



Solutions you can Trust

**MECH ENGINEERS**

www.mech.co.in

Email: keyur@mech.co.in | dilip\_mech@yahoo.com

Phone: 9769449057 | 022-28546555 | 022-28549057

Regd Office: 201, Blue Rose Industrial Estate, Off Western Express Highway, Opp Magathane Bus Depot, Borivali (E), Mumbai - 400066

**POWER SOLUTIONS**  
Manufacturers and Authorized Dealer

Stabilizers | UPS | Inverter  
Iso Transformer | PDU | ATS



by Schneider Electric

**IT SOLUTIONS**  
Dell Registered Partner

Desktop | Laptop | Thin Client  
Networking | Storage | Security  
& Peripherals



PartnerDirect  
Registered

## Solutions to Power Disturbances

| Disturbance   | Waveform | Possible Effects                                     | Possible Causes   | Solution  |
|---|----------|--|---|---|
| <b>1. Sag / Under-Voltage – Voltage Fluctuation</b> |          |  |   |   |
| Sag   |          | System halts, loss of data, shutdown                 | Startup loads, Line faults,   | Servo Controlled Voltage Stabilizer, UPS                  |
| Under Voltage                                       |          | System halts, loss of data, shutdown                 | Utility faults, load changes,   | Servo Controlled Voltage Stabilizer, UPS                  |
| <b>2. Swell / Over-Voltage</b>                      |          |  |   |   |
| Swell   |          | Nuisance tripping, equipment damage/reduced life     | Load changes, utility faults  | Servo Controlled Voltage Stabilizer, UPS                  |
| Over Voltage  |          | Equipment damage /reduced life                       | Load changes, utility faults  | Servo Controlled Voltage Stabilizer, UPS                  |
| <b>3. Interruptions</b>                             |          |  |   |   |
| Interruption  |          | Loss of data possible, Damage shutdown               | Switching, utility faults, circuit breaker tripping, component failures | UPS   |
| <b>4. Transient</b>                                 |          |  |   |   |
| Impulsive   |          | Loss of data, possible damage, system halts          | Lightning, ESD, switching impulses, utility fault clearing              | Stabilizer with Surge Suppressor, UPS                     |
| Oscillatory   |          | Loss of data, possible damage                        | Switching of inductive /capacitive loads                                | Stabilizer with Surge Suppressor, UPS                     |
| <b>5. Waveform Distortion</b>                       |          |  |   |   |
| Harmonics   |          | System Halts, Transformer Heated                     | Electronic Loads, (Non Linear)  | Isolation Transformers, K-Rated Isolation Transformers    |
| Interharmonics                                      |          | Light Flicker, Heating, Communication Interference   | Inductive Load, Control Signal, Faulty Equipment,                       | Ultra Isolation Transformers, Filters, UPS                |
| Noise   |          | System Halts , Data Loss                             | Radio Transmitters, Faulty Equipment, EMI Interference                  | Shielding of Wiring, Isolation Transformers               |
| Power Frequency Variation                           |          | System Halts, Light Flickers                         | Intermittent Operation of Load Equipment                                | Reconfigure Distribution, Relocate Sensitive Loads, UPS,. |
| DC Offset   |          | Transformers Heated, Ground Fault, Nuisance Tripping | Faulty Rectifiers, Neutral Issues                                       | Isolation Transformer, Replace Faulty Device.             |

The above solution summary has been derived with the help of white paper published by *Joseph Seymour* for *Schneider Electric* – Data Center Science Center – White paper 18 Rev 1