type="checkbox"/> PFI bank capacitors health status | <input type="checkbox"/> Current Harmonic Danger level threat |
| <input type="checkbox"/> Voltage swells / Dips | <input type="checkbox"/> Flickers from the source |
| <input type="checkbox"/> NO Tripping required | <input type="checkbox"/> Voltage variations from source |

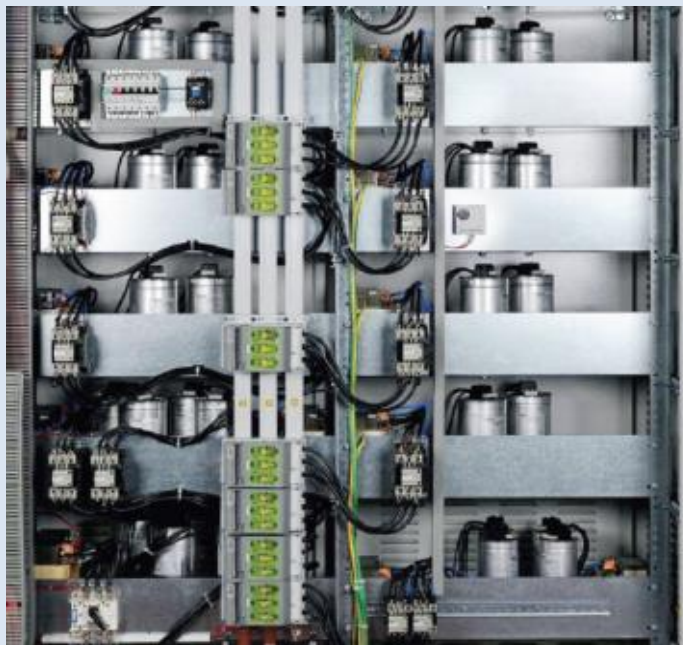
Power Factor Improvement - Panel Analysis

PFI panels play a key role when it comes to maintain the power factor at the main incoming side of Transformer. Inductive load disturbs the power factor which affects the current passing through the transformers. In that scenario capacitive load is required to induce the correct amount of reactive power in the system to correct the power factor and hence correcting the power quality of the system. As the power factor determines how effectively we are utilizing our power source.

Health of capacitors determine how effectively they are addressing the power factor by inducing sufficient amount of reactive power in the system as the steps are being added in the system. In this analysis we check the health of capacitors, the Panel wiring and working condition in manual and auto mode. If needed then we also recommend and install the correct Kvar, Voltage and Amp rating of the capacitor needed to be installed / replaced in the system.



ISKRA - Capacitor



Power Factor Relay

Key Benefits:

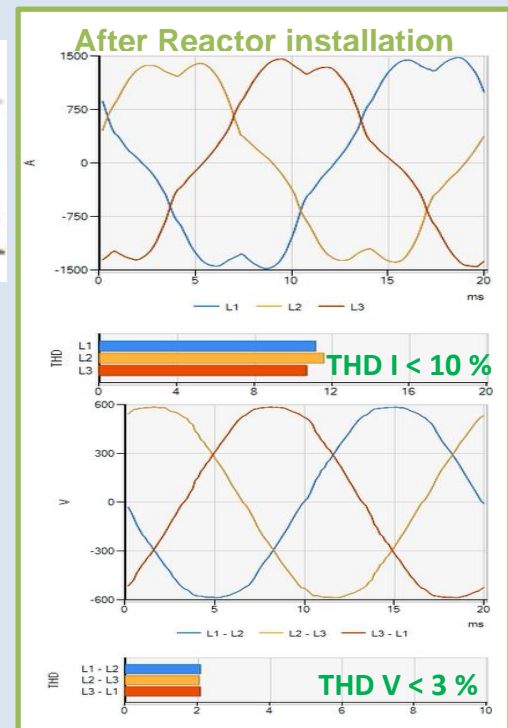
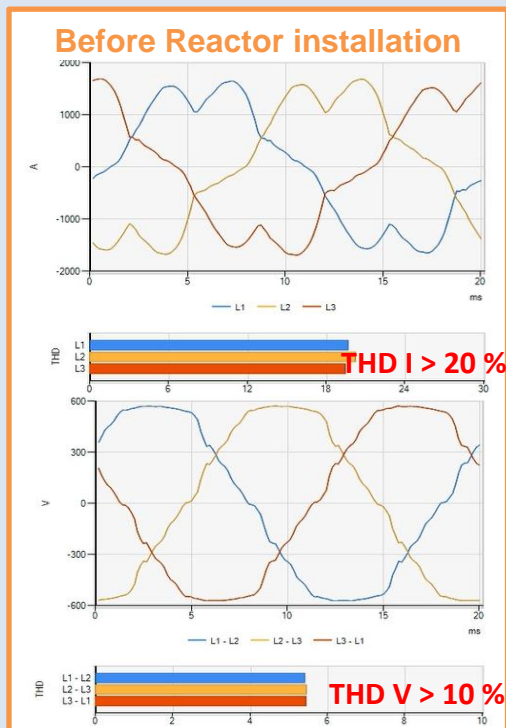
- Health of Capacitors
- Number of turns wire as per standard
- PFI bank capacitor spacing
- Reducing inrush current of capacitors
- Recommendation of Reactors if needed
- contactors condition
- standard cable diameter
- Length of Power cables
- correct Voltage Rating of capacitors
- Harmonic filter addition in the system.

