Source: Thisoldhouse

ENERGY EFFICENT REFRIGERATORS

Product Catalogue - 2014

Prepared by MicroEnergy International GmbH
with the collaboration of Davide Forcella (CERMi-ULB)

EUROPEAN MICROFINANCE PLATFORM
NETWORKING WITH THE SOUTH

e-MFP ACTION GROUP
ON MICROFINANCE
AND ENVIRONMENT

Description and Working Principle

Energy efficient refrigerators provide cold storage services to users with a large reduction of energy consumption – over 50% compared to "non-efficient" refrigerators. Energy efficient refrigerators use a high performance electric compressor and are provided with enhanced insulation measures. The use of adequate insulation materials keeps the inside of the refrigerator cold for several hours, even when the electricity supply is interrupted. Refrigerating appliances can serve both the domestic and commercial sectors – including grocery shops, supermarkets, restaurants, hospitals or health institutions – with a range of sizes and cooling power to satisfy end-users needs.

Technical Characteristics

Capacity	150 – 350 litres
Fuel type needed	AC Electricity
Yearly energy consumption	60 - 220 kWh
Product life time	12 years
Coefficient of performance	~ 0.7

Ease of Distribution, Installation and Maintenance

Fridges are easy to install; usually only plugging it into the electricity socket is required. However, adequate spacing behind the fridge should be available for heat to dissipate. Energy efficient fridges have been successfully marketed and distributed, particularly in the past two decades due to legally enforced high energy efficiency standards and requirements in many countries.

New energy-efficent fridges represent a low maintenance technology. The required maintenance activities include ensuring the fridge is not overloaded (the inlets and outlets for airflow inside the fridge are not blocked) and making sure that the fridge doors are always maintained tightly closed. Frequent cleaning is recommended.

Technology Options

Cold appliances come in varying sizes and designs regarding the target sector and the application they are made for. On the one hand, domestic refrigerators can be divided in three categories;

- refrigerators, which are intended for food preservation and operate between 2-6 °C
- freezers, operating under -18 °C for storing frozen food, preserving fish and ice-making
- refrigerator-freezers which include both options

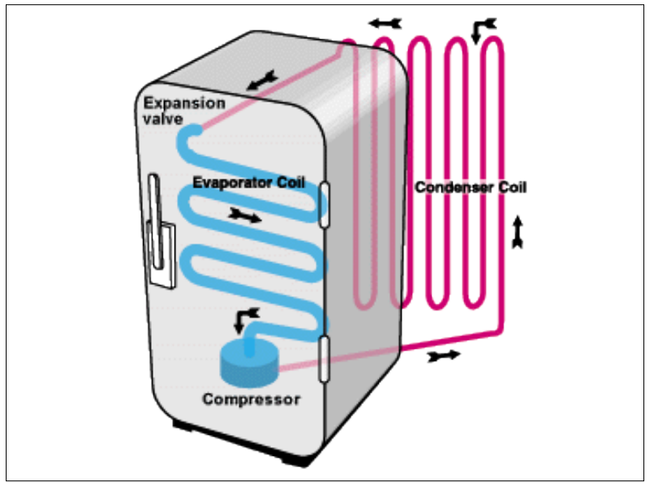
On the other hand, a wider range of models exist for commercial purposes. These can be vertical or horizontal, with or without doors, and with different opening systems to ease their use.

Source: EMT India

Price Range

The cost drivers of this type of technology are the initial investment and the operating costs. Operating costs vary largely, depending on the size of the fridge purchased, starting from USD $ 0.15 per kWh for an A-rating refrigerator.

Type of target group	Price range (USD)
Individual	USD $400 - $1500
Commercial	USD $1000 - $3000



Type of Financing

Energy-efficient refrigerators are suited for microfinancing as well as for financial microleasing. The products offer solutions for institutions or industries that want to replace their current non-efficient appliances or want to install a new refrigerator.

Economic and Social Impact for End-users

The main benefits of energy efficient refrigerators are improved energy efficiency and the improvement in users' quality of life. The needs for preserving food are satisfied and with that, health hazards at the household or commercial level are reduced. Fridges represent a value chain intervention for commodities that require cooling such as fish, meat and dairy products. Selling cold drinks is a business model worldwide.

Replacing an old fridge with an EnergyStar-rated appliance could result in energy savings of up to 70% (aprox. 700 kWh per year). For example, for a medium size household in Bangladesh, where the electricity price is around 6.5 US cents/kwh, replacing an old fridge with an energy efficient appliance results in an annual average saving of USD $45.

Benefits for the MFI

At the household level, MFIs may contribute to the acquisition of refrigerators that are desirable by the end-users for their price competitiveness, high performance and low long-term operating costs. Also, MFIs can drive financing for the commercial sector with loans for purchasing energy efficient and environmentally friendly refrigerators.

Environmental Benefits

Environment: Energy Efficient Refrigerators reduce polluting emissions. They use new refrigerants that are more environmentally friendly. They can also contribute to reduce food waste.

Climate change mitigation: If substituting an old device, it reduces greenhouse gas (GHG) emissions, or it offsets part of the GHG emission for a first refrigerator.

Climate change adaptation: Energy Efficient Refrigerators can help preserve fresh food for longer periods, and prevent the spread of diseases by creating a bacteria isolated environment.

Potential positive synergies with: mini-grids.[1]

References

- EMT India, http://www.emt-india.net/equipment_tips/HVAC_refrigeration/Heat%20Pump.htm
- Thisoldhouse, http://www.thisoldhouse.com/toh/

[1] For further information on potential synergies check the other product catalogues for EE and RE technologies

European Microfinance Platform

The European Microfinance Platform [e-MFP] was founded formally in 2006. e-MFP is a growing network of over 120 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

European Microfinance Platform
39 rue Glesener
L-1631 Luxembourg
Tel: +352 26271382
contact@e-mfp.eu
www.e-mfp.eu

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