Inrush Current Coils in Low-voltage Capacitors Banks

AMBER CAPACITORS LIMITED

AMBER is an ISO 9001:2015 certified company and is one of the largest capacitor producing companies in PAKISTAN. AMBER manufactures dry as well as oil type low voltage capacitor banks for power factor improvement applications since 1995. Capacitors are designed using very latest technology, require little maintenance and are easy to install. AMBER follows international standards for manufacturing and testing of capacitors. These Capacitors are type and routine tested as per IEC 60831-I & II.

For reliable and long life of capacitors, inrush current coils should be installed in series with capacitors.

Inrush current coils are a kind of inductor made up of some turns of wire to limit the inrush current.

HOW TO MAKE AIR CORE INDUCTOR COIL?
For Voltage Level between 250V to 600V.

Make a Coil of **8 Turns** with **6 inch diameter** by using a wire of **25sqm (4AWG).**

Inductance of coil can be calculated by using the following formula:

$$L_{coil} = N^2 \mu_o \mu_r \left(\frac{D}{2} \right) \left[\ln\left(\frac{8D}{d} \right) - 2 \right]$$

L_{coil} = inductance of the coil in henries (H)

N^2 = number of turns

μ_o = permeability of free space = $4\pi \times 10^{-7}$

μ_r = relative permeability

D = loop diameter

d = wire diameter

Inrush current coils (Air-core inductors) are used in series with capacitors to limit the capacitors inrush current to a value equal to or less than the capacitor switching rating of the contactor. When a discharged capacitor connects to a voltage source, a huge amount of inrush current flows which is very harmful for capacitors as well as other control equipment connected in panel.

These are made up of by winding a number of turns of connecting wire to mitigate transients and harmonic distortion in network. It must be designed in such a way to withstand fundamental and harmonic currents..

Warranty shall stand void if capacitors are found installed without inrush current coils.