

RECP Best Practice Catalogue

*Replacement of the piston compressor
Developed within the framework of MED TEST II*



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



The SwitchMed Programme is
funded by the European Union

Best Practice - Replacement of the piston compressor

SECTOR: Food & Beverage

SUBSECTOR: Manufacture of beverages

PRODUCTS Carbonated beverages; flavoured still beverages; fruit juice beverages in PET and glass bottles

CATEGORY Process control or modification

APPLICABILITY Utilities

COMPANY SIZE 269 employees



The SwitchMed Programme is funded by the European Union

TEST Training kit

Best Practice - Replacement of the piston compressor

Description of the problem (Base scenario):

The company has 7 compressors for the production of compressed air. The air produced is stored in reservoirs that feed the various air systems. It has been found that the one piston compressor of 132 KW (maximum pressure = 40 bar/operating pressure = 15 bar) which feeds the low pressure air circuit, sits idle; it operates at a load of 34%. This idle operation leads to overconsumption of energy. In addition, this lubricated piston compressor (old generation) has oil leaks and maintenance problems.

Description of the Solution

In order to avoid idling the 132 KW piston compressor, it is recommended to replace it with a 90 KW rotary-screw compressor, with a maximum pressure of 16 bar or to put the existing rotary-screw compressor back into service, which is currently out of order.



The SwitchMed Programme is funded by the European Union

Best Practice - Replacement of the piston compressor

Economic Benefits

The annual financial gain generated is equivalent to the cost of the energy saved, which is: $183,960 \text{ KWh} \times 0.02\text{€/KWh} = 3,833 \text{ €}$

Environmental Benefits

Annual energy gain generated:
 $(132 - 90) \text{ kW} \times 365 \text{ days/year} \times 12 \text{ hours/day} = 183,960 \text{ KWh}$
The amount of CO₂ prevented per year is $183,960 \text{ KWh/year} \times 0.670 \text{ kg/KWh} = 123 \text{ tons of CO}_2/\text{year}$.

Health and safety impact

Not relevant



The SwitchMed Programme is funded by the European Union

Best Practice - Replacement of the piston compressor

Capital investments & financial indicators	Cost : n.d. Return on investment: n.d.
Suppliers	Compressors suppliers
Other aspects	No technical barriers, no impact on product quality
Implementation	



The SwitchMed Programme is funded by the European Union