



OPTIMAGRID

ENERGY SAVING GUIDE IN INDUSTRIAL AREAS

April 2013

Product coordinated by San Vicente del Raspeig



CONTENT	Page
1. Introduction.....	2
1.1. Good Practices in water	5
1.2. Good Practices in purchases.....	6
1.3. Good Practices in processes and storage	8
1.4. Good Practices in maintenance and cleaning	9
1.5. Good Practices in transport	10
1.6. Good Practices for workers.....	11
1.7. Good Practices with clients	¡Error! Marcador no definido.
2. Industrial solutions.....	14
2.1. Tips on thermal conditioning.....	15
2.1.1. Insulation, building protection and equipments	15
2.1.2. Heating system	16
2.1.3. Cooling system (air conditioning)	16
2.1.4. Absorption refrigeration	16
2.2. Tips on lighting.....	18
2.2.1. Energy efficiency in industrial lighting	18
2.2.2. Industrial lighting design	20
2.2.3. Types of lighting.....	20
2.3. Tips on equipment and machinery.....	21
2.3.1. High efficiency engines.....	21
2.3.2. Regulation of engines.....	21
2.3.3. Boliers	22
2.3.4. Compressors.....	22
2.3.5. Furnaces and dryers	23
2.3.6. Cold-stores	23
2.3.7. Tips on office software equipment	23
2.3.8. Tips on compressed air	24
2.3.9. Tips on ventilation.....	26
3. Financing.....	27
3.1. Financing sources for the incorporation of results.....	28
3.1.1. European programs.....	28
3.1.2. European Investment Bank.....	64
3.1.3. National and regional aids.....	70
3.2. Experiences in the frame of the European Union: good practices of European Projects.....	81
4. Links and contacts.....	101

OPTIMAGRID

ENERGY SAVING GUIDE IN INDUSTRIAL AREAS

1. Introduction

Generally, industries can **optimize their resources and energies** through the following actions:

1. Reducing consumption of raw materials, water and energy.
2. Increasing the process control to minimize waste, emissions, discharges and production rejects.
3. Optimizing process conditions: flow, temperature, pressure, time, residence time, etc.
4. Performing preventive maintenance to avoid spills, leaks and accidents.
5. Standardizing at maximum the variety of materials.
6. Eliminating or reducing the use of substances or materials with toxic or dangerous characteristics in the final product or during the manufacture.
7. Reducing noise during the manufacture.
8. Increasing the use of recyclable substances.
9. Improving the ease of assembly and disassembly.
10. Ensuring the product characteristics are the least dangerous possible.
11. Using less material in the product presentation.
12. Negotiating with the supplier the acceptance of surplus material.
13. Using reusable packages.
14. Optimizing space in consignments and making the most of the return transportation.

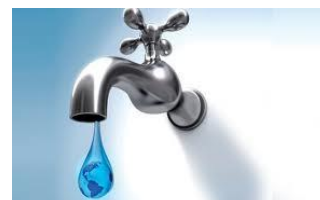
In many of the above cases, the decision to implement them is not linked to the generated energy saving, but fall more on issues related to the **productivity or quality of the product**. It can be and in fact it becomes a key factor in making an investment decision. Issues such as energy costs, fuel availability, other environmental issues, etc. are characteristics of each country or region and in many cases are also conditioned by particular regulations in which little or nothing can be influenced.

It is in the application of horizontal technology where the involvement of external experts can provide **solutions and novel and interesting applications**, with enough impact in reducing energy costs incurred in its implementation, making it truly competitive.

- The use of alternative fuels in boilers, combustion control, economizers, waste heat recovery, steam systems, cogeneration systems (gas turbine, steam turbine and reciprocating engine combined cycle), etc.
- Factory auxiliary networks, compressed air and water.
- Efficient use of electric power, variable speed drives, starters, power factor, motor sizing, transformers, lighting.

- Predictive maintenance based on novel techniques: vibration analysis, thermography, etc.

1.1. Good practices in water

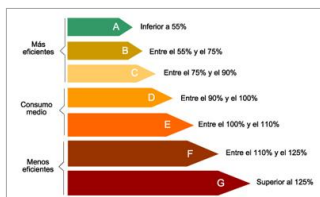


Water is life and is one of the essential resources for the development and maintenance of most activities; even though, it is one of the most impacted resources. It is important to **manage properly natural resources** by forgetting the idea that these are unlimited; the future of many business activities, regardless of the sector referred: agriculture, livestock, industrial, construction or services of any kind, rely on natural resources and the ability of many of them to regenerate.

Very simple practices can be applied:

- Conducting an **audit to determine water consumption**, to identify gaps in the system and to determine how and where you can save on production processes, while taking into account the amount of water used in cleaning the premises, in toilets, toilet sinks and showers.
- Performing **preventive maintenance** with pipes, valves and tanks periodic inspections in order to detect leaks and excessive consumption.
- Installing flow meters, **counters**, in order to apply minimization programs of flow rates reduction in processes with greater consumption.
- Installing **flow reduction systems** in tanks and toilet sinks.
- Examining **wastewater discharge systems**, in sanitary water, sewage, and industrial discharges.
- Performing minimization programs, in order not only to reduce consumed flows and therefore discharges, but also achieving that these flows take the **lowest possible contaminant load**. This affects the water bill and the sanitation tax, with significant savings.

1.2. Good practices in purchases



The purchase area defines the environmental performance of the company, depending on its behaviour, different impacts will be produced on the environment. It is imperative that the supply, no matter the magnitude, is as accurate as possible for the company to maintain a **positive commitment to sustainable development**.

RAW MATERIALS

The raw materials from which a business depends on, define the business model and the implementation of a set of good practices respecting the environment benefit not only the environment, but the economy and the good business performance.

- Applying the criterion of **rationality** when making any purchase, avoiding an over purchase of materials favouring their expiration or obsolescence and them to become waste.
- Implementing a set of guidelines with regards to the **quality of products** to buy, avoiding faulty materials, with a date about to expire or inappropriate.
- Considering a range of **environmental criteria** when buying raw materials, as the possibility of recycling, recovery, less packaging, low energy consumption, less water requirement to the mix, ease of cleaning, proximity of supply, longer duration, etc.
- Coordinating with other areas of the company in order to **replace hazardous products** by others less dangerous or not dangerous at all. In case dangerousness could not be reduced, it must be ensured that the product comes with the International Chemical Safety Card or with the safety sheet and that it reaches adequately to the worker who will operate the dangerous material, being trained to that purpose, in order to prevent damage to the worker and to the environment in case of a spill, leak or accident.
- Entering ecological criteria also in offices, buying recycled or organic paper, using double-sided paper, using up the ink from pens to finish,

evaluating the amount of paper used in instruction booklets, in the propaganda, in internal communications, promoting the use of e-mail, for which is very useful to perform an audit of internal consumption.

- Choosing **products with European Ecolabel**, or AENOR Environment, since they are certified products that promote sustainability or products that are environmentally friendly.

PACKAGING

Packaging causes large impacts due to the volume they mean of the total product they come with. In many cases, the **proper management of packaging** depends on the capacity to negotiate of the managers in charge of purchases.

- Promoting the use of packaging made from recycled or recyclable materials.
- Negotiating with the supplier the return of the packages for their reuse, as well as the provision of greater volume packages preventing the accumulation of small containers for their return.
- Avoiding purchasing raw materials and products carrying an excess of packaging, and promoting the supply of raw materials in bulk, reducing generated waste.
- Avoiding diversifying the types of packages plastic, through a better knowledge of their composition, supporting a selective collection which in turn promotes recycling.

EQUIPMENTS

No matter how small the equipment is: a jackhammer, a chainsaw, a computer or a coffee machine, the **criterion of greater efficiency** and higher quality should be applied, both for the work to be performed, the worker and the environment. There are good practices that can help to make a better choice.

- Acquiring equipments that consume less power, less fuel and fewer natural resources, that do not pollute the water and air, that require less maintenance, produce less waste, make low-noise, in short, that are more environment-friendly.
- Choosing computer monitors with a label that identifies them by their low energy consumption.

1.3. Good practices in processes and storage



Optimizing industrial processes, procedures and working methods, organize properly the storage of raw materials, products and supplies, reduce waste of resources, time and energy, avoiding the generation of waste, effluents and emissions, minimizing risks, both for health and for the environment. Some good practices can be applied to avoid negative impacts.

- Performing **preventive maintenance of production processes** in order to reduce the loss of materials, products and energy leaks and / or spills and stops.
- Reviewing the organization of production to reduce the need to clean the equipment, and the generation of waste and effluents.
- Locating work equipment, machines, tools in a way to minimize discharges, losses and pollution during transportation of parts and materials.
- Using drip pans and splash guards.
- Implementing a **security protocol** in the loading, unloading and transfer of materials, since these tasks involve a risk of spills and leaks.
- Checking the good condition of the packages containing products, whether they are solid or liquid, and its enclosure, to avoid unnecessary spillage of materials.
- Labelling all products that will be handled and stored. In the case of hazardous materials and products, you have to be very strict with its labelling and storage, controlled by a person suitably trained, providing space between the drums for inspection and a list of these products should be placed in a visible place in the store.
- Not opening a new package until the already opened ones are not completely emptied.
- Keeping packages and unused containers covered or closed.
- Keeping in **perfect state the storage areas** so that the materials are not left out in the open, exposed to inclement weather, extreme temperatures, favouring their spoilage and unnecessary waste generation.

- Installing in storage tanks overflow alarm systems in order to prevent excessive of storage and products spillage.
- Drawing up a **contingency plan** in anticipation of a major accident, in order to minimize emissions and discharges that may result.

1.4. Good practices in maintenance and cleaning



Good practices in maintenance operations avoid unnecessary spills, power leakage and dust emissions into the atmosphere; incidents which can become accidents with its own risk. Moreover, implementing good environmental practices when performing cleaning operations helps also minimize, quantitatively and qualitatively, the generation of wastes and discharges. Some actions in this regard:

- Using drip pans and splash guards when performing any maintenance that may cause product spillage.
- Writing maintenance protocols for acting with hazardous products and mixtures, avoiding unnecessary waste generation that has to be managed by the company, with the consequent additional cost.
- **Training adequately the maintenance staff** in relation to all machines, tools and equipment they have to work with. In the same way, being trained on the segregation of waste and the discharge of pollutants.
- Cleaning equipment with sprays based systems, compressed air or high pressure water. The cleaning should be done **immediately** after using the equipment, machine or tool, in order to prevent that dirt dries up and more aggressive methods need to be applied (such as immersion in solvents during a long time) generating more waste and more dangerous waste. Discharges into drains should be avoided.
- Introducing in worksheets the instructions on the proper order of the job, the **decrease in dirt and waste generation**, optimization of materials, in order to reduce the cleaning operation as much as possible.
- Conducting special training for cleaning staff so they know the products they handle, the interpretation of the tags, the possibilities of mixing

different products, the substitution of dangerous products by products that are not dangerous.

- Using the smaller amounts recommended by the manufacturer of the cleaning products, in order to consume as little as possible and minimize pollution discharges that occur from their use.
- Raising awareness among cleaning workers to minimize water consumption in their normal duties, and the possible introduction of systems for cleaning industrial facilities, as sweepers.

1.5. Good practices in transport



Transport is one of the activities that contribute the most to the greenhouse effect, both as a secondary activity of the company or as a main activity, mainly through gaseous pollutants generated in the engines when burning fossil fuels. Applying good practices can significantly reduce these effects.

