

GILBERT ELECTRICAL SYSTEMS & PRODUCTS

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This is a continuation of the basic formulas. This shows the derivation of the inrush calculations from IEEE C37.99.

Capacitor Inrush Current Calculations

From IEEE C37.99-1980

Energizing An Isolated Bank:

$$I_{MAX} = \sqrt{2} * V_{LG} \sqrt{\frac{C_B}{LS}} \quad (20)$$

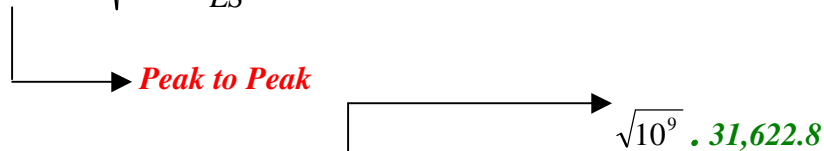
*C_B is the bank capacitance in microfarads
 LS is the system inductance in microhenries.*

As stated $KVAR = \frac{V^2 * 2\pi F * C * 10^{-6}}{1000}$ from (16)

$$C_B = \frac{KVAR * 10^9}{V^2 * (2\pi F)} \quad (21)$$

Then Substitute C_B from (20) with formula (21) we get

$$I_{MAX} = \sqrt{2} * V_{L-G} \sqrt{\frac{\left[\frac{KVAR * 10^9}{(V^2 * (2\pi F))} \right]}{LS}} \quad (22)$$



$$I_{MAX} = \sqrt{2} * V_{L-G} * \sqrt{\frac{\left(\frac{KVAR * 10^9}{(V_{L-L}^2 * (2\pi F))} \right)}{LS}} \quad (23)$$

$\sqrt{(2\pi F)} \approx 19.4163 @ 60Hz$