Harmonics Filters & Reactors

Power Quality is one of the main concerns of the Industrial Sector. Reduction of power losses and enhancing the protection of Machinery/Equipment is the key factor to increase the life of Machinery/Equipment. Power Quality ensures that the Machinery/Equipment is more durable and efficient in terms of performance and reliability.

Harmonics are one of the major damaging phenomena which is produced mostly by inductive load and they are damaging the complete power network, which can only be identified by scanning/studying the power quality of the complete system. After studying the Power network, we induce the specially designed Harmonic Reactors by ISKRA (made in Slovenia) in the PFI with good quality Capacitors installed.

Sine Wave with Bar Graph Representation:



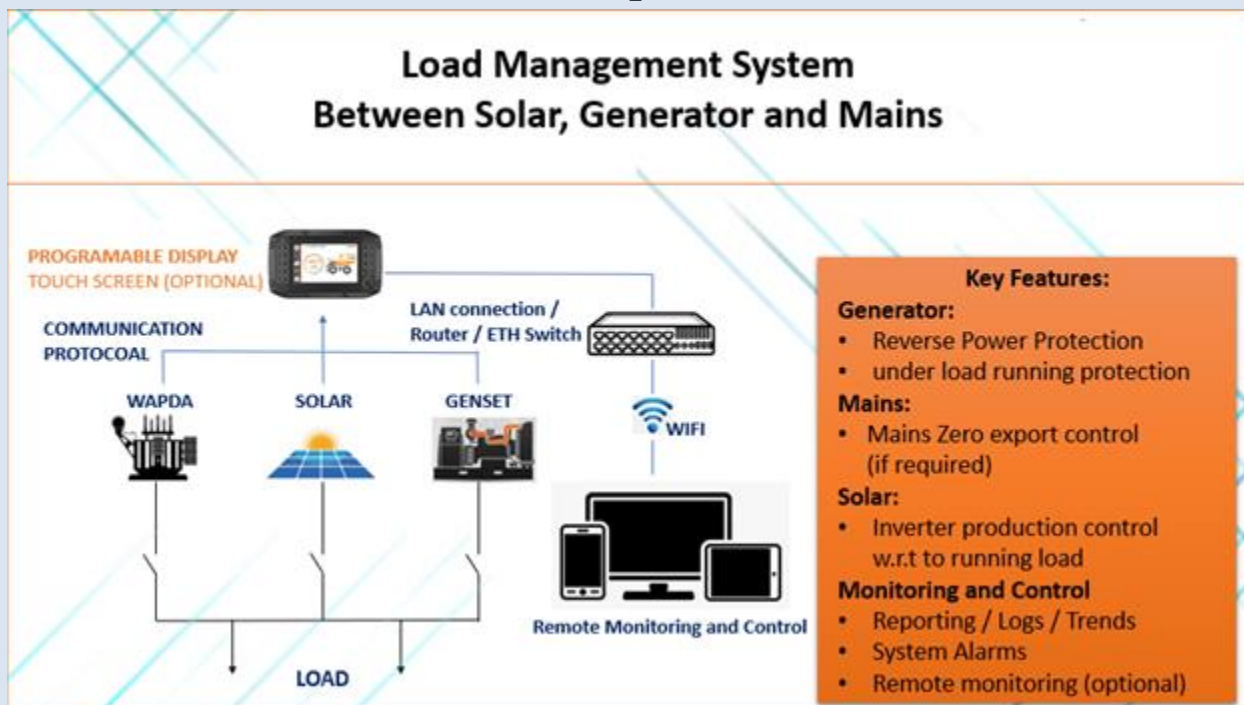
Key Benefits:

- Reduce Voltage and Current Harmonics
- Reduce Inrush Current at Capacitor
- PFI capacitor life enhance
- Reduction of Flickers
- Reduction of Voltage Swells
- Reduced Heating of Power Cables
- Reduce Power losses
- Increase life of Equipment
- Reduce heating of Transformers
- Power Factor improvement
- Durability of Machinery
- Enhanced efficiency of Equipment