- Performing **preventive maintenance of the company vehicles**, both single vehicles (cars, motorcycles, willbarrows) and high capacity vehicles (trucks, buses). Using good quality lubricating oils favouring a better vehicle performance, lower power consumption and longer life of the engines; keep clean filters avoiding clogging; meet revision deadlines and other systems indicated by the manufacturer.
- Performing maintenance of vehicles in prepared and authorised places, in order that the oils and other fluids and wastes are collected and properly managed.
- **Studying the routes** of vehicles in order to optimize the itineraries, avoiding unnecessary travels, with consequent savings in time and fuel. Conducting a prior logistic study is very important.
- **Training drivers properly** to perform saving driving, maximizing the energy use: avoid downing the windows, especially at high speeds as it "slows" the vehicle; graduate the air conditioning to a comfortable temperature of 24-25 °C; the strong breakings and accelerations must also be avoided because they involve unnecessary power loss; controlling

- speed can mean a considerable save of 20% when driving from 120 km/hr. to 90 km/hr.
- Encouraging mobility of workers to their workplace without using private vehicles, offering a company shuttle bus, an industrial park bus or through car sharing.
 - Carrying the loads in closed trucks or covered with an awning, to avoid losing the load. In the same way, the load should be well distributed inside the vehicle, thereby avoiding spills and leaks.
 - Following the **Transport Regulation** on dangerous substances by road avoiding unnecessary accidents, spills or hazardous spills to the environment.
 - Managing properly the vehicle batteries through authorized managers, ensuring a proper control of hazardous waste.
 - Using long duration tyres, which simultaneously perform a lesser friction with the road saving fuel up to 5%. Having tyres in adequate state of pressure and balance, avoiding accidents, a high consumption and its rapid deterioration.
 - Placing tyres in authorized garages or places where they will be recycled. The **tyre recycling** allows producing anti-noise screens, landscape gardening materials, basic materials for children's playgrounds, insulations, conveyors, among many other products.

1.6. Good practices for workers



Workers are the most active agents in the implementation of good practices, since most of the times they are the first to detect the need for a shift towards a **more respectful attitude** to the environment. It is important to use the experience that workers have to the implementation of good practices.

- **Appropriate training** for all workers, both individually in their jobs and in terms of the tasks assigned, and globally in relation to their attitude to any environmental practice applied in the workplace.
- Installing a **suggestion box** to collect all those ideas that workers have to improve processes, work procedures, behaviours and involving saving,

- pollution reduction, etc. Do not forget that the experience of workers is the best value that companies have.
- Raising awareness to all workers of the need to engage themselves in the practices of **rational use** of water, paper, energy, vehicles, as minimization practices in the use of natural resources.
 - Encouraging all workers to get used to read work orders as well as asking any doubts they could have, especially if they have to do with the application of dangerous products, mixing, storage, segregation of waste, its management. All this will prevent accidents and related costs.
 - Conducting regular meetings with team leaders on the status of the implementation of good practices will encourage the identification and **evaluation of indicators**.
 - Encouraging employee participation in environmental management issues of the company through the Delegates of Environment (or Safety Delegates), as representatives and spokespersons of workers.
 - Negotiating the creation of an Environment Committee, with the company and workers involvement, where to discuss **good environmental practices** and their application with the collaboration of all parties.

1.7. Good practices with clients



Customers are the latest recipients of business activities. Communicating that a company carries out their activities with the least environmental impact is a value that puts the company in a better position in relation with its competitors in terms of quality, image, respect for the environment and sustainability.

- Encouraging the **information to clients and users**, promoting their collaboration in achieving the objectives set. The company catalogues and brochures should gather information about the associated symbols with products that respect the environment (eco-labels, energy efficiency, recyclable symbols, green point or fair trade).

- Communicating to employees that customers are aware of the fact that the company applies best practices, encouraging their greater involvement.
- Not performing false **advertising** on the respect for the environment, presenting objectives and outcomes and benefits on the environment, health and natural resources. This advertising can be made within the company's own facilities (posters, flyers, stickers).
- Giving customers the opportunity to collaborate with the maintenance and conservation of the environment, so that when using the company facilities that provide the service, they could collaborate in waste minimization tasks.
- Locating a suggestion box in a visible place so that customers and users can make their contributions to improve the environmental performance of the company.
- Properly labelling products with enough information to make customers aware of the expiration dates, avoiding unnecessary generation of waste.
- Informing users of preventive maintenance periods in order that they make good use of the products and it causes the least number of breakdowns, leaks, spills, waste or emissions.

OTIMAGRID

ENERGY SAVING GUIDE IN INDUSTRIAL AREAS

2. Industrial Solutions

2.1. Tips on thermal conditioning



2.1.1. Insulation, building protection and equipments

- A good insulation both in walls and ceilings and floors is necessary.
- Use of protections to reduce the amount of sunshine in summer.
- Adequate access to the necessary dimensions, adjusting doors and windows.
- Ensure seal closures.
- A right HVAC management to have centralized equipments with centralized programs to turn on and off according to the plans and / or production schedules and staff presence. Ideally, the temperature should be set from this point of view. Preventing the proliferation of individual air conditioning equipments.
- Searching a plant design where the most sensitive points to temperature are located in the north face, as compressor rooms, data processing centres, etc.
- Placing fast double doors at the plant exits in order to ensure that no wheelbarrow traffic changes climate conditions. Air curtains are also effective, although these have an additional consumption.
- Having prefabricated insulated panels available for walls and floors.
- Install variable speed drives on fans.
- Using roof ventilators as an alternative to hot air mass extraction with forced ventilation. Windows inserted in the roof with opening command for air or smoke vent. It is necessary to ensure air inlets from ground level. It is not very effective when there are low external air currents ("calm days") but it is very effective to vent in case of fire, being a legal requirement in terms of the fire load in buildings. This does not solve HVAC in winter.

2.1.2. Heating system

- Taking advantage of natural light can save in lighting and is a free heat source during the winter.
- Establishing comfort temperatures adjusted to the needs; in winter it would be enough with 20/21 °C for a small workplace and 21/22 °C for an office.
- Checking the insulation and resetting the defective insulation points in both building systems and boilers and tanks.
- Insulating pipes carrying heater fluid.

2.1.3. Cooling System (air conditioning)

- Setting comfort temperatures adjusted to the needs; in summer it would be enough with 26/27 ° C for a small workplace and 24/25 ° C for an office.
- Trying to distribute properly the cold, avoiding very cold or hot air currents.
- Cleaning and periodically reviewing the air conditioning system (every 2 or 3 months) could result in energy used for air conditioning savings between 3% and 10%.
- At night, using outside air to heat.
- Installing outdoor awnings to avoid direct sunlight in the summer sun.
- Installing or relocating the capacitor to a cooler, better ventilated place, where the sun does not shine.

2.1.4. Absorption refrigeration

- **Compressor equipments** are the most conventional cooling method. Through mechanical energy a refrigerant gas is compressed. When condensing this gas, it emits the latent heat that, before, through evaporation, has absorbed the same refrigerant at a lower level of temperature. To maintain this cycle, mechanical energy is employed, usually by electrical energy. Depending on the electricity costs, this refrigeration process is very costly. Moreover, taking into account the efficiency of thermal electric plants, only a third of the primary energy is used in the process. Furthermore, the refrigerants employed nowadays belong to the fluorochlorocarbons, which, on the one hand, damage

the ozone layer and, on the other hand, contribute to the greenhouse effect.

- An alternative cooling method is by **absorption equipment**. In these systems the energy supplied is, firstly, thermal energy. The refrigerant is not mechanically compressed, but absorbed by a solvent liquid in an exothermic process and transferred to a higher pressure level by a simple pump. The energy required to increase the liquid pressure by a pump is negligible compared to the energy required to compress a gas in a compressor. At a higher pressure, the evaporated refrigerant is desorbed from the liquid solvent in an endothermic process, that is, by heat. From this point, the cooling process is equal to that of a compression refrigeration system. Therefore, the absorption and desorption system is also called "thermal compressor".
- Absorption refrigeration systems distinguish between two circuits, the **refrigerant circuit** between thermal compressor, condenser and evaporator, and the **solvent circuit** between the absorber and the stripper. A remarkable advantage of absorption systems is that the refrigerant is not a fluorocarbon. The mixture of refrigerant and solvent in air conditioning applications and for temperatures greater than 0 °C is water and lithium bromide (LiBr). In applications for temperatures down to -60 °C is ammonia (NH₃) and water. To date, no other appropriate mixtures have been found for these applications, although absorption systems are being developed, in which the refrigerant is absorbed in solid matrices of zeolites.

Advantages and disadvantages of absorbing substances		
	Advantages	Disadvantages
Water / lithium bromide (LiBr):	The cooling water has a high heat capacity. The lithium bromide solution is not volatile. The substances are not toxic or flammable.	The system cannot cool at temperatures below the freezing point of water. The lithium bromide is solvent in water in a limited way. It demands a high waterproof system.
Ammonia (NH₃) / Water	The ammonia refrigerant has a high	Very high coolant pressure (thicker pipes),

	heat capacity, application of very low temperatures, down to -60 °C, very good properties of heat and mass transfer.	solvent volatility (requires a correction), ammonia toxicity.
--	---	---

2.2. Tips on lighting



2.2.1. Energy efficiency in industrial lighting

In the economic sectors of industry and services, lighting accounts for more than 5% of the energy consumption. In offices and retail sector, the relationship is even greater. In large industrial enterprises, the cost of energy devoted to lighting may be higher or lower depending on the type of production and its energy intensity. In all sectors, it is required a **verification of the energy efficiency** of lighting installations, because in most cases there is a potential for optimization.

The method for analyzing the possibilities of an increase in lighting efficiency is based on **valid processing ways** for crosscutting technologies:

- Avoiding the use of unnecessary lighting (too strong lighting).
- Reducing the use of the required energy (better light reflection).
- Improving the efficiency level of the system (good regulation).
- Using existing energy flows (natural light).

The potential for a reduction in energy consumption can be attributed to the phases of imported energy, useful energy and end use. To check if established electricity consumption can be reduced, it is necessary to **check the actual energy demand**. Next, it should be checked if the installed lighting power corresponds with the necessary lighting or whether, on the contrary, it is oversized. The next step is to check if the lighting reflection caused by dirty

reflectors could be reduced, contributing to a decline in electricity demand as fewer luminaries could be used. Finally, energy consumption can be reduced by **low-demand efficient technology** of electricity to produce the same lighting level (for example the power consumed by a lamp to change its conventional ignition system for electronic ballast can be reduced).

A lamp **regulation and control system** allows lighting demand to suit spatially and temporally the needs. This will prevent lighting in unnecessary areas or when no one is present.

Lamps transform electricity into heat (loss) and into visible radiation (light). The light output is a measure for evaluating the lamp efficiency and it is measured in lumens/watt (lm/W). Most of the energy consumed by a lamp is transformed into heat but while incandescent lamps this performance does not exceed 5% in the case of fluorescent lamps the performance is about 25%.

When making the decision about the most efficient lamp type for each type of business, it should be considered, in addition to the requirements in the type of use, the colour reproduction, the acquisition price and the different types of lamps on the market and its effect on the electricity consumption.

BRIEF LIGHTING TIPS

- The lighting level is determined according to the working activity developed in each unit.
- Take advantage, whenever it is possible, of natural light, whilst ensuring that this does not cause glare at work, except for delineation or cad work.
- Replace traditional fluorescent tubes for high-performance ones, a 10% greater light output with lower power and longer life will be achieved.
- Discharged lamps starting systems must be electronic for lower consumption.
- Use, whenever possible, motion detectors or timers in toilets, individual offices, interior warehouses or hallways with little presence.
- When replacing lamps, luminaries and auxiliary systems, it is advisable that they are from the **same manufacturer or have similar characteristics**. Buying cheaper equipment is not always a good solution for saving.
- A lamp and luminaries cleaning should be scheduled twice a year; this involves 20% reduction in consumption by having to install fewer lamps.

2.2.2. Industrial lighting design

- There is a relationship between the professional products quality and the production facilities quality.
- Experience shows that good lighting in factories and workplace is a very effective way to increase both productivity and quality.
- Good lighting enhances comfort and worker safety, reduces the level of errors and encourages staff to improve their performance.
- In this sense, the lamp and lighting design choice is relevant.

2.2.3. Types of lighting

A. **General lighting**.- Provides uniform lighting level in the entire area of the industrial unit. It is determined mainly by the height available for lighting installation:

- Low height areas (up to approx. 7 m): fluorescent tube is usually selected.
- Average height areas (approx. 7-12 m): tubular fluorescent or high intensity discharged lamps of unusual sources.
- High height areas (above 12 m): isolated light.

