



HITACHI INDUSTRIAL UPS SYSTEM FOR FERTILIZER INDUSTRY APPLICATIONS

ABOUT HITACHI INDUSTRIAL UPS SYSTEM

With a vision of “To be recognized as the most trusted Power Electronics Company by supplying superior products and services”, Hitachi Hi-Rel Power Electronics Private Limited has garnered a significant level of trust in Indian power electronics market segment wherein it serves the entire gamut of Industries.

UPS, an Uninterruptible Power Supply, also Uninterruptible Power Source, is an Electrical Apparatus that provides Emergency Power to a load when the Input Power Source, typically mains power, fails.

Hitachi Industrial UPS System, the flagship product, is regarded as the ultimate solution to power problems by providing both Uninterrupted Power Backup and Power Conditioning. It works as an exceptional safeguard against power disruption and reflects the industry's ultimate in advanced technology with proven track record in mission critical applications.

ABOUT FERTILIZER INDUSTRY / APPLICATIONS

Fertilizers are substances that supply one or more of the chemicals required for agriculture plant growth. There are sixteen elements that are absolutely necessary for plant growth. Out of these sixteen, 9 elements are required in large quantities while the other seven are needed in smaller amounts.

The fertilizer industry is extremely vital as it manufactures some of the most important raw materials required for crop growth and production. The primary objective of this industry is to ensure the inflow of both primary and secondary elements required for crop production in the desirable quantities.

The main products manufactured by the fertilizer industry are phosphate based fertilizers, nitrogenous fertilizers (Neem urea, calcium ammonium nitrate), Potash fertilizers (Potassium, magnesium sulphate, potassium chloride), Multi-nutrient fertilizers (NPK/NP fertilizers, ammonium phosphates), crop protection & other complex fertilizers.

The important machinery in the fertilizer production line includes, disc mixers, vertical crusher, disc granulator, rotary drum granulator, rotary dryer, rotary cooler, belt conveyor, elevator, packaging machines, high-temperature materials drying equipment, fertilizer coating machine and other important machines and equipment's. All these machines and equipment's are being controlled and monitored through varieties of systems like SCADA, DCS, PCS, pneumatic to electronics controlling system, field instruments, sensors and other important controlling equipment.

CHALLENGE/ISSUES (What are the issues the customer used to face?)

Fertilizer production is a highly energy-intensive process and fertilizer plants operate continuously year around. Availability of quality power and reliability of electrical systems play important role to ensure the reliability of the plant and equipment and ensure that there is no forced shutdown of a plant.

Fertilizer plants mainly dependent on the electricity grids for power supply. Frequent interruption in the power supply as well as fluctuation in the voltage and frequency adversely affects the operation of these plants. It reflects in low on-stream factor and poor capacity utilization of the plants.

The management of complex fertilizer manufacturing process demands constant, reliable system-wide control and measurement & monitoring. Typically, its accomplished with system-wide monitoring and control using sophisticated System Control and Data Acquisition (SCADA) equipment. The remote sensors, related Programmable Logic Controllers (PLCs) and software, control equipment are vital to the reliable supervision of production.

The SCADA, PLCs, Field Instruments, sensors and other important equipment are responsible for the monitoring and control of critical functions requiring absolute reliability. Without the SCADA systems continuous measurement and control, field instruments, flow controllers, sensors, pumps and valves that control pressure and flow and its manifolds could result in shutdown of the fertilizer plant and may cause damage to electrical equipment and production losses. To further compound the problems, SCADA system PLCs are often sensitive to power contamination such as voltage spikes, sags, surges and common mode noise. These problems can result in unreliable operation or failures.

NEED FOR THE SOLUTION (What is the need for utilizing Hitachi Product?)

- To stop the damage of the SCADA, DCS and PLCs systems
- To protect Pneumatic electronics controller system
- To protect field instruments measurement data
- To protect the losses of pressure and flow control
- To protect sensitive valves and pumps from damage due to power interruptions
- To protect plant auxiliary systems
- To ensure continuous monitoring and control of the fertilizer plant process
- To protect the power supply failure for emergency lighting system
- To protect the IT equipment's and servers
- To fulfil continuous power requirement for fire protection system
- To maintain healthy remote monitoring controls

HITACHI SOLUTION (How it helps in solving the Challenges/Issues?)

It's highly important to have uninterruptible power supply solution for the fertilizer plants which offers the total protection to plant equipment by providing constant and stable power with backup time to critical load. If controllers and measurement equipment fails due to power problems, it may result into production losses.

Here, Hitachi Industrial UPS System play the vital role by providing clean and uninterrupted power supply to mission critical application to operate plants without any unforeseen shutdown.

