Voltage Dip / Power Blackout Compensator

UNISAFE

MEGASAFE

NISSIN ELECTRIC CO., LTD.
Problem of Voltage Disturbance

- Power Blackout
- Voltage Dip

- Production Line Loss
- Product / Material Loss
- Opportunity Loss

Huge Loss

Cost for maintenance / repair of production line

Cost of Damaged product / material which has to be scrapped

Loss due to the stoppage of the production line

To mitigate such huge loss, **Nissin** would like to propose you to introduce

**Voltage Dip / Power Blackout Compensator**

NISSIN ELECTRIC CO., LTD.
Nissin’s Voltage Dip / Power Blackout Compensator

**UNISAFE**
- Problem: Voltage Dip
- Application: Low Capacity Load
- For Low Voltage

**MEGASAFE**
- Problem: Voltage Dip
- Application: High Capacity Load
- For Medium Voltage

**POWERSAFE**
- Problem: Voltage Dip, Power Blackout
- Application: High Capacity Load
- For Medium Voltage

**HIGH SPEED FAULT CURRENT LIMITING SWITCH**
- Problem: Voltage Dip, Power Blackout
- Application: High Capacity Load, Generators
- For Medium Voltage
Nissin offers various types of compensator to accommodate the customers’ needs.

**Correction Capability**

- **Load Capacity (kVA)**
  - Medium Voltage
  - Low Voltage

**Voltage Dip**
- Duration of Correction:
  - 0.1 sec.
  - 2 sec.
  - 5 sec.
  - 5 min.
  - 1 hour

**Power Blackout**
- MEGASAFE 1000~4000kVA
- POWERSAFE 2000/4000/6000kVA
- HIGH SPEED FAULT CURRENT LIMITING SWITCH 200/400/600/800A

**Capacitor Type**
- UNISAFE 100~400kVA
- EDLC Type UNISAFE 100~400kVA

**Power Source**
- GENERATOR
- BATTERY
- EDLC (Electric Double Layer Capacitor)
- CAPACITOR

NISSIN ELECTRIC CO., LTD.
Nissin’s compensators will be installed in customer’s transmission line according to its purpose and function.

For Voltage Dip + Power Blackout

For Voltage Dip
To countermeasure the problem of Voltage Dip, we recommend...
Power Storage = Capacitors

Compensation of insufficient voltages

Commercial Power Supply during normal operation

Compact
Compared with power generation systems, smaller installation area is required

High Efficiency
More than 98% (Unisafe)
More than 99% (Megasafe)

Less Maintenance
Unlike batteries or generators, no periodical maintenance is needed

Eco-Friendly
Battery is not used = No lead

NISSIN ELECTRIC CO., LTD.
The compensation characteristics of Nissin MEGASAFE is just suitable for the actual voltage dip.

Example of Voltage Dip on Japanese Actual Site and Compensation Performance

- The compensation characteristics provide a longer compensating time to areas where frequent voltage dip occur within a narrow dip range.
- Compensating time is extended according to the aspect of the voltage dip, the load factor, and power factor.
Case Study: Cost-Benefit Analysis

For the above case, the investment for the Megasafe (2000kVA) will be recovered after 5 times of the occurrence of Voltage Dip.
## Case Study: Your Case

<table>
<thead>
<tr>
<th>Voltage</th>
<th>kV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity of Production Line to be Protected</td>
<td>kVA</td>
</tr>
<tr>
<td>Occurrence of Voltage Dip</td>
<td>Times/Year</td>
</tr>
<tr>
<td>Product/Material Loss</td>
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<tr>
<td>Production Line Loss</td>
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<tr>
<td>Opportunity Loss</td>
<td></td>
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</tbody>
</table>

For your case, the investment for the offered voltage dip compensator will be recovered within year(s).
Application of Megasafe

Megasafe is flexible to accommodate the users’ production line.

1. For multiple production line
2. For single production line

No AC Power Input for Rectifiers is needed.
<table>
<thead>
<tr>
<th>Product</th>
<th>Purpose</th>
<th>Power Storage</th>
<th>Rated Capacity (Rated Current)</th>
<th>Rated Voltage</th>
<th>Duration of Correction (Sec.)</th>
<th>Installation</th>
<th>Dimensions (mm)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Low Voltage</td>
<td>0.1-2.0</td>
<td>Indoor</td>
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<td>D</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Medium Voltage</td>
<td>1.0-5.0</td>
<td>Outdoor</td>
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<td>10-60</td>
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<td>Depend on the Level of Voltage Dip</td>
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<td>Unicafe</td>
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<td></td>
<td>100kVA</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>1250</td>
<td>750</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>200kVA</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>1250</td>
<td>750</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>300kVA</td>
<td>○</td>
<td>●</td>
<td>○</td>
<td>2190</td>
<td>750</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>400kVA</td>
<td>○</td>
<td>●</td>
<td>○</td>
<td>2190</td>
<td>750</td>
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<td>100kVA</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>1750</td>
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<td>200kVA</td>
<td>●</td>
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<td></td>
<td></td>
<td>1,000kVA</td>
<td>○</td>
<td>●</td>
<td>○</td>
<td>6000</td>
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<td>2,000kVA</td>
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<td>6700</td>
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<td>3,000kVA</td>
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<td>●</td>
<td>○</td>
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<td>2300</td>
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<td>4,000kVA</td>
<td>○</td>
<td>●</td>
<td>○</td>
<td>11100</td>
<td>2300</td>
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</table>

- ●: Standard
- ○: Optional
<table>
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<tr>
<th>Product</th>
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<td></td>
<td></td>
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<td>Low Voltage</td>
<td>Medium Voltage</td>
<td>0.1-2.0</td>
<td>1.0-5.0</td>
<td>10-60</td>
</tr>
<tr>
<td>Powersafe</td>
<td>Parallel Full Volt</td>
<td>Battery</td>
<td>2,000kVA</td>
<td>200V 400V 3.3kV 6.6kV</td>
<td>Depends on the Level of Voltage Dip</td>
<td>Indoor</td>
<td>11400 x 2500 x 2650</td>
<td>43500</td>
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<tr>
<td></td>
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<td></td>
<td>4,000kVA</td>
<td></td>
<td></td>
<td></td>
<td>22100 x 2500 x 2650</td>
<td>84700</td>
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<tr>
<td></td>
<td></td>
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<td>6,000kVA</td>
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<td></td>
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<td>31400 x 2000 x 2650</td>
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<td>High Speed</td>
<td>Generator Connection</td>
<td>Generator</td>
<td>(200A)</td>
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<td>Indoor</td>
<td>2300 x 2900 x 2550</td>
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<tr>
<td>Fault Current</td>
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<td>(400A)</td>
<td></td>
<td></td>
<td>Indoor</td>
<td>3800 x 2200 x 2650</td>
<td>5600</td>
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<td>Limiting</td>
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<td></td>
<td>(600A)</td>
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<td>Indoor</td>
<td>4000 x 2200 x 2650</td>
<td>6500</td>
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<tr>
<td>Switch</td>
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<td>(800A)</td>
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<td></td>
<td>Indoor</td>
<td>5800 x 3200 x 2350</td>
<td>11300</td>
</tr>
</tbody>
</table>

- Standard
- Optional

NISSIN ELECTRIC CO., LTD.
Thank You For Your Kind Attention