B. **Localized lighting**.- Provides specific light levels in the workplace.

SEVEN KEY POINTS FOR GOOD INDUSTRIAL LIGHTING

- ENOUGH LIGHT, having adequate levels of light, depending on the nature of the visual task. The need for lighting is greater to lower the probability of error, for security reasons, depending on the age of the worker.
- HOMOGENEOUS LIGHTING, general lighting with a high degree of homogeneity guarantees total freedom when placing machinery and work benches. (200 lux at any point).
- GOOD VERTICAL LIGHTING, in certain jobs the visual task is located in the vertical level. In these cases, in-ceiling lighting offering an asymmetric distribution of light should be used.

- LIGHT SOURCES WELL OUTER SCREENED, they are essential in workplaces where the setting up space is at a low height, mainly because the light sources are relatively bright and produce a high flux in all directions. Grids provide outer screening in the critical direction.
- HOMOGENEOUS BALANCE SHINE, uniform lighting helps to create a sense of comfort.
- NICE LIGHT COLOR, a source with a nice colour appearance and a good colour performance is necessary.
- LOW MAINTENANCE COST, it is as important as modern machinery and a motivated workforce. Installing a good and efficient lighting will generate lower energy and maintenance costs.

2.3. Tips on equipment and machinery



2.3.1. High efficiency engines

Replacing conventional motors by high efficiency motors represents:

- Low consumption at equal loading.
- More reliable and lower losses.
- More expensive, but considerably higher performance.
- Amortization in approximately 2.5 years.

2.3.2. Regulation of engines

- Performing proper maintenance and cleaning.
- Using a programmed sequence start.
- Reducing up to 50% the motors' consumption will minimize losses in the facility.
- Increasing motor life and facilities.

2.3.3. Boilers

- Not spoiling energy through the chimney. Gases heat recovery.
- Harnessing gas energy. Pre-heaters and economizers.
- Setting the air/ fuel mixture. Optimum combustion.
- Other losses:
 - Walls: reviewing refractories and insulation.
 - Purges: improving the quality of feed water and sensible heat recovery.
- Regulating, checking and cleaning the components of the boiler.
- Making the most of the used fuel and considering other ones.
- Using it at full load, if not, use several boilers.
- Using better constant performance boilers at steady state.
- Optimizing fluid transport.

2.3.4. Compressors

- Recovering heat from the refrigerant used by the compressor (air, water, oil) and using it to heat air or water through a heat exchanger.
- Locating the compressor as near as possible to the higher demand point, the length decrease of the distribution network decreases the capital and the operation costs.
- Using compressing air in several stages.
- Avoiding compressor operation in vacuum, it is better using two compressed air equipments only in cases of peak demand; **avoiding the over sizing** of a single equipment can consume up to 75% energy required to operate at full load.
- Taking the intake air from outside because its temperature is lower, for every 4 °C increase in the admission, the energy consumption increases 1%.
- Pre-cooling air compressor improves its efficiency, usually it is performed by cooling and it is obtained at -25 °C. Savings in energy consumption up to 30%.
- Maintenance, according to the manufacturer's instructions not only preserves the performance of the equipment but also the **optimum thermal efficiency**.
- Using a control system (by modulation, by loading, automatic dual, microprocessor, etc.) Adjusting the compressor operation to the production needs.
- **Avoiding losses** in the distribution grids of compressed air.

- Studying the use of air dryers, after the compressor and before its distribution. A temperature rise of 40 °C as recommended by the manufacturers.

2.3.5 Furnaces and dryers

- Harnessing the gas heat. Recovering waste heat.
- Proper insulation.
- Analyzing the possibility of **fuel substitution**.
- Saturating flue gas saturated to the maximum avoids condensation.
- Air excess between 10% and 20%.
- Wet flue gas partial recirculation.
- Studying the most appropriate **grain size measurement of the product**. The finer, the better it dries.
- Drying the product in the dryer the minimum, before introducing it through natural air streams or forced atmospheric air.
- Considering the storage humidity.

2.3.6. Cold-stores

- Adjusting the temperature to the product and the preservation time.
- Keeping elements of control and regulation in good condition.
- Installing a timer switch for inside lighting.
- Keeping the doors closed, if not, flexible curtains.
- Good insulation, hermetic sealing.
- Making refrigerators independent from heated premises.
- Attaching all chambers decreases the outer contact surface.
- Protecting the refrigerator enclosure from solar radiation.
- Seizing the installation to the needs.

2.3.7. Tips on office software equipment

- Turning off the computer when not using it for more than one hour.
- Configuring the mode "energy saving", this enables the computer idle status or low consumption. This solution allows consuming up to 60% less power.
- When acquiring a new computer, making sure it has the "energy star" label (**mandatory labelling for energy efficient office computer systems**),

or other accepted energy labels such as: German blue angel, Swiss energy 2000, Nordic White Swan and TCO '99.

- When buying a new printer or copier, demanding the "energy saving" mode.
- Both the copier and printer must be turned off at night and on weekends, this operation involves little time and yet the savings can be significant.

2.3.8 Tips on compressed air

Compressed air is used by a large number of companies because it improves productivity by automating and accelerating production. However, few companies consider the high cost of its production. To reduce it, a series of routines can be performed to improve the efficiency of the compressed air system and thereby obtain significant savings:

Leaks account for over 40% of the losses. It is therefore essential to establish a **system to detect leaks**, so that they can be repaired immediately, and take into account the following aspects:

- Set a regular program of leak test.
- It is easier to detect leaks in the compressor during periods of no air demand or noise in the factory.
- Small leaks can be detected with soapy water.
- Check all joints, fittings and hoses.
- Check the wear of the cylinder seals pneumatically operated.
- Identify redundant pipes, potential source of leaks, and cut or remove them (the isolating valves themselves are not entirely reliable, as they can also leak).
- Consider **zoning the compressed air system** by installing zone valves, pressurizing only the areas that require it. Similarly, study if all zones require the same pressure. If not, install pressure reducing valves for low pressure supply parts. Consumption and the possibility of leaks will be reduced.
- Analyze whether it is profitable to install a local compressor for equipments requiring higher pressures and longer operating periods than the rest of the system.
- **Check the water traps** periodically, as the defective ones mean a continuing loss of large amounts of compressed air.

- Adjust the air pressure generation to the minimum necessary (regular pressure generation is 7 atm). A less pressure atmosphere may lead to a more than 4% cost reduction. Also check that air tools also work to the minimum pressure required.
- Analyze the possibility of replacing your air tools for electrical equivalents as they are up to 80% cheaper to operate.
- If you use air guns, make sure your pressure is right, reducing system pressure up to 2 atm. Reduce operating costs with this measure by 60%.
- **Adjust the level of air quality** based on the work done since, the higher the quality, the greater the energy consumption. If you need more than one type of air at your facility, discuss the desirability of having separated treatment and distribution systems.
- Check that the compressors are stopped when there is no air demand and they do not start before there is need for air.
- **Periodically clean the inlet air filters**, or replace them when necessary.
- Try to **direct inputs from the outside air** (and facing north if possible), as the compressors work more efficiently with cold air.
- Check the efficiency and performance of the dryers and air controls.
- Periodically clean the heat exchangers.
- If you have manual drain valves to remove water, replace them by automatic ones, and take care of their regular maintenance.
- Study in detail the selection criteria of the compressor, as this choice will have a great influence on future operating costs.
- Seek technical advice to analyze the different possibilities in **multi-compressor facilities**, so that the compressors are sequenced to meet demand. Note that it is more efficient operating the minimum number of compressors at full load than using more part-load compressors.
- Seek **professional advice** on the need to increase the storage capacity of air in the case that air tanks are insufficient to cover its consumption.
- Seek professional advice about suitable pipe size, as if they are too narrow large frictional losses will be produced.
- Analyze the possibility of installing a **heat recovery system** that generates the compressor in order to use it to supplement local heating or water heating. Note that about 90% of the energy used by the compressor is converted into heat.
- Check that the air treatment levels are not excessive and adapt them according to each equipment need.
- Take into account that **air fans** are much cheaper than compressors for low pressure works.

2.3.9. Tips on ventilation

- Improve the efficiency of the equipment used in ventilation, turbines and other elements that drive the air from an electric motor.
- Improve the conditions of the premises to **prevent heat gain** (heat extraction) inside and outside, giving them naturally induced ventilation. With higher initial investment energy saving is also higher thanks to the achievement of optimal results in ventilation. Better conditions concerning the sun orientation of the facilities can be searched.
- Disconnect all ventilation equipment when not needed (activities recess) and occasionally unneeded.
- Reduce the premises heat load, turning off unnecessary lights and changing the location of some equipment that emphasize and support these movements.
- **Open doors and windows**, avoid obstacles that block air circulation. Do not block loaded air flow between doors and windows.
- **Relocate fans** to prevent the moving air volume is above needs disconnecting the unneeded ones.
- Ensure working with **greater efficiency equipments** (if there are low efficiency equipment use them only when the most efficient ones are not able to cope with).
- Painting with light colours walls (interior and exterior) and ceilings to reflect radiation and store low energy (especially outdoors, where you should never painted beyond light colours).
- **Replace oversized and low efficiency motors and equipments** with other more suitable.
- Improve the **insulation conditions** of the premises (outer screening direct sunlight: lattices and eaves or other similar methods).
- Use **motors with speed control** to vary the air flow for different thermal loading conditions of the premises (at least two speed steps).

OPTIMAGRID

ENERGY SAVING GUIDE IN INDUSTRIAL AREAS

3. Financing

3.1. Financing sources for the incorporation of results

3.1.1. European Programs

The following section shows a summary of the main existing financing sources in the energy field in the frame of the European Programs managed by the European Commission for the financing period 2007 – 2013:

- ✓ Competitiveness and Innovation Program.
- ✓ Intelligent Energy for Europe Program.
- ✓ ECO-INNOVATION Program.
- ✓ INTERREG SUDOE Program.
- ✓ INTERREG MED Program.
- ✓ Seventh Framework Program for Research and Technological Development.
- ✓ INTERREG IVC Program.
- ✓ ENPI CBC MED Program.
- ✓ PROGRESS Program.

The European programs selected enable the **participation of companies** and, in particular, of small and medium sized enterprises, and are ruled by **two principles** to bear in mind before participating in European projects executed in the frame of these programs:

COFINANCING PRINCIPLE

European projects are characterized by being co-financed by the European Commission by a certain percentage and by the project partners' contributions with their own funds of the remaining percentage of the total project budget.

The co-financing rates vary from 50% to 95%, but in all cases, the contribution of the European Commission from the European Regional Development Funds in most cases, must be completed with the contribution of the beneficiaries, who must prove having the financial capacity to implement the project in the way the program establishes.

TRANSNATIONALITY PRINCIPLE

European projects are characterized by their transnational nature. The term transnational project implies the involvement of several European countries at all stages, as well as common goals, problems, strategies and action plans and a shared added value and tangible and measurable benefits to all partners and territories.

The transnational nature of the projects allows searching for transnational solutions more effective and with a greater impact than the solutions that could be achieved at local, regional or national levels.