HITACHI INDUSTRIAL UPS SYSTEM FOR FERTILIZER INDUSTRY / APPLICATIONS

HITACHI
Inspire the Next

Industrial grade UPS System offers;

- Continuous and stable power to critical load against wide input voltage fluctuations without any interruptions, as long as backup required.
- Provide clean and continues power to Pneumatic electronics controller system
- Provide uninterrupted power supply to SCADA, PLCs and sensors to continuous measurement and control
- Power backup support to emergency lighting and fire protection system
- Provide power backup to field instruments measurement equipment
- Provide uninterrupted power supply to valves and pumps controlling system and plant auxiliary systems
- Provide continues power to fire protection and emergency lighting system

BENEFITS OF USING HITACHI INDUSTRIAL UPS SYSTEM IN FERTILIZER INDUSTRY APPLICATIONS

- Provides superior quality power output even in high ambient temperature conditions up to 50°C
- Higher ingress protection class design IP-41/42/43, and specially designed IP-53 enclosure protection offers longer self-life even in the worst environmental conditions
- Customized battery charger design offers higher battery backup to support the load in case of subsequent power failure
- Protect SCADA, PLCs and other critical monitoring and control equipment
- No more losses of critical measuring data
- Unique PCB design with conformal G3 coating increase the life of UPS parts and offers stable performance under any hazardous environmental conditions.

HITACHI INDUSTRIAL UPS SYSTEM FOR FERTILIZER INDUSTRY / APPLICATIONS

i4 Series UPS System – Single Phase Output

Range: 5 kVA to 250 kVA

- Input reactors to minimize AC mains notching
- Automatic Battery Charging Float / Boost mode selection with current limit
- High efficiency : DSP based IGBT inverter technology
- Specially designed output transformer for PWM operation
- Sinusoidal – PWM operation with direct AC feedback – handle nonlinear loads upto Crest Factor 3:1 with <5% THD
- High branch fast-acting fuse clearing capacity (upto 30% rated fuse)
- DSP based control Redundant control power supplies
- Programmable static switch with upto $\pm 6\%$ synchronization window
- Comprehensive LED mimic and LCD + keypad enabled
- RS485 interface and programmable potential
- RFI / EMI protection
- Potential free contacts
- Compatible with maintainable type batteries (Tubular, Plante, Ni-Cd etc.)
- High reliable and more than 20 years long self-life design
- Front access oriented layout
- Ingress protection class IP-53/43/42/41
- Suitable for higher ambient temperature condition up to 50°C



HITACHI INDUSTRIAL UPS SYSTEM FOR FERTILIZER INDUSTRY / APPLICATIONS

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- PC based Monitoring, Control & Reporting unit (Optional)
 - Monitors the system performance with automatic generation of daily weekly reports.
 - Automatic service call fax generation with fault and alarm log details.
 - Higher level connectivity with DCS/PLC through RTU for Modbus TCP/IP
 - Monitoring on LAN through SNMP
 - Battery Monitoring System
- A large array of options available including 12 pulse charger, Parallel or Hot standby Redundancy, Redundant cooling fans and more

ABOUT HITACHI HI-REL POWER ELECTRONICS PRIVATE LIMITED

Founded & established in 1983 as Hi-Rel Electronics Pvt. Ltd., which later on in year 2015 had become the 100% subsidiary company of Hitachi, Japan which is one of the Global fortune 500 companies with a new name as Hitachi Hi-Rel Power Electronics Private Limited, which is being recognized as one of the pioneers in power electronics domain. Hitachi Hi-Rel, today, is a leading manufacturer of Industrial UPS, IT & Infra UPS, Medium & Low Voltage Variable Frequency Drives, Grid Tied Solar Inverters, Air Compressors and Railway Inverters.

Hitachi Hi-Rel has state-of-the art manufacturing facility at Sanand near Ahmedabad in Gujarat-India. Hitachi Hi-Rel is helping a wide array of industries and organizations to meet the mission critical demands through technologically superior, low polluting and innovative products Solutions and continue to offer world class power electronics products, value added services & customized solutions.

With a vision of “To be recognized as the most trusted Power Electronics Company by supplying superior products and services”, Hitachi Hi-Rel has garnered a significant level of trust in Indian power electronics market segment wherein it serves the entire gamut of Industries, particularly in mission critical applications for Refineries, Petro-Chemicals, Power Generation, Steel & Metals, and Process Industries as well as Critical Data Processing Applications. Besides offering greater energy efficiency & lower carbon footprint, each of the company product streams bears the hallmark of excellence with company accreditations. Hitachi Hi-Rel is an ISO 9001:2015, ISO 14001:2015 & ISO 45001:2008 certified company having export house status. Hitachi Hi-Rel sales network & service infrastructure expands out to the world & with this network, we have made strong inroad in Global markets like South East Asia, Middle East, Africa and Brazil. Also, with a presence of strategically located skilled service engineers in India helps us to score high in terms of customer expectations on service deliverables & uptime of the product.

With expertise, experience and an efficient product line, Hitachi Hi-Rel will always try to be your power electronics partner. When you choose to do business with Hitachi Hi-Rel, you are partnering with a company who cares.

FOR MORE INFORMATION

To know more about Hitachi Hi-Rel Power Electronics Private Limited and its offered products and solutions, please visit www.hitachi-hirel.com

You may also share your requirements at <https://www.hitachi-hirel.com/inquiry> to receive the phone call or Hitachi product information thru email from our authorized sales representative of your region.

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