RECP Best Practice Catalogue

Installation of a compensation battery Developed within the framework of MED TEST II







SECTOR:	Food & Beverage
SUBSECTOR:	Bakery and farinaceous products
PRODUCTS	Semolina, Flour, Couscous, Pasta
CATEGORY	Process control or modification
APPLICABILITY	Utilities
COMPANY SIZE	400 employees







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Description of the	The average power factor (Cos φ) of the company during 2016 is 0.75 which is considered bad and the company still pays penalties. To avoid paying these penalties, its power factor must be improved to at least 0.89 according to the contract with the energy supplier.
problem	The total reactive energy for which the company paid penalties in 2016 is 3,285,930 kvarh, and the amount of these penalties is 11,215 €.
(Base scenario):	In addition, the reactive current causes an increase in the average current in the electrical circuits and consequently energy losses by the joule effect.
Description of the Solution	To reach a power factor of 0.89 and not to pay penalties, the company must offset a reactive energy of 3,285,930 kvarh per year, which corresponds to an average reactive power of 375 kvar. The solution is to install a 400 kvar reactive current compensation battery.







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Economic Benefits	The company will save on the penalties it pays, which is $11,215 \notin$ /year. There will be an energy savings of $105,378 \text{ KWh/year}$, which results from the reduction of joule losses by the installation, or a financial savings of $105,378$ KWh x $0.03 \notin$ /KWh = $3,255 \notin$ /year Total savings = $14,470 \notin$ /year
Environmental Benefits	An annual energy savings of more than 105 MWh: By improving the power factor, the average current goes from 1,992 A to 1,680 A. This reduction in current enables a reduction in the joule losses from this installation: $3 \times \text{Rt} \times (1,992 \times 1,992 \text{-} 1,680 \times 1,680) \times 8,760$ hours = 105,378,175 Wh = 105,378 KWh. Rt is the resistance of a transformer phase of 630 kVA (Rt = 3.5 m Ω) A reduction in GHG emissions of more than 70 tons of CO ₂ e/year: A reduction in CO ₂ e = Energy saved x Emission factor = 105,378 KWh x 0.000670 tons of CO ₂ e/KWh = 70.6 tons of CO ₂ e/year
Health and safety impact	Not relevant







The SwitchMed Programme is funded by the European Union **TEST** Training kit

Capital investments & financial indicators	Cost: 11,250 € Return on investment: 0.78 year
Suppliers	Electric automation suppliers
Other aspects	No technical barriers, no impact on product quality
Implementation	







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