



EFFICIENT AIR CONDITIONERS

Product Catalogue - 2013

Prepared by MicroEnergy International GmbH



EUROPEAN
MICROFINANCE
PLATFORM

NETWORKING WITH THE SOUTH

e-MFP ACTION GROUP
ON MICROFINANCE
AND ENVIRONMENT

Description and Working Principle

Air conditioning is the process of altering the properties (temperature and humidity) of the air towards more favorable conditions for humans; eventually providing a sense of cooling or heating. Efficient air cooling is satisfying the cooling needs of a certain space while consuming less energy than is usually needed with inefficient appliances. The medium used to transfer energy from the inside to the environment (outside) is the coolant or refrigerant.

Technical Characteristics

Size	1.00 m x 0.25 m x 0.3 m
Usual weight	7 - 8 kg
Fuel type needed	Electricity
Capacity (kW)	2.6 - 7.32
Product life time	10 - 20 years
Seasonal energy efficiency ratio	10 - 18
Coefficient of performance	2-4
Energy per year (new/old)	350/1400 kWh per year
Reduction in costs (energy)	75%

Ease of Distribution, Installation and Maintenance

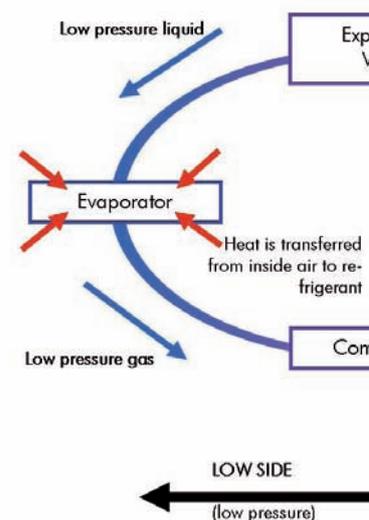
Installation must be performed by a qualified HVAC technician. The system is usually mounted inside the space to be conditioned and the condenser is mounted on the roof or a designated space outside.

Usually the AC system is well sealed; both the inner evaporator unit and the outer condenser unit should not be opened. Typical maintenance work on a regular basis includes the following tasks:

- Cleaning the dust that might accumulate over the evaporator, making sure the condensate is suitably channeled away.
- Cutting down any trees or remove any obstacles in the way of the air inflow into the condenser's fan. Protect the condenser unit with appropriate cover when it is not used.
- If cooling becomes unusual, the refrigerant may have leaked. A professional should seal leaks and recharge the system.
- Removing filters and clean them with water at the beginning of the cooling season, and regularly during the rest of the year.
- Cleaning the coils of the condenser and evaporator if not sealed, otherwise, a professional technician should fix any malfunction.

Technology Options

Energy efficient systems are commercially available in a wide range of sizes. In addition, air conditioning concepts outside conventional vapor compression are gaining more and more interest, such as evaporative cooling or absorption cooling (using heat, e.g. from the sun). However, these are not as readily available and more expensive.



Price Range

The two main price drivers are the initial costs of buying and installing the system (major companies provide the service for free, or with a professional technician for an agreed price depending on the location) and the running costs.

Type of target group	Price range
Individuals (houses)	USD \$250 - \$700
Offices - companies - factories	USD \$250 - \$1250
Operating costs (usage dependent)	USD \$500 - \$1000 per year

Type of Loan

Energy Efficient AC systems are best suited for both individual loans and commercial or industrial loans, either for replacing current non-efficient systems or installing new systems.

Economic and Social Impacts for End-users

The main benefits of energy efficient AC systems are improved energy efficiency and improved quality of life for its users. Performing tasks in an air conditioned environment increases the productivity and comfort.

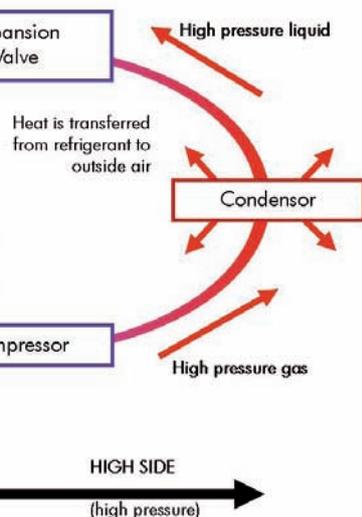
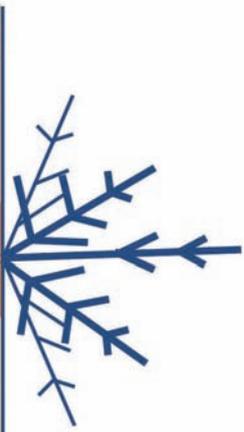
If outdated air conditioners (with low Seasonal Energy Efficiency ratings) are replaced with newer models, users would gain a considerable annual cost saving, depending on the geographical area and the types of systems. For example, a 15 year old AC replaced with a new efficient system could save up to USD \$1850 over a 5-year period, with annual operating costs of around USD \$370. This results in a payback period of around 1 - 2 years.

Benefits for the MFI

MFI's may contribute to providing efficient systems to end-users. Consumer demand is increasing, as the market is in high need for efficient technologies. Greater distribution of efficient technology helps improve communities' quality of life and reduces environmental harm.

Environmental Benefits

Replacing old systems and/or installing new energy-efficient ones can reduce greenhouse gas emissions. These new systems use the most environmentally friendly refrigerants such as R410a, instead of R12. New refrigerants are approved by environmental protection authorities and do not damage the ozone layer.



European Microfinance Platform

The European Microfinance Platform [e-MFP] was founded formally in 2006. e-MFP is a growing network of 140 organisations and individuals active in the area of microfinance. Its principal objective is to promote co-operation amongst European microfinance bodies working in developing countries, by facilitating communication and the exchange of information. It is a multi-stakeholder organisation representative of the European microfinance community. e-MFP members include banks, financial institutions, government agencies, NGOs, consultancy firms, researchers and universities.

e-MFP's vision is to become the microfinance focal point in Europe linking with the South through its members.

e-MFP Microfinance and Environment Action Group

e-MFP Action Groups facilitate synergies among e-MFP members and encourage them to implement activities together, thus contributing to the advancement of the microfinance sector.

The aim of the e-MFP Microfinance and Environment Action Group is to bring together microfinance practitioners to discuss and exchange experiences in dealing with environmental issues and to create new practical tools to advance environmental microfinance. The Action Group is also intended to act as a think tank that disseminates its results among e-MFP members and the microfinance sector at large with a view to increasing the awareness of and commitment to act on these issues. It is meant both as an internal knowledge-sharing and external awareness-raising platform that serves as a reference in the microfinance sector.

Head of the Action Group: MicroEnergy International GmbH, www.microenergy-international.com

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