PV / Solar - Load Management Systems

Demand for solar applications is increasing due to its efficiency and environment friendly power source. Solar applications involve Hybrid, Off grid and ON grid inverters. Mostly ON grid inverters are installed especially in industrial sector due to its maximum power production feed to grid and utilizing maximum solar (PV) generated power. The need to control this power arises when we need to integrate our solar inverters with Generators or if your net-metering is disabled, then our solution plays a vital role to control your solar production according to load requirement. We will limit the solar production according to 30% of generator rating and your desired minimum load on mains side. This system can be integrated with Synchronized load share system. There is option to limit solar production Manually or Automatically.

Schematic Representation:



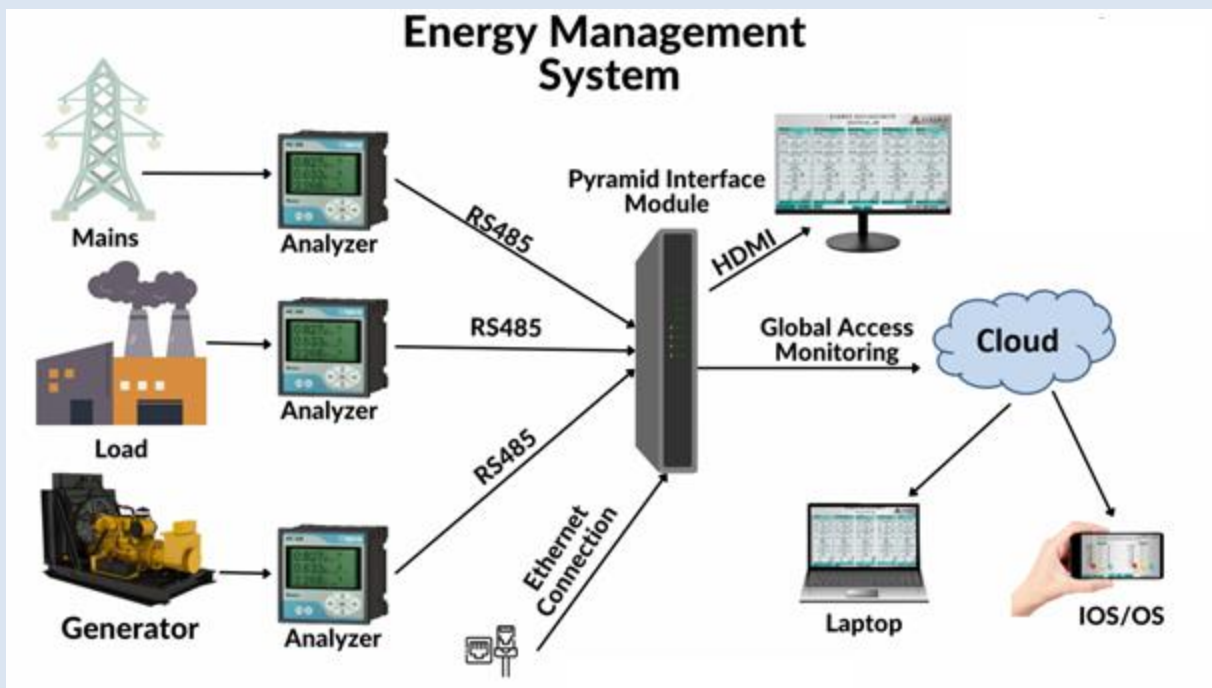
System Key Features:

- Accurate Energy consumption Monitoring
- Cost Analysis of Generator Vs Mains
- Helps to take decision for intervention for Energy Efficiencies and Operations cost saving.
- Monitoring of Harmonics Distortion in Power Network.
- Emails / Alerts / customized Indications.
- TRENDS / Graphical Display
- Monitoring of all Power Sources
- Data Logging of required Parameters & Alerts
- Automatic and Customizable system reports & alerts
- Customizable graphical user interface
- Daily/Weekly/Monthly Kwh Reports for Auditors
- Remote Access via Phone app / PC

Energy Management Solution

Improving energy efficiency is one of the main challenges for a sustainable Business. Becoming or continuing to be economically competitive in the marketplace, requires reducing the cost of production. Significant energy and money can be saved through Energy Management. Energy Management helps management to accurately monitor and control the cost of operations and take decision for future expansions & Interventions for energy efficiencies. This system will help management for better decision making, analyzing the performance, Planning and Controlling the cost of operations and for future Interventions to improve the energy efficiency of system and saving the Energy Cost.

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