

Power factor correction system

DESCRIPTION

The MAQCOS model is designed for studying and rectifying power factors. It consists of three branches:

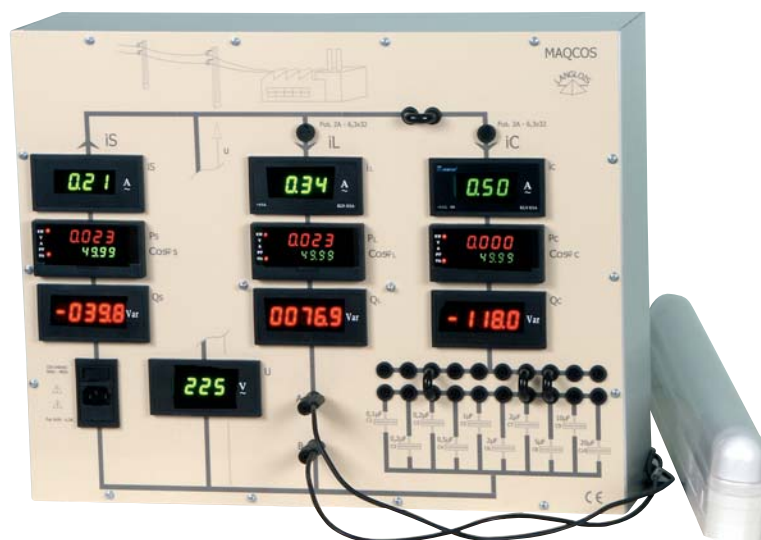
- source branch, S, representing the energy supplied by the electricity mains (Network)
- plant branch, L, symbolizing a plant's energy consumption
- plant branch, C, including the padding condensers (integrated in the model and connected using jumper wires)

Each branch is equipped with the same measuring instruments:

- ammeter
- wattmeter, measuring active energy
- Power factor meter, measuring the power factor
- varmeter, measuring reactive energy

Students are thus able to compare four electrical variables in the three branches at the same time. They will observe (surprisingly?) that the source current value in the mains network branch may be much lower than the value in the plant branches. That source reactive energy is close to zero when power factor is around 1, whereas plant reactive energy is at maximum value. The model shows the impact of a power factor regulator on the cost per kWh transmitted and the resulting electricity bill.

MAQCOS is supplied with a fluorescent tube and IPXX connection.



ref. MAQCOS

PROPOSED EXERCISES AND CORRECTIONS:

- Study an industrial lighting installation using the fluorescent tube
Current in the branches - power in the mains with and without power factor compensation - active and reactive energy in the branches - Fresnel patterns.
- Study power factor for a single-phase motor idling and loaded, with and without compensation - power in the transmission line in different cases - Fresnel pattern
- Study of pure inductance in an operating plant to determine the capacitor bank required.
- Role of automatic compensation.
- Study resonance, max/min current

TECHNICAL SPECIFICATIONS

13 displays: 3 x A, 3 x W, 3 x power factor, 3 x VAR, 1 x V

10 condensers: 0.1 μF - 41 μF

Fuse protection

Dimensions: 510 x 400 x 150 mm - Weight 6.5kg

VARIABLE INDUCTANCE OPTION



ref. PSYJR

Students have to find out the pure resistances and inductances of an installation, without interrupting its operation and with a view to deciding on the compensation condenser battery to activate, via a power factor regulator.

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