

HIGHER POWER FACTOR PENALTIES LOOM

If your plant or building has a poor power factor you might want to think about improving it fairly smartly: chances are good that power factor penalties will increase by as much as 400% later this year – significantly adding to energy costs and shaving your profits.

Until fairly recently lines companies have been relatively relaxed about large electricity users presenting a poor power factor – using energy inefficiently. But the economy is expanding and the country's generating capacity and transmission network is limited.

Improving energy-efficiency is infinitely more appealing – and cheaper – than building more power stations and transmission lines to absorb the electrical losses.

Users can improve their power factor by installing capacitor banks, and high penalties are an obvious incentive to invest in the technology. The step is doubly attractive because in addition to eliminating the penalty charges, power factor correction equipment offers numerous benefits to end users.

What is power factor?

All electrical networks consume two types of power: **active power** (which produces work), and **reactive power**. The latter is needed to generate magnetic fields to operate motors, though it doesn't perform any *actual* work. But you pay for both Active power (measured in kWh) and Reactive power (measured in kVAR). Together, they form Total Power (measured in kVA).

Power factor is the ratio between Working Power and Total Power. In an ideal world, that ratio would be 1 (where **ALL** the power is used to produce work). In reality, power factor varies widely depending on the size and nature of the load. Most lines companies are now demanding a ratio of at least 0.95 – with the promise of higher penalties for those not achieving it.

A glass of beer offers a useful analogy. If the beer's been poured correctly, the glass contains 90% beer and 10% froth. If the barman's ham-fisted, you'll get a glass with 60% beer and 40% froth. No prizes for guessing which you'd prefer.

The solution

Solving a troublesome power factor is relatively simple process. It sees the installation of a bank of capacitors at your site. The technology enables the lines company to see that the site is consuming lesser reactive energy and presenting the appropriate power factor level.

"Fitting a capacitor bank isn't a one-size-fits-all solution," says Adrian Duque, Schneider Electric's Product Manager. "The size of the bank is determined by a variety of factors, including the site's load and the kind of the equipment it operates.

"Yes, it requires an investment, but the return on that investment is typically around one or two years. And in addition of eliminating penalty charge, the capacitor bank offers end-users other benefits."

Benefits

"It effectively makes more power available to the end user – as much as 20% more – at no extra cost. That's good news for anyone interested in expanding operations or installing additional equipment. Where you might have been forced to install a bigger transformer or heavier cables as part of the upgrade, optimising power factor eliminates the need."

Power factor correction equipment, he adds, minimises the chance of your existing transformer being overloaded and overheating.

For more information about assessing and correcting power factor at your site, contact Adrian Duque: 09 829 0490 adrian.duque@schneider-electric.com