COMPETITIVENESS AND INNOVATION PROGRAM - CIP

<p>Description</p>	<p>The Competitiveness and Innovation Framework Programme (CIP) aims to encourage the competitiveness of European enterprises. With SMEs as its main target, the programme supports innovation activities (including eco-innovation), provides better access to finance and delivers business support services in the regions. It encourages a better take-up and use of information and communications technologies (ICT) and helps to develop the information society. It also promotes the increased use of renewable energies and energy efficiency.</p> <p>CIP Programme contributes to the Lisbon strategy for growth and jobs:</p> <ul style="list-style-type: none"> - By supporting the improvement of the business environment. - By enhancing competitiveness of European companies, particularly SMEs. - In the framework of a sustainable development.
<p>Objectives</p>	<ul style="list-style-type: none"> - To promote access to finance for the start-up and growth of SMEs and investment in innovation activities. - To create an enabling environment for SME cooperation, particularly in the field of cross-border cooperation. - To involve all stakeholders in the innovation process, particularly to SMEs and financial intermediaries. - To strengthen the competitiveness of enterprises, especially SMEs. - To strengthen economic and administrative reforms related to enterprise and innovation. - To promote all possible forms of innovation including eco-innovation. - To accelerate the development of an information society innovative, competitive and sustainable. - To promote energy efficiency and new renewable energy in all sectors, including transport.
<p>Actions</p>	<p>The CIP is divided into three operational programmes. Each of them has its specific objectives, aimed at contributing to the competitiveness of enterprises and their innovative capacity in its own areas, such as ICT or sustainable energy:</p> <p>The Entrepreneurship and Innovation Programme (EIP), has as objectives:</p>

	<ul style="list-style-type: none"> - Better access to finance for SMEs through venture capital investment and loan guarantee instruments. - Business and innovation support services delivered through a network of regional centres: The Enterprise Europe Network. - Promotion of entrepreneurship and innovation. - Support for eco-innovation. - Support for policy-making that encourages entrepreneurship and innovation. <p>The Information Communication Technologies Policy Support Programme (ICT PSP) aims at:</p> <ul style="list-style-type: none"> - Developing a single European information space and strengthening the European internal market for ICT and ICT-based products and services. - Encouraging innovation through the wider adoption of and investment in ICT. - Developing an inclusive information society and more efficient and effective services in areas of public interest and improving quality of life. <p>The Intelligent Energy Europe Programme (IEE) aims at:</p> <ul style="list-style-type: none"> - Fostering energy efficiency and the rational use of energy sources. - Promoting new and renewable energy sources and energy diversification. - Promoting energy efficiency and new energy sources in transport.
<p>Budget</p>	<p>Total budget: 3.621 million Euros for 2007-2013.</p> <ul style="list-style-type: none"> - 60% of the overall budget (€ 2.166 million) is attributed to the EIP, the fifth of which (€ 430 million) is dedicated to promoting eco-innovation. - 20% (€ 728 million) of the total budget is allocated to support ICT-PSP. - 20% (€ 727 million) to the Intelligent Energy Europe Programme.

<p>Beneficiaries</p>	<p>Participation in this program will depend on each call for proposals. However, in general we can note the following entities:</p> <ul style="list-style-type: none"> - Public entities (local and regional). - Chambers of Commerce. - Small and medium enterprises (SMEs). - SME associations or groupings. - Universities. - Research centers. - Individuals (depending on the call). <p>From:</p> <ul style="list-style-type: none"> - All EU Member states. - - Certain third countries.
<p>Co-financing</p>	<p>The EU contribution covers minimum 50% of the project total budget, depending on the sub-programme.</p>
<p>Website</p>	<p>http://ec.europa.eu/cip/</p>

**INTELLIGENT ENERGY FOR EUROPE
COMPETITIVENESS AND INNOVATION PROGRAM - CIP**

Description	<p>The objective of the Intelligent Energy - Europe II Programme is to contribute to secure, sustainable and competitively priced energy for Europe, by providing for action :</p> <ul style="list-style-type: none"> - To foster energy efficiency and the rational use of energy resources. - To promote new and renewable energy sources and to support energy diversification. - To promote energy efficiency and the use of new and renewable energy sources in transport. <p>The Programme in particular contributes to the EU Energy 2020 Strategy, and facilitates the implementation of the Energy Efficiency Plan 2013 and of the Directive on the promotion of the use of energy from renewable sources.</p> <p>This Programme has become the main EU instrument to tackle non-technological barriers to the spread of efficient use of energy and greater use of new and renewable energy sources.</p>
Objectives	<p>In operational terms the Intelligent Energy - Europe Programme aims to:</p> <ul style="list-style-type: none"> a) provide the elements necessary for the improvement of sustainability, the development of the potential of cities and regions, as well as for the preparation of the legislative measures needed to attain the related strategic objectives; develop the means and instruments to follow up, monitor and evaluate the impact of the measures adopted by the EU and its Member States in the fields addressed by the Programme. b) boost investment across Member States in new and best performing technologies in the fields of energy efficiency, renewable energy sources and energy diversification, including in transport, by bridging the gap between the successful demonstration of innovative technologies and their effective, broad market uptake in order to attain leverage of public and private sector investment, promote key strategic technologies, bring down costs, increase

	<p>market experience and contribute to reducing the financial risks and other perceived risks and barriers that hinder this type of investment.</p> <p>c) remove the non-technological barriers to efficient and intelligent patterns of energy production and consumption by promoting institutional capacity building at, inter alia, local and regional level, by raising awareness, notably through the educational system, by encouraging exchanges of experience and know-how among the main players concerned, business and citizens in general and by stimulating the spread of best practices and best available technologies, notably by means of their promotion at EU level.</p>
<p>Actions</p>	<p>SAVE: Energy efficiency and rational use of energy resources</p> <ul style="list-style-type: none"> - Improving energy efficiency and the rational use of energy, in particular in the building and industry sectors - Supporting the preparation and application of legislative measures <p>ALTENER: New and renewable energy resources</p> <ul style="list-style-type: none"> - Promoting new and renewable energy sources for centralized and decentralized production of electricity, heat and cooling, and thus supporting the diversification of energy sources. - Integrating new and renewable energy sources into the local environment and the energy systems. - Supporting the preparation and application of legislative measures. <p>STEER: Energy in transport</p> <ul style="list-style-type: none"> - Supporting initiatives relating to all energy aspects of transport and the diversification of fuels. - Promoting renewable fuels and energy efficiency in transport. - Supporting the preparation and application of legislative measures. <p>Integrated Initiatives</p> <p>Combining several of the above specific fields or relating to certain</p>

	<p>EU priorities.</p> <p>They may include actions integrating energy efficiency and renewable energy sources in several sectors of the economy and/or combining various instruments, tools and actors within the same action or project.</p>
Participation criteria	<ul style="list-style-type: none"> - Public or private entities established in the EU, Norway, Iceland, Liechtenstein, FYROM and Croatia. - Minimum of 3 partners from 3 countries other than the eligible area, except for: integrated initiatives mobilization and training.
Budget	Total budget: 730 million euros for 2007-2013.
Beneficiaries	<p>Eligible entities may participate in the EU Member States, EFTA countries which are members of the EEA, candidate countries and Western Balkan countries. Third countries may participate in the program when agreements allow so.</p> <p>Eligible entities:</p> <ul style="list-style-type: none"> - Public and private agencies. - Joint Research Centre - European Commission. - International organizations. - Energy Agencies, local or regional, established in IEE area or even beneficiaries of IEE funds (if they show sufficient funds to cover the costs of the project without overlapping project activities funded with IEE funds that they have received or are receiving).
Co-financing	<p>75% of eligible expenses.</p> <p>In the case of Integrated Initiatives the co-financing can be higher (90%) depending on the action, please refer to the call for proposal.</p>
Website	http://ec.europa.eu/energy/intelligent/

**ECO INNOVATION PROGRAM
COMPETITIVENESS AND INNOVATION PROGRAM - CIP**

Description	<p>The initiative CIP Eco-innovation First Application and Market Replication Projects (in short: CIP Eco-innovation) is part of the Entrepreneurship and Innovation Programme (EIP) which seeks to support innovation and competitiveness of SMEs.</p> <p>Eco-innovation is defined as any form of innovation aiming at significant and demonstrable progress towards the goal of sustainable development, through reducing impacts on the environment or achieving a more efficient and responsible use of resources. Eco-innovation is central to addressing the challenges of resource scarcity, air, water and soil pollution, water efficiency - and also provides opportunities for growth and jobs.</p> <p>The three main aspects of CIP Eco-innovation are:</p> <ol style="list-style-type: none"> 1. Environmental benefits 2. Economic benefits (including wide replication) 3. Contribution of projects to innovation. <p>The promotion of eco-innovation contributes to the implementation of the Environmental Technologies Action Plan (ETAP). This measure ensures that environmental policy continues to make an important contribution to the green economy and combines this with economic development and jobs.</p> <p>As such, the measure should contribute to the implementation of the EU actions supporting innovation policies, as presented in Europe 2020 strategy, especially in the areas of resource efficiency, Climate Change Package, Action Plan on Sustainable Consumption and Production and Sustainable Industrial Policy and Lead Market Initiative. The Innovation Union flagship and the Resource efficiency roadmap both recognize that eco-innovation plays an increasing role in the future.</p>
Objectives	<p>CIP Eco-innovation aims to support projects concerned with the first application or market replication of eco-innovative techniques, products, services or practices of EU relevance, which have already been technically demonstrated with success but which, owing to residual risk, have not yet penetrated the market. They should contribute to remove obstacles to the development and wide application of eco-innovation, create or enlarge markets for related</p>

	<p>products and improve the competitiveness of EU enterprises on world markets.</p> <p>The projects should also aim at reducing environmental impacts, increasing resource efficiency or improve environmental performance of enterprises, in particular SMEs.</p>
<p>Actions</p>	<p>1. Sustainable building products:</p> <p>Construction products and related processes that reduce consumption of resources, embodied carbon and production of by-product wastes. This covers the use of more environmentally friendly materials, use of bio-based materials, increased use of recycled and reused materials from construction and demolition waste, reduced use of raw material, and innovative manufacturing and construction processes.</p> <ul style="list-style-type: none"> - Water <ul style="list-style-type: none"> - Water-efficient processes, products and technologies, especially water-free processes. - Water and wastewater treatment: solutions that offer greater efficiency and reduced environmental impact. - Smart distribution systems saving water, chemicals and other resources. - Materials recycling: <ul style="list-style-type: none"> - Improve the quality of recycled materials through better waste sorting and treatment methods, construction and demolition waste, commercial/industrial waste, potential recyclables or recyclable waste from electrical and electronic equipment and end-of life vehicles. - Innovative products using recycled material or facilitating material recycling, matching international product standards, advanced design requirements and high quality consumer needs. - Business innovations to strengthen the competitiveness of recycling industries, such as new markets for recycling products, supply chains or harmonised manufacturing, reuse and recycling processes. <p>4. Food and drink sector:</p> <ul style="list-style-type: none"> - Cleaner and innovative products, including packaging methods and materials, processes and services aiming at higher resource efficiency.

	<ul style="list-style-type: none"> - Cleaner and innovative products, processes and services at the production phase, aiming at a reduction of waste, waste prevention, water efficiency and improved water quality and greenhouse gas emissions, or/and increasing recycling and recovery. - Innovative cleaner products, processes and services aiming at reducing the environmental impact of consumption of food and drinks. <p>5. Green businesses:</p> <ul style="list-style-type: none"> - Design, implementation and uptake on the market of innovative products and services that will decrease environmental impacts and use less resources. Projects should follow the principles of Integrated Product Policy and a life cycle approach. - Substitution of materials by innovative ones that reduce environmental impacts and prompt higher resource efficiency, as well as substitution of scarce materials and increased use of secondary raw materials. - Greening of production and clean production processes supporting environmental, innovative processes with a high replication factor. Actions could also include the valorisation of by-product resources or waste as new raw materials. - Gradual innovation by introducing re-manufacturing mechanisms and innovative repairing services with environmental benefit.
<p>Budget</p>	<p>Total budget: 433 million euros for 2007-2013.</p>
<p>Beneficiaries</p>	<p>Applications can be submitted by one or several entities.</p> <p>All applicants must be legal persons, whether private or public:</p> <ul style="list-style-type: none"> - Public entities (local and regional). - SMEs, SMEs associations and Chambers of Commerce. - Universities and Research Centers. <p>The programme is open to legal persons established in:</p> <ul style="list-style-type: none"> - EU Member States. - EFTA countries which are members of the EEA. - Candidate countries. - Western Balkan countries. - Israel.
<p>Co-financing</p>	<p>The European Commission grants up to 50% co-financing.</p>

