

# Power Factor Cor

## + Cogeneration

### how is it done?



The installation of a **Photovoltaic System (or other cogeneration system)** undoubtedly offers a series of significant advantages to End Users, especially Industries, which will be able to independently produce part or all of their own Active Energy requirements, reducing or ceasing withdrawal from the Distribution Network.

Although Active Energy is produced "on-site", depending on the type of load, End Users will still continue to withdraw Reactive Energy from the Distribution Network and this will result in a dizzying lowering of the Cos phi.

We are referring to a case we dealt with in July 2015, where an End Customer **became subject to payment of a penalty for excessive consumption of Reactive Energy following the installation of a Photovoltaic System for its Industry.**

#### Plant data prior to the Photovoltaic system

Available Power: 600 kW  
 Consumed Power: 490 kW  
 Active Energy: 78,400 kWh/month  
 Reactive Energy: 35,280 kWh  
**Cos phi: 0.91**

#### Situation post-Photovoltaic system

##### Photovoltaic Power: 350 kW

Active Energy: 22,400 kWh  
 Reactive Energy: 35,280 kVARh  
**Cos phi: 0.53**

The Customer is taking an Active Power of about 140 kW from the network, against the 350 kW produced by the photovoltaic system.

Therefore, in relation to the consumption of Reactive Energy, the cos phi has reached such a value as to make the Customer subject to penalties.

Therefore, in order to bring the Cos phi from a value of 0.53 to a value > 0.95 on an active power of 140 kW (that taken from the network), a Reactive Power of 178 kVAR is required.

We have realized an Automatic Power Factor Correction system with 200 kVAR Power, equipped with three-phase Capacitors with Nitrogen Gas insulation and G48Filter Series Filter Reactors.