



Active filters and detuned power factor correction combat production downtime

Power factor correction systems are effective in reducing the reactive power of nonlinear loads. In many companies, systems of this type are continuously in operation. If the power supply is also heavily polluted by harmonics, filters are a great help. Unsatisfactory power quality, however, cannot always be attributed to clearly identifiable causes. This means that despite measures having been taken, electrical faults still occur in the machinery, greatly disrupting production. This is often caused either by power factor correction systems that are not detuned, thus making resonance occur, or by the trend to ever more electronic loads, which generate supply-side harmonics. FRAKO offers customized solutions to combat these problems, employing network analyses, detuned power factor correction systems and, when required, active or passive harmonic filters.

Initial Status



Ravago Plastics Deutschland GmbH is the German subsidiary of the Ravago group, a leading global enterprise in the polymer compounding and plastics recycling sector.

State-of-the-art manufacturing systems are installed at this company, but production came to a halt several times due to the failure of frequency converters and the soft-start relays in the

machinery drives. A network analysis carried out by FRAKO revealed an enormous resonance problem plus high levels of harmonics. The cause was a power factor correction system without detuning, in combination with electronic loads, in this case the converter electronics. A detuned power factor correction system subsequently installed by FRAKO now makes a big difference, not only eliminating resonance but also reducing the load on the transformer and the cabling by a third. In addition, the FRAKO active filter reduces the

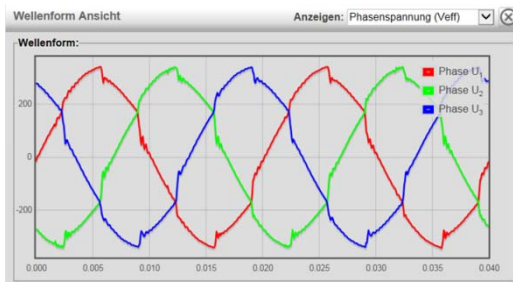
harmonics and now ensures that power quality is the best possible for uninterrupted production.

Cut the expense of reactive power and boost system performance

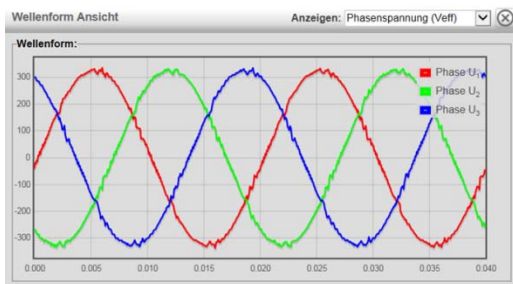
Not only do power factor correction systems reduce the burden on the supply network and the utilities budget, they also ease the load on transformers and thus release extra capacity that is most welcome should additional machinery be installed. However, only detuned systems are capable of avoiding resonance. If the network is also troubled by harmonics, appropriately dimensioned passive filters will help. They act effectively as a detuned correction system adjusted for a particular frequency. FRAKO offers customized solutions in all cases.

Active filters prevent production downtime

Switched-mode power supply units, electronic ballasts, frequency converters and other power electronic devices give rise to harmonics in power networks. These supply-side harmonics then endanger the operational reliability of machines, installations and other appliances, and can even cause total failure and a production standstill. FRAKO active filters can remedy this situation. They reduce the harmonics effectively and help to stabilize network power quality.



Voltage curve (without filter)



Voltage curve with filter



Continuous monitoring prevents unpleasant surprises

In many companies, older power factor correction systems without detuning are still in operation. Once installed, they perform their duties for years, but often without any maintenance. If defective capacitors or burnt-out contactors remain undetected, a system will become increasingly less effective. This results in heavier reactive currents, which cause unnecessary costs. However, the rude awakening does not occur until electronic loads, such as modern machine drives controlled by frequency converters, are connected to the system. To prevent this happening, it is advisable to introduce continuous monitoring of power supply quality. FRAKO offers this, together with the options of on-site and remote maintenance.

Clean networks from A to Z with FRAKO

Anyone who has already experienced the problems described above will lose no time in investing in FRAKO detuned power factor correction systems and active filters. Although the payback time for power factor correction systems is short because of the savings on reactive power costs, the installation of active filters is more expensive and their effect is not immediately obvious. However, only active filters provide the high level of security against system failure that is absolutely necessary, especially for quality-related or continuous processes. Measurements of power quality made on site form the best basis for deciding which type of system is technically the most suitable.

FRAKO offers a parameter measurement, evaluation and advisory service, together with the supply and commissioning of the appropriate power quality systems, all from a single source.

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