Website	http://ec.europa.eu/environment/eco-innovation
----------------	---

INTERREG SUDOE PROGRAM

Description	<p>The Territorial Cooperation Program for the European Southeast Space (SUDOE) is a program focused on the regional development through the co-financing of transnational projects by the ERDF (European Regional Development Fund).</p> <p>The main objective is to develop a strategy that values the strengths and corrects the weaknesses of SUDOE in order to consolidate the European Southeast as an area of territorial cooperation in the fields of competitiveness and innovation, environment, sustainable development and spatial planning while helping to ensure a harmonious and balanced integration of their regions, within the objectives of economic and social cohesion of the EU.</p>
Objectives	<p>The main objectives of the programme are:</p> <ul style="list-style-type: none"> - Developing technological research and pilot projects with high potential of results transferability. - Making up stable Networks in SUDOE space for the generation, exchange and transfer of innovation and new knowledge. - Enhancing competitiveness and innovation capacity in the most interesting segments of the region economy. - Preserving, conserving and enhancing the heritage value of the spaces and natural resources. - Improving the management of natural resources, especially energy efficiency, and promoting sustainable use of water resources. - Boosting joint cooperation strategies for the prevention of natural hazards and, in particular, risks of earthquakes, fires, floods, deforestation or desertification and pollution. - Integrating multimodality in transport and interconnection of networks from a transnational perspective. - Promoting territorial equal access to communications infrastructure, the information society and knowledge. - Fully exploiting synergies between urban and rural areas to promote sustainable development by combining resources and expertise. - Increasing socioeconomic municipalities and regions dynamism from SUDOE by the inclusion in cooperation networks. - Evaluating transnational interesting cultural heritage and

	SUDOE space identity.										
Actions	<ul style="list-style-type: none"> - Axis 1: Promotion of innovation and stable networking cooperation in the field of technology. - Axis 2: Improvement of the sustainability for the protection and conservation of the natural environment of SUDOE. - Axis 3: Harmonious integration of SUDOE Space and improvement of information networks accessibility. - Axis 4: Boost on sustainable urban development making the most of the positive effects of transnational cooperation. - Axis 5: Strengthening of institutional capacity and utilization of technical assistance 										
Budget	Total budget: 132 million euros for 2007-2013.										
Beneficiaries	<p>Public actors: national, regional and local public bodies, research institutes, universities, organizations and socio-economic actors, etc.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Countries</th> <th style="text-align: left;">Regions</th> </tr> </thead> <tbody> <tr> <td>Spain</td> <td>All, except Canary Islands</td> </tr> <tr> <td>Portugal</td> <td>Norte, Algarve, Centro, Lisboa, Alentejo</td> </tr> <tr> <td>France</td> <td>Poitou-Charentes, Aquitaine, Midi-Pyrénées, Limousin, Auvergne, Languedoc-Roussillon</td> </tr> <tr> <td>United Kingdom</td> <td>Gibraltar.</td> </tr> </tbody> </table>	Countries	Regions	Spain	All, except Canary Islands	Portugal	Norte, Algarve, Centro, Lisboa, Alentejo	France	Poitou-Charentes, Aquitaine, Midi-Pyrénées, Limousin, Auvergne, Languedoc-Roussillon	United Kingdom	Gibraltar.
Countries	Regions										
Spain	All, except Canary Islands										
Portugal	Norte, Algarve, Centro, Lisboa, Alentejo										
France	Poitou-Charentes, Aquitaine, Midi-Pyrénées, Limousin, Auvergne, Languedoc-Roussillon										
United Kingdom	Gibraltar.										
Co-financing	The ERDF grants up to 75 % co-financing .										
Website	http://www.interreg-sudoe.eu										

MED- EUROPE PROGRAM

<p>Description</p>	<p>The MED programme is one of the European Transnational cooperation programmes in the frame of the 'territorial cooperation' objective of the EU cohesion policy. Partners from 13 countries Including the whole northern Mediterranean Seacoast are working together to strengthen the competitiveness, employment and sustainable development of this area. The transnational setup allows the programme to tackle territorial challenges beyond national boundaries.</p> <p>The strategic objective is to make the whole MED space a territory able to match international competition. The Programme establishes 4 main priorities: innovation, environment, accessibility to the territories and balanced territorial development, with 2 key project criteria: project with strong transnational and concrete dimension.</p>
<p>Objectives</p>	<p>The MED Programme, under the guidance of the Lisbon and Gothenburg Strategies, has as general objectives:</p> <ul style="list-style-type: none"> - To improve the area's competitiveness in a way that guarantees growth and employment for the next generations (Lisbon strategy). - To promote territorial cohesion and environmental protection, according to the logic of sustainable development (Goteborg strategy). <p>For each of the lines of action, specific objectives of the program are defined:</p> <p>Innovation:</p> <ul style="list-style-type: none"> - Building transnational networks between businesses supporting organisations, economic operators, clusters etc. to facilitate technology transfer and dissemination of innovative practices and know-how. - Developing transnational networks of research and resource centres, innovation and entrepreneurship centres and intermediate structures that facilitate innovation processes. <p>Environment:</p> <ul style="list-style-type: none"> - Promoting transnational partnerships to protect, enhance and increase the awareness of the fragile areas and their

	<p>resources from the integrated territorial development and sustainable tourism point of view.</p> <ul style="list-style-type: none"> - Promoting biodiversity through protection and enhancement of natural resources. - Creating and disseminating innovative materials and production processes that allow reducing energy consumption amongst public stakeholders and businesses. <p>Territorial Accessibility:</p> <ul style="list-style-type: none"> - Building transnational partnerships to promote multimodal transport systems in urban areas and promoting the use of transportation modes with a low environmental impact. - Supporting transnational actions allowing a more efficient use of ICT for civil society, administrations and economic operators. <p>Balanced regional development:</p> <ul style="list-style-type: none"> - Promoting transnational collaboration between different multilevel territorial systems (towns, metropolis, islands, rural areas, isolated territories, etc.) to improve services networking and encourage the emergence of common strategies. - Promoting transnational initiatives enhancing the role of historical heritage and cultural resources from the point of view of integrated territorial development.
<p>Actions</p>	<p>Axis 1: Strengthening innovation capacities</p> <p>Objective 1.1: Dissemination of innovative technologies and know-how.</p> <p>Objective 1.2: Strengthening cooperation between economic development stakeholders and public authorities.</p> <p>Axis 2: Environmental protection and promotion of a sustainable territorial development.</p> <p>Objective 2.1: Protection and enhancement of natural resources and cultural heritage.</p> <p>Objective 2.2: Promotion of renewable energies and energy efficiency improvement.</p> <p>Objective 2.3: Prevention of maritime risks and strengthening of maritime safety.</p> <p>Objective 2.4: Prevention of and fight against natural risks.</p> <p>Axis 3: Improvement of mobility and of territorial accessibility</p>

	<p>Objective 3.1: Improvement of maritime accessibility and of transit capacities through multimodality and intermodality.</p> <p>Objective 3.2: Support to the use of information technologies for a better accessibility and territorial cooperation.</p> <p>Axis 4: Promotion of a polycentric and integrated development of the Med.</p> <p>Objective 4.1: Coordination of development policies and improvement of territorial governance.</p> <p>Objective 4.2: Strengthening of identity and enhancement of cultural resources for a better integration of the Med space.</p>
<p>Budget</p>	<p>Total budget: 250 million euros for 2007-2013.</p>
<p>Beneficiaries</p>	<p>Regions and towns administrations, research centers and national authorities in charge of related sectors, universities as well as nonprofit making associations: the Programme welcomes projects from various horizons.</p> <p>The MED Programme funds projects with partners from the coastal and Mediterranean regions of 9 Member States. Mediterranean candidates and potential candidate countries to the EU are invited to get involved in projects. These countries participate with the European funds of the IPA (Instrument for Pre-Accession Assistance): Albania, Croatia, Bosnia Herzegovina and Montenegro.</p> <p>The Med programme covers the following areas:</p> <ul style="list-style-type: none"> - Albania: entire country - Bosnia Herzegovina: entire country - Croatia: entire country - Cyprus: entire country - France: Corse, Languedoc-Roussillon, Provence Alpes Côte d'Azur, Rhône-Alpes - Greece : entire country - Italy: Abruzzo, Apulia, Basilicata, Calabria, Campania, Emilia-Romagna, Friuli-Venezia Giulia, Lazio, Liguria, Lombardy, Marche, Molise, Umbria, Piedmonte, Sardinia, Sicily, Tuscany, Veneto - Malta: entire country - Montenegro: entire country - Portuga : Algarve, Alentejo - United-Kingdom: Gibraltar - Slovenia: entire country

		- Spain: Andalusia, Aragon, Catalonia, Balearic islands, Murcia, Valencia and Ceuta and Melilla
	Co-financing	The ERDF grants up to 75 % co-financing .
	Website	http://www.programmamed.eu/

**SEVENTH FRAMEWORK PROGRAM
FOR RESEARCH AND TECHNOLOGICAL DEVELOPMENT**

Description	<p>FP7 is the short name for the Seventh Framework Programme for Research and Technological Development. This is the EU's main instrument for funding research in Europe and it will run from 2007 to 2013. FP7 is also designed to respond to Europe's employment needs and competitiveness. FP7 supports research in selected priority areas - the aim being to make, or keep, the EU as a world leader in those sectors.</p> <p>In order to complement national research programmes, activities funded from FP7 must have a "European added value". One key aspect of the European added value is the transnationality of many actions: research projects are carried out by consortia which include participants from different European (and other) countries; fellowships in FP7 require mobility over national borders. Indeed, many research challenges (e.g. fusion research, etc), are so complex that they can only be addressed at European level.</p>
Objectives	<p>The Framework Programmes for Research have two main strategic objectives:</p> <ol style="list-style-type: none"> 1. To strengthen the scientific and technological base of European industry; 2. To encourage its international competitiveness, while promoting research that supports EU policies.
Actions	<p>FP7 is made up of 4 main blocks of activities forming 4 specific programmes plus a fifth specific programme on nuclear research:</p> <p>Cooperation - Collaborative research</p> <ul style="list-style-type: none"> - Health - Food, Agriculture and Biotechnology - Information and Communication Technologies - Nanosciences, Nanotechnologies, Materials and new Production Technologies - ENERGY: The overall objective of this theme is adapting the current energy system into a more sustainable one, less dependent on imported fuels and based on: <ul style="list-style-type: none"> - A diverse mix of energy sources, in particular renewables, energy carriers and non polluting sources. - Enhancing energy efficiency, including by rationalising

	<p>use and storage of energy.</p> <ul style="list-style-type: none"> - Addressing the pressing challenges of security of supply and climate change, whilst increasing the competitiveness of Europe's industries. <p>The EU Member States and the European Parliament have earmarked a total of € 2.35 billion for funding this theme over the duration of FP7.</p> <p>Emphasis will be given to the following activities:</p> <ul style="list-style-type: none"> - Hydrogen and fuel cells. - Renewable electricity generation. - Renewable fuel production. - Renewables for heating and cooling. - CO2 capture and storage technologies for zero emission power generation. - Clean Coal Technologies. - Smart energy networks. - Energy efficiency and savings. - Knowledge for energy policy making. - Environment (including climate change). - Transport (including Aeronautics). - Socio-economic sciences and Humanities. - Security. - Space. <p>Ideas - European Research Council</p> <ul style="list-style-type: none"> - Frontier research actions <p>People - Human Potential, Marie Curie actions</p> <ul style="list-style-type: none"> - Initial training of researchers - Marie Curie Networks. - Life-long training and career development - Individual fellowships. - Industry-academia pathways and partnerships. - International dimension - outgoing and incoming fellowships, international cooperation scheme, reintegration grants. - Excellence Awards. <p>Capacities - Research capacities</p> <ul style="list-style-type: none"> - Research infrastructures. - Research for the benefit of SMEs. - Regions of Knowledge. - Research Potential. - Science in Society. - Support to the coherent development of research policies.
--	---

	<ul style="list-style-type: none"> - Specific activities of international cooperation. <p>Nuclear research and training</p> <ul style="list-style-type: none"> - Fusion energy – ITER. - Nuclear fission and radiation protection. <p>Joint Research Centre</p> <ul style="list-style-type: none"> - Direct actions in Euratom. - Non-nuclear actions.
<p>Budget</p>	<p>Total budget: 50.500 million euros for 2007-2013.</p>
<p>Beneficiaries</p>	<p>Participation in FP7 is open to a wide range of organisations and individuals:</p> <ul style="list-style-type: none"> - Research groups at universities or research institutes. - Companies intending to innovate. - SMEs, SME associations or groupings. - Public or governmental administration (local, regional or national). - Early-stage researchers (postgraduate students) and experienced researchers. - Institutions running research infrastructures of trans-national interest. - International organisations. - Civil society organisations. <p>The eligible countries are:</p> <p>The 27 EU member states.</p> <p>Candidate countries: Croatia, the former Yugoslav Republic of Macedonia, Turkey and Island.</p> <p>Associated countries: Switzerland, Norway, Israel, Liechtenstein, Serbia, Albania, Montenegro, Bosnia and Herzegovina (countries that have agreements of cooperation in science and technology that involve making a contribution to the budget of the Framework Programme).</p> <p>Third Countries: the participation of organizations and individuals located in countries that are not members, candidates and members must be justified from the point of view of the positive contribution to the objectives of FP7.</p>
<p>Co-financing</p>	<p>The maximum reimbursement rates to the costs of a project depend on the funding scheme, the legal status of the participants and the type of activity. The standard reimbursement rate for research and technological development activities is 50%. Certain legal entities</p>

