BK – Batteries for reactive power compensation

REM 2 Design

APPLICATION

BK batteries are designed for reactive power compensation in low-voltage networks. The main consumers are industrial plants and enterprises. The high cost of electricity has forced consumers to introduce solutions that provide real savings.

Using BK solutions, we are able to reduce the value of reactive power in an easy and non-invasive way. By using a capacitor battery, we can reduce reactive power of an inductive nature generated, for example, by a motor. Thanks to the use of modern regulators, the battery automatically regulates the power of capacitors, in order to maintain the correct cos fi.

EQUIPMENT

Enclosure

Thermosetting plastic

The housing is made of SMC plastic with IP 44 or 54. In the II protection class, with a flammability class from HB to V0, in RAL 7035 color, with the possibility of additional varnishing to provide temporary resistance to environmental effects and UV radiation.

Aluminum OU-1/OU-2 or Steel OU-1/OU-2

Housing made of aluminum sheet (joining by welding or riveting). Powder coated in any color. Dimensions adapted to the type, amount of equipment and individual customer needs. The housing has a high resistance to degradation, environmental impact and UV radiation.

The housing is made in protection class I or II. Class II protection is achieved by applying an additional insulation layer, permanently lined on the inner and outer surfaces. The thickness of the layer ensures the proper degree of insulation.

Ventilation allows constant air flow through the use of a ventilation labyrinth, while eliminating the ingress of dirt and the accumulation of water and moisture. Doors having internal hinges with anti-burglary catch and multi-point locking, basquil lock lockable with padlock or system cylinder

Mounting elements

- mounting profiles – steel, hole-punched, mounted to the housing structure.

- Mounting plate – made of plastic or galvanized steel, mounted on vertical mounting profiles made of galvanized sheet metal under the current track insulators;
- Cable holders with mounting bar;
- Masking plates – made of plastic plates or metal sheets, mounted to the housing structure.

Equipment

- Power capacitors – dry gas-filled with grading in accordance with the results, obtained from measurements or technical documentation;
- capacitor protection – fuse disconnects or individually selected circuit breakers;
- breaker – responsible for switching off all capacitors;
- automatic regulator of reactive power – such as DCRK;
- indicator lights – presence of phases, on the door of the housing;
- wiring of the set – full (DY, LgY).

Scope

- Taking measurements to determine compensation parameters;
- analysis of billing and costs created by reactive energy;
- presentation of a price and technical offer to the customer;
- installation and commissioning of batteries at the facility;
- preparation of as-built documentation;
- providing service and compensation guarantees.

Current paths

- Current paths of the supply and drain module made of copper flat bars bolted together or LgY wires with a cross-section matched to the current load.

Accessories

- plinth - made in solid or ventilated versions of any height;
- thermoset foundation – fitted to the dimensions of the thermoset housing;
- aluminum foundation FM – fitted to the dimensions of the housing, equipped with removable front and rear covers;
- FB concrete foundation – built of reinforced concrete slabs, bolted together with aluminum or thermo cladding;
- cable pocket.

COMPLIANCE WITH STANDARDS

- **PN-EN 61439-1**
  „Low-voltage switchgear and controlgear – Part 1: General provisions";
- **PN-EN 61439-5**
  "Low-voltage switchgear and controlgear – Part 5: Sets for power distribution in public networks";
- **PN-E-05163**
  "Shielded low-voltage switchgear and controlgear. Guidelines for testing under arc discharge conditions resulting from an internal short circuit";
- **PN-EN 50274**
  "Low-voltage switchgear and controlgear – Protection against electric shock – Protection against unintentional direct contact of hazardous live parts";
- **PN-EN 60529**
  „ S Degrees of protection provided by enclosures (IP Code)";
- **PN-EN 61921**
  „Energy capacitors. Low voltage capacitor banks for improving power factor";
- **PN-EN 62208**
  „Empty enclosures for low-voltage switchgear and controlgear. General requirements";
- **PN-EN 62262**
  „Degrees of protection against external mechanical impact provided by enclosures of electrical equipment (IK code) (IDT PN-EN 50102:2001)";
- **PN-EN ISO 4628**
  „Paints and varnishes – Evaluation of deterioration of coatings – Determination of the amount and extent of damage and the intensity of uniform changes in appearance – Part 6: Evaluation of the degree of chalking by the tape method";
- **PN-EN ISO 2409**
  „Paints and Varnishes – Testing by the Notch Grid Method".

RATED PARAMETERS

Voltage rating:	400 V
Rated insulation voltage:	690 V
Reactive power rating:	12,5 - 500 kVar
Stage rated power:	2,5 - 80 kVar
Rated frequency:	50 Hz
Short circuit strength:	40 kA
IP rating:	44 -55
IK degree of mechanical resistance:	10
Protection class:	I/II
Dimensions of the supply/receiving terminals:	2 x 4 x 240 mm² / 4 x 240 mm²
Network layouts:	TN-S, TN-C
Height/Width/Depth:	unlimited for enclosures aluminum enclosures in protection class I or II