COOPER POWER SERIES

Metal-enclosed capacitor banks

Meet higher power quality, efficiency, safety and reliability demands

Reduce losses and CO_2 emissions, improve power quality, safety and reliability in your underground distribution system. Eaton, with more than 70 years of capacitor development experience, introduces metal-enclosed capacitor banks that are smaller, easier to install and maintain, and less-intrusive compared to traditional capacitor banks.

Improving power factor in the distribution system can save a medium utility up to millions of kWH annually

Capacitors improve efficiency in the power system by reducing losses from point of application to the generator, saving money and decreasing CO_2 emissions. Capacitors also improve power quality by supporting voltage and mitigating harmonic issues when applied as harmonic filters.

Underground distribution cables have inherent capacitance. However, on heavily loaded lines—especially in areas with growing inductive loads, such as with high air-conditioning demand—the cable capacitance is not sufficient.

As the number of underground distribution feeders increases, the corresponding need for metal-enclosed capacitor banks also grows.

Utility applications include placement in the substation and on the feeder circuit. Utilities can also benefit from metal-enclosed capacitor banks when applied next to poles that are too congested for a pole-mounted bank.

Commercial and industrial applications include:

- Industrial parks
- Industrial substations
- Universities
- Mines
- Shopping malls

Eaton's metal-enclosed capacitor banks feature technology designed to meet or exceed all applicable ANSI, IEEE®, NEC® and IEC standards for worldwide utility and industrial applications. Standard ratings are available up to 38 kV, 200 kV-BIL in single or multi-step configurations.

Used as a multiple-step, second-order harmonic filter bank in a large wind-turbine drivetrain facility

Powering Business Worldwide

Eaton offers a single-source solution for reactive power compensation and harmonic compliance related concerns. Beyond just capacitor banks and harmonic filter equipment, Eaton provides an integrated approach that includes field measurements, computer simulations and capacitor bank/harmonic filter design and specification.

Vertically integrated expertise

Eaton provides a comprehensive solution that meets power quality, safety, reliability, aesthetic and ease of installation and maintenance needs.

- Single point of responsibility and accountability
- More than 70 years of experience in design and manufacture of power capacitors
- Eaton manufactures equipment and components to coordinate in the bank
  - Capacitors
  - Fuses
  - Switches
  - Controls
  - Relays
- Field-based application engineers who work in sizing and specifying to match requirements—providing the ability to customize to exact needs
- System engineering expertise, including the ability to take site measurements and analyze data. Eaton can further assist with sizing and planned upgrades as the load changes
- Structural engineering expertise, can be designed to meet IEEE Std. 693™-2005 standard and any local structural requirements

Improved power quality and efficiency

Underground distribution systems with metal-enclosed capacitor banks will see increased power quality through:

- Reduced losses, leading to higher efficiency throughout the system
- Power factor improvement
- Voltage improvement
- System capacity release
- Harmonic filtering from engineered-to-order harmonic filters

Increased safety

Though metal-enclosed capacitor banks are typically not installed where accessible by the general public, safety is still critical. Eaton meets or exceeds all safety requirements including:

- Deadfront construction available for protection from energized parts
- Visible disconnects and ground switches available for visual verification during maintenance
- Most reliable capacitors in the industry:
  - Highest safety margin to discharge inception voltage (DIV) in the industry
  - Highest I^2t withstand in the industry
  - All fusing is current-limiting to provide maximum safety in the event of a component failure

Smaller, less intrusive design

- Smaller profile than a typical open-rack bank
- External vertical and horizontal clearance requirements eliminated
- More compact, pleasing to the eye design
- Can be painted to blend into the environment

Improved reliability

The capacitor enclosure leads to less downtime.

- Less susceptible to animal and pollution related outages
- Faster and easier maintenance
- Equipment is protected by the enclosure
  - Less maintenance needed
  - Can be installed in harsh environments
- Lower system integration risk because Eaton provides all equipment fully assembled and tested

Easy installation

- Reduce installation time—fully assembled, completely self-contained, tested and ready to install
- Only requires one connection to the power system
- Portable asset for short-term projects

Easy maintenance

- Easy access to equipment at a workable height—no bucket trucks needed for routine maintenance
- Less environmental contamination and animal interference
- Optional disconnect and ground switches with visual verification

Fully assembled and tested at the factory, reducing site installation time

Substation shunt capacitor bank

For Eaton's Cooper Power series capacitor product information, call **1-877-277-4636** or visit:
Eaton.com/cooperpowerseries

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