		<p>can receive up to 75% (non-profit public bodies, SMEs, research organisations, higher education establishments).</p> <p>For demonstration activities, the reimbursement rate may reach 50%. For other activities (consortium management, networking, training, coordination, dissemination etc.), the reimbursement can be up to 100% of the eligible costs. The 100% rate applies also to frontier research actions under the European Research Council.</p>
	<p>Website</p>	<p>http://ec.europa.eu/research/fp7/</p>

INTERREG IV PROGRAM

<p>Description</p>	<p>INTERREG IVC provides funding for interregional cooperation across Europe. It is implemented under the European Community's territorial co-operation objective and financed through the European Regional Development Fund (ERDF). The Operational Programme was approved in September 2007 and the period for INTERREG IVC will last from 2007-2013.</p> <p>The areas of support are innovation and the knowledge economy, environment and risk prevention. Thus, the programme aims to contribute to the economic modernisation and competitiveness of Europe. INTERREG IVC is linked to the objectives of Lisbon and Gothenburg agendas.</p> <p>The programme supports two types of projects: Regional Initiative Projects and Capitalisation Projects.</p> <ul style="list-style-type: none"> - In Regional Initiative Projects partners work together to exchange experiences in a policy field of their interest. They can choose between three levels of intensity for their cooperation. These vary from simple networking to the development of policy instruments or the establishment of mini-programmes. - In Capitalisation Projects partners build on already identified good practices. Capitalisation projects are set up to transfer these good practices into mainstream programmes of EU Structural Funds. This is done by developing action plans and involving relevant policy makers. The European Commission offers additional expertise to some of these projects, named Fast Track Projects.
<p>Objectives</p>	<p>The overall objective of the INTERREG IVC programme, with its focus on interregional co-operation, is to improve the effectiveness of regional development policies in the areas of innovation, the knowledge economy, the environment and risk prevention as well as to contribute to the economic modernisation and increased competitiveness of Europe.</p> <p>The exchange, sharing and transfer of policy experience, knowledge and good practices will contribute to achieving this objective. The role of INTERREG IVC should not be reduced solely to</p>

	<p>the exchange and transfer of 'operational' practices. The work on operational practices is of course important but it should be considered as a step towards policy improvements. Even if by transferring practices from one region to another, regions can contribute to enrich and renew the way they implement their policies, the transfer of practices is usually not sufficient to ensure long term policy effects. By approaching the practices in their wider policy context, partners in a project should also exchange their experience on the different policy frameworks of their regions. It is through this strategic approach that the cooperation can achieve more structural changes in each of the participating regions.</p>		
<p>Actions</p>	<p>The programme is organised around two thematic priorities related to the Lisbon and Gothenburg agendas. A certain number of sub-themes are defined for each of the priorities:</p> <p>Priority 1: Innovation and the knowledge economy</p> <ul style="list-style-type: none"> - Innovation, research and technology development. - Entrepreneurship and SMEs. - The information society. - Employment, human capital and education. <p>Priority 2: Environment and risk prevention</p> <ul style="list-style-type: none"> - Natural and technology risks; climate change - Water management - Waste prevention and management - Biodiversity and preservation of natural heritage; air quality - Energy and sustainable transport - Cultural heritage and landscape. 		
<p>Budget</p>	<p>Total budget: 302 million euros for 2007-2013.</p>		
<p>Beneficiaries</p>	<p>In order to be eligible to ERDF or to the pre-allocated Norwegian funding, beneficiaries have to be public authorities and bodies whose expenditure is considered as public expenditure.</p> <p>The eligible INTERREG IVC cooperation area covers the entire territory of the European Union with its 27 Member States, including insular and outermost areas. In addition, Norway and Switzerland are full members of the programme. Partners from other countries can participate at their own costs.</p>		
<p>Co-financing</p>	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">Funding rate and source</td> <td style="width: 50%;">Participating States (EU + Norway)</td> </tr> </table>	Funding rate and source	Participating States (EU + Norway)
Funding rate and source	Participating States (EU + Norway)		

	75% ERDF	Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxemburg, Netherlands, Spain, Sweden, UK.
	85% ERDF	Bulgaria, Czech Republic, Cyprus, Estonia, Greece, Hungary, Lithuania, Latvia, Malta, Poland, Portugal, Romania, Slovakia, Slovenia.
	50% Norwegian funding	Norway
Website	http://www.interreg4c.net/	

ENPI CBC MED PROGRAM

<p>Description</p>	<p>The multilateral cross-border cooperation "Mediterranean Sea Basin Programme" is part of the new European Neighbourhood Policy (ENP) and of its financing instrument (European Neighbourhood and Partnership Instrument - ENPI) for the 2007-2013 period: it aims at reinforcing cooperation between the European Union and partner countries regions placed along the shores of the Mediterranean Sea.</p> <p>14 participating countries, which represent 76 territories and around 110 million people, are eligible under the Programme.</p>
<p>Objectives</p>	<p>The objectives of the European Neighbourhood Policy are:</p> <ul style="list-style-type: none"> - Avoiding the emergence of new dividing lines between the enlarged EU and the neighbouring countries. - Creating at the EU borders an area of economic prosperity, as well as stability and security. <p>The general objective of the Programme is to contribute to promoting the sustainable and harmonious cooperation process at the Mediterranean Basin level by dealing with the common challenges and enhancing its endogenous potential.</p>
<p>Actions</p>	<p>Priority 1: Promotion of socio-economic development and enhancement of territories, concentrating on innovation and research in key sectors for the cooperation area, creating synergies among potentials of the Mediterranean Sea Basin countries and strengthening strategies of territorial planning.</p> <ul style="list-style-type: none"> - Support to innovation and research in the process of local development of the Mediterranean Sea Basin countries. - Strengthening economic clusters creating synergies among potentials of the Mediterranean Sea Basin countries. - Strengthening the national strategies of territorial planning by integrating the different levels, and promotion of balanced and sustainable socio-economic development. <p>Priority 2: Promotion of environmental sustainability at the Basin level, pursued through the preservation of natural common heritage, the reduction of risk factors for the environment, the improvement of energy efficiency and the promotion of the use of</p>

	<p>renewable energy sources.</p> <ul style="list-style-type: none"> - Prevention and reduction of risk factors for the environment and enhancement of natural common heritage. - Promotion of renewable energy use and improvement of energy efficiency contributing to addressing, among other challenges, climate change. <p>Priority 3: Promotion of better conditions and modalities for ensuring the mobility of persons, goods and capitals, supporting the flows of people among territories as a cultural, social and economic plus for countries on both shores, and improving the conditions and modalities of circulation of goods and capitals among the territories.</p> <ul style="list-style-type: none"> - 3.1 Support to people flows among territories as a means of cultural, social and economic enrichment. - 3.2 Improvement of conditions and modalities of circulation of goods and capitals among the territories. <p>Priority 4: Promotion of cultural dialogue and local governance, supporting the exchange, training and professional development of young people and all forms of dialogue among the communities as well as improving the governance process at local level.</p> <ul style="list-style-type: none"> - 4.1 Support to mobility, exchanges, training and professionalism of young people. - 4.2 Support to the artistic creativity in all its expressions to encourage dialogue among communities. - 4.3 Improvement of the governance processes at local level.
<p>Budget</p>	<p>Total budget: 200 million euros for 2007-2013.</p>
<p>Beneficiaries</p>	<p>The main categories of eligible actors are:</p> <ul style="list-style-type: none"> - Public bodies and local, regional and national authorities. - Universities and research centers. - Non-governmental organisations and those representing economic and social interests. - Associations and federations. - Companies and other private organisations. <p>The eligible regions of the following 14 countries participate in the Programme.</p> <p>EU Mediterranean Countries</p>

	<table border="1"> <thead> <tr> <th>Country</th> <th>Regions</th> </tr> </thead> <tbody> <tr> <td>Cyprus</td> <td>the whole country</td> </tr> <tr> <td>France</td> <td>Corse, Languedoc-Roussillon, Provence-Alpes-Côte d'Azur</td> </tr> <tr> <td>Greece</td> <td>Anatoliki Makedonia - Thraki, Kentriki Makedonia, Thessalia, Ipeiros, Ionia Nisia, Dytiki Ellada, Sterea Ellada, Peloponnisos, Attiki, Voreio Aigaio, Notio Aigaio, Kriti</td> </tr> <tr> <td>Italy</td> <td>Basilicata, Calabria, Campania, Lazio, Liguria, Puglia, Sardegna, Sicilia, Toscana.</td> </tr> <tr> <td>Malta</td> <td>the whole country.</td> </tr> <tr> <td>Portugal</td> <td>Algarve.</td> </tr> <tr> <td>Spain</td> <td>Andalucía, Cataluña, Comunidad Valenciana, Murcia, Islas Baleares, Ceuta, Melilla.</td> </tr> </tbody> </table>		Country	Regions	Cyprus	the whole country	France	Corse, Languedoc-Roussillon, Provence-Alpes-Côte d'Azur	Greece	Anatoliki Makedonia - Thraki, Kentriki Makedonia, Thessalia, Ipeiros, Ionia Nisia, Dytiki Ellada, Sterea Ellada, Peloponnisos, Attiki, Voreio Aigaio, Notio Aigaio, Kriti	Italy	Basilicata, Calabria, Campania, Lazio, Liguria, Puglia, Sardegna, Sicilia, Toscana.	Malta	the whole country.	Portugal	Algarve.	Spain	Andalucía, Cataluña, Comunidad Valenciana, Murcia, Islas Baleares, Ceuta, Melilla.
	Country	Regions																
	Cyprus	the whole country																
	France	Corse, Languedoc-Roussillon, Provence-Alpes-Côte d'Azur																
	Greece	Anatoliki Makedonia - Thraki, Kentriki Makedonia, Thessalia, Ipeiros, Ionia Nisia, Dytiki Ellada, Sterea Ellada, Peloponnisos, Attiki, Voreio Aigaio, Notio Aigaio, Kriti																
	Italy	Basilicata, Calabria, Campania, Lazio, Liguria, Puglia, Sardegna, Sicilia, Toscana.																
	Malta	the whole country.																
	Portugal	Algarve.																
	Spain	Andalucía, Cataluña, Comunidad Valenciana, Murcia, Islas Baleares, Ceuta, Melilla.																
	<p>Mediterranean Partner Countries</p>																	
	<table border="1"> <thead> <tr> <th>Country</th> <th>Regions</th> </tr> </thead> <tbody> <tr> <td>Egypt</td> <td>Marsa Matruh, Al Iskandanyah, Al Buhayrah, Kafr ash Shaykh, Ad Daqahliyah, Dumyat, Ash Sharquiyah, Al Isma'iliyah, Bur Sa'id, Shamal Sina.</td> </tr> <tr> <td>Israel</td> <td>The whole country</td> </tr> <tr> <td>Jordan</td> <td>Irbid, Al-Balga, Madaba, Al-Karak, Al-Trafilia, Al-Aqaba.</td> </tr> <tr> <td>Lebanon</td> <td>the whole country</td> </tr> <tr> <td>Palestinian Authority</td> <td>the whole country.</td> </tr> <tr> <td>Syria</td> <td>Latakia, Tartous.</td> </tr> <tr> <td>Tunisia</td> <td>Médenine, Gabès, Sfax, Mahdia, Monastir, Sousse, Nabeul, Ben Arous, Tunis, Ariana, Bizerte, Béja, Jendouba.</td> </tr> </tbody> </table>		Country	Regions	Egypt	Marsa Matruh, Al Iskandanyah, Al Buhayrah, Kafr ash Shaykh, Ad Daqahliyah, Dumyat, Ash Sharquiyah, Al Isma'iliyah, Bur Sa'id, Shamal Sina.	Israel	The whole country	Jordan	Irbid, Al-Balga, Madaba, Al-Karak, Al-Trafilia, Al-Aqaba.	Lebanon	the whole country	Palestinian Authority	the whole country.	Syria	Latakia, Tartous.	Tunisia	Médenine, Gabès, Sfax, Mahdia, Monastir, Sousse, Nabeul, Ben Arous, Tunis, Ariana, Bizerte, Béja, Jendouba.
	Country	Regions																
	Egypt	Marsa Matruh, Al Iskandanyah, Al Buhayrah, Kafr ash Shaykh, Ad Daqahliyah, Dumyat, Ash Sharquiyah, Al Isma'iliyah, Bur Sa'id, Shamal Sina.																
	Israel	The whole country																
	Jordan	Irbid, Al-Balga, Madaba, Al-Karak, Al-Trafilia, Al-Aqaba.																
Lebanon	the whole country																	
Palestinian Authority	the whole country.																	
Syria	Latakia, Tartous.																	
Tunisia	Médenine, Gabès, Sfax, Mahdia, Monastir, Sousse, Nabeul, Ben Arous, Tunis, Ariana, Bizerte, Béja, Jendouba.																	
Co financing	The EU contribution covers maximum 90% of the project total budget.																	
Website	http://www.enpicbcmmed.eu/																	

