Mobile capacitor banks
Reactive power solutions

COOPER POWER SERIES

Maintain required voltage with reactive power solutions

Reactive power is needed to maintain the voltage required to deliver active power through the transmission grid. Rapid deployment of capacitor banks during contingencies is critical to avoid voltage collapse and maintain the grid's ability to push active power through the transmission lines.

Mobile capacitor banks provide an economical and flexible solution for adding vars to the grid without the need to install permanent equipment. The banks can be used for var/power factor support, voltage support, emergency outage support, maintenance applications, temporary power for construction assistance, peak loading support and delaying large capital investments.

As North America's leading manufacturer of power capacitors, Eaton offers highly configurable mobile capacitor banks—custom designed to address the reactive power needs of electric power utilities and to comply with applicable standards and regulations, such as DOT, EPA, ANSI, NESC and IEEE®. Eaton has been manufacturing capacitors in the United States since the 1940s and is recognized as a world leader in this segment.

Eaton's mobile capacitor banks are available in voltages from 4 kV to 230 kV and can be configured with externally fused, fuseless or internally fused capacitor units. These banks feature an open rack design and can be supplied with various switching, protection and control options. Eaton also offers multi-voltage designs that can quickly be converted to operate at different system voltages by reconfiguring the capacitor bank buswork.

Eaton offers various tractor trailer options such as flatbeds, single-drop and double-drop trailers. Standard transportation protection features include custom bracing, insulator/bushing guards, fencing and anti-vibration materials.

Design and specification assistance from industry's premier application engineers

Our mobile capacitor bank design is supported by experienced application engineers. The turnkey manufacturing and assembly process is managed from order to delivery with periodic updates on the progress. Recognizing the unique needs of this application, our engineers work closely with clients to provide a design that meets the requirements for reactive power, transportability, protection and control while verifying it complies with federal and state regulations.

In-house structural engineers will design the frames, bases and weight distribution to address the structural reactions associated with environmental conditions during deployment—such as wind and snow loading.

A variety of on-site support is available through Eaton's Electrical Engineering Services & Systems (EESS). This support includes training, system studies, startup and commissioning services, local testing and maintenance services.

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Unique designs and features

Mobile capacitor banks are unique and designed specifically to meet the requirements of the customer. Because mobile capacitor banks are often designed to be placed anywhere on the customer's transmission or distribution system, the banks are designed to be fully self-contained. This can include a protection and control system, SCADA, automatic and remote switching, protective fencing, critical spare components, manual transfer switch for local power when in storage, service control and DC battery system.

Depending on customer requirements, mobile capacitor banks can be designed on a single- or multi-trailer platform. The following is a list of equipment commonly included.

- Current-limiting reactors
- Capacitor switching device
- Current and voltage sensing
- Protection and control panels
- DC power (batteries and charger)
- AC station power provisions
- Protective fencing
- External fusing
- Disconnect switches
- Hydraulic leveling systems
- Air ride suspension
- Hydraulic rack outs (with manual or motor operators)
- Surge arresters
- Unbalance detection
- Polymer insulators/bushings
- Grounding mats
- Grounding system
- Grounding switch
- SF_6 handling pump
- Tools/storage compartments
- Anti-vibration pads (EPM)
- Anti-skid steel decking
- Anti-lock braking system

Special considerations

When utilizing mobile capacitor bank solutions, it is important to consider national, state and local requirements for the transportation of electrical equipment. Special permitting and/or escort vehicles may be required for transportation of the mobile capacitor bank.

Eaton's mobile capacitor banks include provisions for grounding the trailer and the equipment installed on the trailer. Grounding shall be in accordance with local government and utility regulations and standards.

Circuit switches and circuit breakers containing SF_6 gas are subject to DOT regulations. SF_6 gas at pressures less than 25 PSIG at 68 °F can be transported in a non-DOT approved container without any further transport requirements. For pressures greater than 25 PSIG, an optional SF_6 gas handling pump is available for reclaiming the SF_6 gas before transportation.

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