



Lebanon Energy Efficiency & Renewable Energy Finance Facility



SUPPORTED BY Banque du Liban

Sustainable Energy Investment ➤ *Improved Business Results*

Energy Efficiency and Renewable Energy in Industrial Sectors

Globally the industrial sector is responsible for around one-quarter of total energy consumption. The industrial sector spans a wide variety of activities. While the energy saving potential in industrial application regularly exceeds 30% (except for very modern production plants), finding the most efficient solutions for reducing energy consumption is often a complex task.

LEEREFF offers loans for standard technologies and for non-standard projects. Both approaches can be applied in industrial energy efficiency projects:

Standard Technologies: LEEREFF has developed a list of standard technologies, which includes pre-approved devices, such as compressors, lighting, motors, Solar PV, etc. For simple energy efficiency improvements in production facilities, the list offers a wide variety of solutions.

Non-standard projects: Industrial complexes often require improvements in their production facilities. While machine replacements can produce substantial energy savings, it is advisable to combine these (often high) investments with a more complex review of energy saving potential throughout the process. For example, consider a new machine being connected by conveyors with other process steps. Are the conveyors equipped with the most efficient motors and/or are the motors fitted with variable speed drives, which can easily produce energy savings in excess of 50%? For non-standard projects, you can get free technical advice from the LEEREFF team of engineers.

As a general note, access to energy is the life-blood of all manufacturing industries, but energy is often in short supply in Lebanon.



Consider making your own energy: factories generally have large roofs. These can be perfect for rooftop solar PV installations. Why not replace part of the energy purchased off the grid by solar energy produced on your roof? The benefits include cost savings AND improve your security of energy supply.

Also see our sector flyers for Food & Beverage Production and Textiles.

OVERVIEW OF EXAMPLES FOR ENERGY SAVING AND RENEWABLE ENERGY INVESTMENTS IN THE INDUSTRIAL SECTOR

MAIN ENERGY CONSUMERS ACROSS ALL INDUSTRIES

- **Electrical energy:**
 - Compressors
 - Pumps
 - Motors
 - Fans
 - Lighting, cooling & refrigeration
- **Gas and fuel oils:**
 - HVAC
 - Furnaces & kilns
 - Steam & Heat

MAIN ENERGY EFFICIENCY MEASURES

- Efficient Manufacturing / process equipment
- Efficient models and variable speed drives for motors, fans and pumps
- Compressor replacement
- Efficient boilers
- Combined Heat & Power (CHP) or Tri-generation
- Heat recovery systems

MINI CASE – FURNITURE



A manufacturer of high quality chairs and tables invested in an air compressor, efficient power staple guns, finishing spray guns and a programmable thermostat

and benefited from a 58.8% reduction in the consumption of natural gas, electricity.

**LEEREFF OFFERS
LOW INTEREST LOANS
& FREE TECHNICAL SUPPORT**

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MINI CASE - PHARMACEUTICALS



A pharmaceutical production company aimed to reduce the energy consumption in the warehouse and production buildings without compromising on product quality. The focus of the initial assessment was on the energy performance of the pharmaceutical HVAC systems. The agreed projects were implemented in order to reduce energy consumption, whilst maintaining quality, safety and regulatory requirements. The projects consisted of replacement and optimization of fans and fan controls in AHUs of the warehouses and installation of temperature demand controlled ventilation for the production area, producing energy savings of 2.5 MWH/a and 1,950 MWH/a respectively.

- Energy efficient lighting
- Energy management systems
- Solar PV (factory roofs are large!!)
- Solar hot water

MAIN ENERGY EFFICIENCY MEASURES IN FACTORY AND ADMINISTRATIVE BUILDINGS

- Building insulation
- Energy efficient windows
- LED lighting inside administrative buildings and in parking lots
- HVAC
- Office equipment

MINI CASE – PRINTING



A printing company with the capacity to produce 8,000 square meters of printed materials undertook a simple energy audit to improve its energy consumption. Resulting

from the consultants' recommendations, the company made the following improvements:

- Compressed Air – installed a properly sized air compressor, delivering the required 6 bar instead of 10, saving approximately 23 % of energy
- Installed LED lighting throughout ad saved more than 60% on lighting energy
- Replacement of HVAC system reduced system related energy consumption by 30%

MINI CASE – METAL PROCESSING



A large metal processing company with the production capacity of three thousand reinforced concrete units per month invested in optimizing the energy efficiency

of its plant. The project consisted of installation of new press scissors to reduce operational costs and energy consumption in the melting furnaces, decentralization of compressed air system, heat recovery and automatic control systems. The investment resulted in annual energy savings of 30,000 MWh per year and also reduced production wastes and operation time.





WHAT IS LEEREFF?

LEEREFF stands for 'Lebanon Energy Efficiency & Renewable Energy Finance Facility'. LEEREFF is a dedicated credit line for companies who wish to invest in sustainable energy including:

- Renewable energy
- Energy Efficiency in industry and commerce
- Green Buildings (Commercial)

LEEREFF offers investment support through loans from The European Investment Bank (EIB) and Agence Française de Développement (AFD), with interest rate subsidies provided by the Banque du Liban (BDL), and free technical assistance provided by an international team of engineers, financed by the EU.

Please visit our website to find out how you can benefit from and apply for a LEEREFF loan: www.leereff.com



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