**PROGRESS PROGRAM
EUROPEAN PROGRESS MICROFINANCE FACILITY**

Description	<p>The European PROGRESS Microfinance Guarantee encourages the creation of new enterprises and self-employment. This instrument makes it easier to become independent and create a small business while promoting social inclusion.</p>
Objectives	<ul style="list-style-type: none"> - Increase and facilitate microfinance for people wishing to start or develop a micro-enterprise, including with self-employment purposes, as it allows microcredit providers increase their lending. - Improve access to microfinance to reduce the risk borne by microfinance institutions. This allows providers to reach groups that normally would not have paid any service. <p>Access to microcredit (loans below €25,000) is done through pre-selected microfinance providers, including public and private banks, non-bank microfinance institutions and nonprofit microfinance providers, who set their own terms for their award.</p> <p>The instrument does not directly finance entrepreneurs, but also allows microfinancing providers in the EU countries increase loans they grant. The structures to develop these instruments are the following:</p> <ul style="list-style-type: none"> - Security instrument. - Funded instruments (debt securities, equity instruments and risk-sharing instruments).
Budget	<p>The Instrument wants to mobilize microloans worth 500 Million € with a contribution from the EU of 100 M€. The European Commission is endorsed with the European Investment Bank Group, which may result in the award of around 45,000 loans over a period of up to eight years.</p>

<p>Beneficiaries</p>	<p>The "European PROGRESS Microfinance Guarantee" does not provide direct funding to entrepreneurs; it provides assistance to microfinance institutions in the countries of the EU so that they can make more loans.</p> <p>The provision of microcredit loans or loan guarantees to microcredit is done to bodies established in the EU Member States, such as:</p> <ul style="list-style-type: none"> - Financial institutions. - Microfinance Institutions. - Guarantee Institutions. - Other institutions authorized to provide microfinance loans or guarantees. <p>PROGRESS microcredits can be requested by people who have lost or are at risk of losing their job, with difficulties to enter or re-enter the labor market and at risk of social exclusion or vulnerable people who are at disadvantage in accessing the conventional credit market. Micro-enterprises, especially those in the social economy.</p>
<p>Website</p>	<p>http://ec.europa.eu/social/main.jsp?langId=en&catId=836</p>

Programming period 2014 – 2020

Europe programs its budgets every 7 years. The present programming period began in 2007 and ends in December 2013.

Currently, the European Commission is in the process of preparing the budget for the future programming period covering the years 2014 to 2020, and is **defining the new European funding programs** and regrouping and merging the current ones.

At the moment, Europe has announced the future launch of **two new initiatives** where companies will be able to participate and, especially, small and medium enterprises, with research, business development and the promotion of innovation its major funding axis.

The following sheets present a summary of these two initiatives mentioned above:

- ✓ Horizon 2020 Program.
- ✓ Programme for the Competitiveness of enterprises and SMEs (COSME).

HORIZON 2020 PROGRAM

<p>Description</p>	<p>Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. Running from 2014 to 2020 with an €80 billion budget, the EU's new programme for research and innovation is part of the drive to create new growth and jobs in Europe.</p> <p>Horizon 2020 provides major simplification through a single set of rules. It will combine all research and innovation funding currently provided through the Framework Programmes for Research and Technical Development, the innovation related activities of the Competitiveness and Innovation Framework Programme (CIP) and the European Institute of Innovation and Technology (EIT).</p>
<p>Objectives</p>	<p>1. Excellent Science. This will raise the level of excellence in Europe's science base and ensure a steady stream of world-class research to secure Europe's long-term competitiveness with a budget of € 24.600 million. This will:</p> <ul style="list-style-type: none"> - Increase the support (77%) to the most talented and creative individuals and their teams to carry out frontier research of the highest quality by building on the success of the European Research Council. - Fund (€3.100 millions) collaborative research to open up new and promising fields of research and innovation through support for Future and Emerging Technologies (FET). - Provide researchers with excellent training and career development opportunities through the Marie Curie actions (21% budget increase). - Ensure Europe has world-class research infrastructures (including e-infrastructures) accessible to all researchers in Europe and beyond. <p>2. Industrial Leadership</p> <p>This will aim at making Europe a more attractive location to invest in research and innovation (including eco-innovation), by promoting activities where businesses set the agenda. It will provide major investment in key industrial technologies, maximise the growth potential of European companies by providing them with adequate levels of finance and help innovative SMEs to grow into world-leading companies. This will:</p>

	<ul style="list-style-type: none"> - Build leadership in enabling and industrial technologies , with dedicated support for ICT, nanotechnologies, advanced materials, biotechnology, advanced manufacturing and processing, and space, while also providing support for cross-cutting actions to capture the accumulated benefits from combining several Key Enabling Technologies. - Facilitate access to risk finance. - Provide Union wide support for innovation in SMEs. <p>3. Societal Challenges</p> <p>This reflects the policy priorities of the Europe 2020 strategy and addresses major concerns shared by citizens in Europe and elsewhere. A challenge-based approach will bring together resources and knowledge across different fields, technologies and disciplines, including social sciences and the humanities. This will cover activities from research to market with a new focus on innovation-related activities, such as piloting, demonstration, test-beds, and support for public procurement and market uptake. It will include establishing links with the activities of the European Innovation Partnerships. Funding will be focussed on the following challenges:</p> <ul style="list-style-type: none"> - Health, demographic change and wellbeing. - Food security, sustainable agriculture, marine and maritime research and the bio-economy. - Secure, clean and efficient energy. - Smart, green and integrated transport. - Climate action, resource efficiency and raw materials. - Inclusive, innovative and secure societies.
<p>Actions</p>	<ol style="list-style-type: none"> 1. Social Sciences and Humanities. 2. Small and Medium Enterprises (SMEs). 3. Access to risk finance. 4. Communication and dissemination. 5. International cooperation. 6. Complementary and cross-cutting activities. 7. Associations.
<p>Budget</p>	<p>87.740 million € for 2014-2020</p>

<p>Beneficiaries</p>	<ul style="list-style-type: none"> - Research groups at universities or research institutes. - Companies intending to innovate. - SMEs, SME associations or groupings. - Public or governmental administration (local, regional or national). - Early-stage researchers (postgraduate students) and experienced researchers. - Institutions running research infrastructures of trans-national interest. - International organisations. - Civil society organisations. <p>The eligible countries are:</p> <p>The 27 EU member states.</p> <p>Candidate countries: Croatia, the former Yugoslav Republic of Macedonia, Turkey and Island.</p> <p>Associated countries: Switzerland, Norway, Israel, Liechtenstein, Serbia, Albania, Montenegro, Bosnia and Herzegovina (countries that have agreements of cooperation in science and technology that involve making a contribution to the budget of the Framework Programme).</p> <p>Third Countries.</p>
<p>Website</p>	<p>http://ec.europa.eu/research/horizon2020/index_en.cfm?pg=h2020</p>

Business Competitiveness and SMEs Programme - COSME

Description	<p>The Business Competitiveness and SMEs Programme will ensure continuity of initiatives and actions already undertaken by the Entrepreneurship and Innovation Programme (EIP), building on the results and lessons learnt.</p> <p>While many successful features of the EIP will be continued, the management of the Programme will be simplified to make it easier for entrepreneurs and SMEs to benefit from it.</p>
Objectives	<ul style="list-style-type: none"> - Facilitating access to finance for SMEs. - Creating an environment favourable to SMEs' creation and growth. - Encouraging an entrepreneurial culture in Europe. - Strengthening the sustainable competitiveness of EU businesses. - Supporting the internationalisation of SMEs and improving their access to markets.
Actions	<ol style="list-style-type: none"> 1. Access to finance for SMEs through dedicated financial instruments. 2. Enterprise Europe Network: a network of business services centres. 3. Entrepreneurship. 4. Business competitiveness and policy development. 5. Internationalisation of SMEs and improve their access to markets.
Budget	2.387 billion euros for 2014-2020.
Beneficiaries	<ul style="list-style-type: none"> - Entrepreneurs, in particular in SMEs, will benefit from an easier access to funding for the development, consolidation and growth of their business. - Citizens who want to become self-employed and face difficulties in setting up or developing their own business, for instance young entrepreneurs. - Member States' authorities (at national, regional and local level), which will be better assisted in their efforts to elaborate and implement effective policy reform. In particular, they will benefit from EU-wide reliable data and statistics, best practice and financial support to test and scale up sustainable solutions for improving global

	competitiveness.
Website	http://ec.europa.eu/cip/cosme/index_en.htm

3.1.2. European Investment Bank

The **European Investment Bank** (EIB) makes loans for SMEs (less than 250 employees) for projects that (1) contribute to EU objectives, (2) are feasible from the economic, financial, technical and environmental points of view, and (3) help attract other sources of funding.

Priority objectives of the EIB:

- Cohesion and convergence.
- Supporting the knowledge economy.
- Trans-European Networks.
- **Support for SMEs.**
- Promotion of environmental sustainability.
- Sustainable, secure and competitive energy.

The EIB loans for SMEs finance **any investments or expenses** which are essential to the overall development of a modest magnitude company, namely:

- Tangible investments, that is, the acquisition of equipment or real estate goods.
- Intangible investments, such as expenditures directly linked to research and development activities.
- The permanent increase in working capital.

The EIB offers **three financial instruments** for SMEs:

- EIB financing for SMEs.
- EIB financing for SME: shared risk schemes (venture risk schemes with intermediary banks, in which case the EIB guarantees part of the overall risk borne by the intermediary).
- Mezzanine financing (equity loans, equivalent or quasi-equity, enabling SMEs to increase their capacity to borrow from banks without opening the capital or constituting significant guarantees).

Since 2008, the EIB launched the "**EIB Financing for SMEs**" line. In the years 2008-2009, the EIB granted loans worth 15 billion euros to support SMEs; in 2010, 115,000 SMEs benefited from EIB funding.

In 2008 - 2011, the EIB granted loans worth 30 billion euros; in 2011, 120,000 SMEs benefited from EIB funding amounting to 13,000 Million Euro.

Until 2012, the EIB granted loans amounting to 2,000 million euros.

The following summary sheets explain two EIB initiatives in which companies can participate:

- ✓ JESSICA Initiative.
- ✓ JEREMIE Initiative.

