



Technical article

New range of static capacitor banks:

Outstanding performance affordable to all.

If you were to think about the first step to take to improve energy efficiency in your facility, one of the first, most common actions would be power factor correction. Mainly due to the new requirements and technologies that have emerged over the years, the continuous development of compensation techniques is now a reality.

The most common system, used since the beginning, was power factor correction through **contactor switching**, which is still a suitable method in facilities where the load curve is the same in all phases (**balanced system**) and **variations in consumption are not very quick** (variations greater than 20 seconds). However, over the years, as the technology has developed, with dynamic loads becoming increasingly prevalent, systems have become more unbalanced, with far quicker variations in consumption.

As a result, a new technique emerged: the use of **static contactors** (solid-state relays or thyristors) to operate the capacitors in a capacitor bank. This concept of

compensation offers us a number of significant advantages over compensation through contactor switching, including:

Advantages of the new range:

- › **Faster response speed:** using static contactors (thyristors) is the best solution for power factor correction in facilities where load variations are highly fluctuating and fast (in the order of ms). Application examples include: welding units, lifts, freight elevators, compressors, cranes, etc.
- › **No mechanical wear:** as an electromechanical component, the contactor has a limited mechanical working life, meaning that regular maintenance has to be performed to ensure the proper operation of the unit. However, using thyristors makes this unnecessary, increasing the useful life of the capacitor bank and optimising maintenance costs.
- › **Noise reduction:** using contactors requires mechanical components to be activated, which increase the noise and may become an annoyance in facilities used for services, etc. However, with thyristors, these noises disappear.
- › **Elimination of transients during connection:** by using zero switching control boards, we ensure that there are no transients when the capacitor bank is connected, thus extending its useful life and eliminating any disturbances in the electrical network.

New static compensation system

- › Faster response speed
- › No mechanical wear
- › Noise reduction
- › Elimination of transients during connection

In the early days, the high cost of this technology was a problem for companies, as investing in a static capacitor bank required extremely long repayment periods, and this cost was often difficult to justify, especially when compared to a capacitor bank with contactors.

In recent times, **CIRCUTOR**, a pioneer in the development of the technology used in static capacitor banks **for over 20 years**, has adapted the new technologies that have emerged to this compensation technique, developing a new range of static capacitor banks that are similar in price to compensation systems that use contactors in its R&D+i department, thus eliminating the cost issue involved in choosing a static capacitor bank as a compensation method.

Therefore, **CIRCUTOR** has launched a new range of static capacitor banks, **EMS-C**, **EMK**, **OPTIM FRE (with detuned filters)**, with a new compensation system with thyristor operation that is suitable for industrial applications such as arc welding, compressor start-up, cranes and hoists, and also the services sector, such as compensating lifts in communities of residents, due to its quick load input and output rate.

Thanks to the reduced costs of the new ranges of static capacitor banks and their more advanced technology, **we have made them a real, cost-effective option for any type of facility.** ▶



The change in the types of loads in facilities is making it necessary to further develop the traditional concept of power factor correction. Circutor, a pioneer in static capacitor banks, has developed the compensation system that uses thyristors, managing to bring down the cost of static capacitor banks with filters to the level of traditional compensation systems that use contactors.



The new static compensation system, suitable both for industrial applications and the services sector, such as compensating lifts in communities of residents, due to its quick load input and output rate.