Capacitor bank reactor reactance ratio

What is the reactance of a series capacitor bank?
Assuming two identical series capacitor banks are installed at the one-third and two-third of the line,which can provide 60% compensation in total. The reactance of one capacitor is -j34.96 ?. A simple example is given below to show the voltage profile along the line at the heavy load condition with and without series compensation.

Why are Series reactors used with capacitor banks?
Series reactors are used with capacitor banks for two main reasons: Control the natural frequency of the capacitor bank and system impedance to avoid resonance or to sink harmonic current. This note is based on a realistic example and discusses the effect and consequences of different types of reactor.

Why does a capacitor bank have a resistor and a reactor?
The reactor is to limit the currentsince it behaves like large impedance during abrupt current transients. The resistor is to add damping to the capacitor discharge current. After capacitor bank is bypassed,it will be brought back into service once capacitors are discharged and MOV is cooled down.

What is the detuning factor of a capacitor bank?
Since the detuning factor for the project was given as p=7%,one knows that the capacitor bank needs to be equipped with reactors. For this reason,some calculations have to be performed,in order to fit the power of the capacitors and its rated voltage taking into account reactive power of a detuning reactors.

Do automatic capacitor banks have reactor protection?
Most automatic capacitor banks employed today are provided with reactor protectionas a result of the increasing harmonic loading of the consumer installation and the power networks. Every capacitor or capacitor tap is connected in series to an inductance (reactor),in contrast to "normal" unprotected compensation.

What are the requirements for a capacitor bank?
EN 61921:2005 describes the general requirements for the capacitor bank. The most important of them are listed below: Index of protectiondepends of the place of the installation of a capacitor bank. If the capacitor bank is to be placed in the same place as the main switchgear or utility room next to it,IP 20 is enough.

Series capacitor bank is connected at the ends of or along the long EHV transmission line for the purpose of increasing power transfer capacity by compensating the line series inductance [2].

The reactor-protection factor p [%] specifies the ratio of the reactor reactance to the capacitor reactance at network frequency. p=XLx 100 / Xc. For example: p=7 %, f1 = 50 Hz. fres = 50 x (1/sqrt (0.07)) = 189Hz. One of the often-tried standard values is normally used for the choice of a suitable

reactor-protection factor for the application:

There are two purpose of series reactor used in capacitor bank for distribution level, one to control the inrush current while charging the cap-bank and second as a 5th harmonic filter(6% reactor capacity). For 66kv and above ...

To use a detuned reactor, you need to make a correct assessment of the risks of capacitor bank resonance in your installation, we recommend the following procedure: Take measurements over a significant period (minimum one week) of the voltages, currents, power factor, level of harmonics (individual and global THD-U/THD-I).

Figure 1 - Reactor-protected compensation bank of 400 kvar, 400 V, 50 Hz, 16 × 25 kvar (photo credit: Frako Kondensatoren und Anlagenbau GmbH, Germany) A compensation unit with a total of 110 kvar for instance is ...

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Reactance ratio refers to the ratio of reactance value of series reactor to capacitance reactance value of capacitor bank. Reactance rate mainly affects the tuning frequency of the system. Tuning frequency = 50Hz * sqrt (1 / reactance rate). 7% reactance tuning frequency is about 189hz, and 14% reactance tuning frequency is about 134hz. When ...

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