**JESSICA INITIATIVE – F.I.D.A.E.
INVESTMENT FUND TO FINANCE ENERGY EFFICIENCY AND RENEWABLE ENERGIES
PROJECTS**

Description	<p>It is an initiative developed by the European Commission and the European Investment Bank (EIB) which allows Member States to use the Structural Funds to make repayable investments in projects taking part of an integrated plan for sustainable urban development.</p> <p>This fund finances all investments directly related to the increase of energy efficiency and renewable energy use in urban environments and is compatible with other sources of public and private funding as well as grants co-financed by the ERDF or not.</p> <p>Since 2012, the IDAE has launched a Technical Assistance Unit responsible for supporting the identification and selection of eligible projects.</p>
Objectives	<p>The Portfolio Fund F.I.D.A.E. finances sustainable urban development projects that improve energy efficiency, renewable energy use and are developed by energy service companies (ESCOs) and other private companies.</p>
Actions	<p>The projects must be located in one of the ten autonomous regions, included in F.I.D.A.E:</p> <p>They must also be included in any of the following sectors:</p> <ul style="list-style-type: none"> - Building: public buildings and private buildings. - Industry: companies of any size. - Transport: infrastructure, equipment and fleets of private and public transport (for public use). - Public services infrastructure related to energy: street lighting and traffic lights, local infrastructure, inclusive smart grids and information and communications technologies (ICT) related to the priority themes. <p>The projects must be part of any of the priority themes:</p> <ul style="list-style-type: none"> - Projects for Energy Efficiency and Energy Management: <ul style="list-style-type: none"> - Renovation of existing buildings, with performances in the thermal envelope, heating, cooling, lighting, etc. - New buildings with an energy rating A or B. - Renewal or extension of heating or cooling networks.

	<ul style="list-style-type: none"> - Renewable Energy Projects: <ul style="list-style-type: none"> - Solar thermal. - Solar PV if they join a project of energy efficiency. - Biomass. - Projects related to clean transport, which contribute to the improvement of energy efficiency and renewable energy use (electric charging infrastructure for electric vehicles or plug-in hybrid electrical energy recovery from braking electric public transport, fleet management, electric or hybrid buses, etc.). <p>Finally, projects must:</p> <ul style="list-style-type: none"> - Ensure an acceptable return on investment. - Be included in an integrated plan for sustainable urban development. - Not be finalized at the time of receiving funding.
Budget	123 Million Euro.
Beneficiaries	<ul style="list-style-type: none"> - Private companies. - Public-private companies. - Public bodies in an indirect way: that launch projects through Energy Service Companies – ESCOs.
Website	http://www.idae.es/index.php/releategoria.3957/id.728/relemenu.408/mod.pags/mem.detalle

JEREMIE INITIATIVE
JOINT EUROPEAN RESOURCES FOR MICRO TO MEDIUM ENTERPRISES

Description	<p>Initiative of the European Commission in collaboration with the European Investment Fund (part of the EIB Group), which gives EU Member States, through their national authorities or regional management, the opportunity to use part of their resources from the EU Structural Funds to improve access to finance for SMEs through credit, venture capital, loans, guarantees and counter coavales, business angels etc..</p> <p>JEREMIE enables Member States to use part of the structural funds they receive from the EU for a number of financial refundable products for SMEs. SMEs use these financial products and later reimburse the amounts, which are used again generating a capital amount that is available to new generations.</p> <p>The holding fund develops an investment strategy before the signing of a JEREMIE Financing Agreement between the EIF and the national/ regional government of an EU Member State. The national/ regional government transfers the funds granted to a JEREMIE bank account, launching a call for expressions of interest to select the financial intermediaries following a certain process.</p> <p>The financial intermediaries are responsible to make funds available to micro and SMEs.</p> <p>In Spain, the first agreement for the creation of a JEREMIE fund has been signed by the European Investment Fund (EIF) and the Government of Extremadura, amounting 10 million euros, whose beneficiaries are small and medium enterprises (SMEs) in Extremadura.</p>
Objectives	<p>The JEREMIE funds support:</p> <ul style="list-style-type: none"> - The creation of new businesses or expanding existing businesses. - Access of enterprises (especially SMEs) to investment capital to modernize and diversify its activities, develop new products, ensure and broaden their access to markets. - Research and development-oriented companies, technology transfer, innovation and entrepreneurship.

	<ul style="list-style-type: none"> - Technological modernization of production structures to help achieve the objectives of an economy based on low carbon emissions. - Productive investments that enable the creation or maintenance of stable jobs.
<p>Beneficiaries</p>	<p>The JEREMIE fund is targeted at financial intermediaries, which in turn provide financial instruments oriented at SMEs, which are the ultimate beneficiaries.</p>
<p>Website</p>	<p>http://www.eif.org/what_we_do/jeremie/index.htm</p>

3.1.3. National and regional aids

At a national level, the IDAE, **Institute for Energy Diversification and Saving** is an intermediate body that performs various functions relating to the management of the **European Regional Development Fund (ERDF) Operational Programmes** on the Autonomous Communities of Andalusia, Castilla-La Mancha, Extremadura, Murcia, Ceuta, Melilla, Canarias, Castilla y León and Valencia, for measures or actions in energy saving and efficiency and renewable energy sources development.

The IDAE promotes projects with a clear **technological innovation component** that enjoy replicability.

- ✓ Renewable Energy Plan 2005 – 2010 IDAE.
- ✓ Renewable Energy Plan 2011- 2020 IDAE.
- ✓ Energy Saving and Efficiency Action Plan 2011 – 2020 IDAE.

PER 2005 – 2010
RENEWABLE ENERGY PLAN 2005-2010 OF THE IDAE

Description	<p>Sponsor: Ministry of Industry, Tourism and Trade.</p> <p>This plan replaces the Development Plan of Renewable Energies 2000-2010, whose results were inefficient. Its purpose was to strengthen the objectives of the government's energy policy: ensuring the safety and quality of the electricity supply and the respect for the environment, and the determination to fulfill the commitments of Spain in the international (Kyoto Protocol, National Allocation Plan), and the ones derived from the appartenance of the European Union.</p>
Objectives	<p>The main objective is to cover with renewable sources at least 12% of the total energy consumption in 2010. Secondary objectives: raise 29.4% of electricity generation from renewable sources and 5.75% of biofuels in transport for this year.</p> <p>Objectives by technical areas:</p> <ul style="list-style-type: none"> - Wind Power: 12,000 MW increase, reaching a total installed capacity of 20,155 MW. - Hydropower: increase by 810 MW. - Solar thermal: increase of 4,200,000 m2 area installed for solar thermal power generation. - Solar thermoelectrical: reach 500 MW in installations. - Photovoltaic solar energy: photovoltaic power increase of 363 MWp. - Biomass: MW6 1695 growth. - Biogas: increase the installed capacity of 94 MW.
Actions	<ul style="list-style-type: none"> - Development of focal grouping of wind farm plants of the same company or a certain territory. - Promoting public procurement in state infrastructure and use of environmental flows. - Extension of the current fiscal incentive scheme for at least the first 10 years of the life of a project. - Payments to the generation of electricity from renewable sources. The total amount of premiums rises to 4.956 billion euros. - Development of raw materials to decrease the dependence

	<p>on external agents for its delivery.</p> <ul style="list-style-type: none"> - Development of technologies for the collection, packaging, transportation and raw material collection.
Budget	<p>23.598 million Euro distributed as follows:</p> <ul style="list-style-type: none"> - Promoters: 4.719 million euros. - External financing: EUR 18.197 million. - Public aid: 680 million euros.
Beneficiaries	<ul style="list-style-type: none"> - Local public institutions that promote and publicize the Action Plan. - The research groups at universities or research institutes. - SMEs, SME associations or groupings of the sectors mentioned.
Website	<p>http://www.idae.es/index.php/mod.documentos/mem.descarga?file=/documentos/PER_2005-2010_8_de_gosto-2005_Completo.%28modificacionpag_63%29_Copia_2_301254a0.pdf</p>

PER 2011 – 2012
RENEWABLE ENERGY PLAN 2011 - 2020 OF THE IDAE¹

Description	<p>Sponsor: Ministry of Industry, Tourism and Trade.</p> <p>This plan, designed as a continuation of the 2005-2010 PER, includes new energy scenarios and the incorporation of objectives in coherence with the 2009/28/EC Directive of the European Parliament and the Council, on the promotion of the use of energy from renewable sources, which sets binding minimum targets for the European Union as a whole and for each of the member states.</p>
Objectives	<p>In Spain, the goal sets that renewable sources account for at least 20% of the final energy consumption in 2020, with a minimum contribution of 10% of renewable energy sources in transport in that year.</p> <p>Specific objectives:</p> <ul style="list-style-type: none"> - Getting a proportionate development of the renewable energy basket. - Converting wind energy renewable source in the largest share. - Increasing the contribution of solar energy. - Distributing evenly the use of thermal biomass between industrial and domestic sector. - Intensifying the growth in the use of biodiesel.
Actions	<ul style="list-style-type: none"> - Development of management systems of the electricity demand and the smart grids in general. - Simplification of the administrative procedures in renewable power facilities. - Adaptation of the legal framework of the special regime to sectoral aspects. - Specific regulatory treatment for the network connection and authorization of renewable small power facilities. - Reduction of administrative barriers to the R & D projects related to renewable power generation.

¹ Given the economic crisis and the state of the electrical system, which entails a large and growing deficit of the fee threatening its sustainability, the Ministry of Councilor approved in January 27th, a law to temporarily suspend the renewable energy pre-allocation procedures and delete, also temporarily, the economic incentives for new installations of electricity production from renewable energy sources, waste and cogeneration.

	<ul style="list-style-type: none"> - Simplified administrative procedure for experimental R & D platforms for offshore wind and/ or energy of the sea. - Establishment of a Net Balance mechanism for renewable electrical installations aimed at consumption. - Development of a National Development Programme in Agroenergy. - Establishment of a Certification and Qualification System for Installers. - Establishment of an obligation to use biofuels for transport concession lines. - Creation of a National Development Plan for Biofuels Technology.
Budget	62.500 Million Euro.
Beneficiaries	<ul style="list-style-type: none"> - Local public institutions that promote and publicize the Action Plan. - The research groups at universities or research institutes. - SMEs, SME associations or groupings of the sectors mentioned.
Website	http://www.idae.es/index.php/mod.documentos/mem.descarga?file=/documentos_11227_PER_2011-2020_def_93c624ab.pdf

PAEE 2011-2020
ENERGY SAVING AND EFFICIENCY ATION PLAN 2011-2020 OF THE IDAE

Description	<p>Sponsor: Ministry of Industry, Tourism and Trade.</p> <p>Plan prepared by the Ministry of Industry, Tourism and Trade, in collaboration with the IDAE, approved by Resolution of the Council of Ministers in July 2011, with the aim of:</p> <ul style="list-style-type: none"> - Complying with Directive 2006/32/EC of the European Parliament and the Council on the efficiency of the end-use energy and energy services. This Directive sets a minimum target of 9% energy savings by 2016. - Meeting targets 20-20-20 (20% reduction in energy consumption, 20% of final energy renewables, 20% reduction in CO2 emissions). - Following up of previous national plans: Action Plan 2005 - 2007 and Action Plan 2011-2020. <p>This Plan includes a balance of the energy efficiency plans prior to 2010, leading to conclude that Spain already meets the target of 9% energy savings by 2016 set by 2006/32/EC Directive.</p>
Objectives	<p>The Energy Saving and Efficiency Plan aims to reduce the final energy consumption per unit by 2% per year between 2010 and 2020.</p> <p>This objective of saving 20% consumption in 2020 represents 35.6 million tonnes of oil equivalent and cumulative savings of over 965 million barrels.</p> <p>Fields of application of the proposed savings:</p> <ul style="list-style-type: none"> - Industry: 14% saving. - Transport: 33% saving. - Building and Equipment: 15.6% saving. - Public services: 32.7% saving. - Agriculture and Fisheries: 4.7% saving. <p>The approved Plan will bring significant economic benefits for reductions in fossil fuel imports, reductions in CO2 emissions associated with combustion, and generate jobs and stimulate</p>

	<p>economic activity.</p> <p>The Action Plan will mobilize an investment of 45.985 million euros and savings of 78.687 million euros, representing a net profit of 32.702 million euros.</p>
<p>Actions</p>	<p>Specific measures by sector:</p> <p>INDUSTRY</p> <ul style="list-style-type: none"> - Strategic projects in industry. - Implementation of energy management systems. - Support for energy audits. <p>TRANSPORT</p> <ul style="list-style-type: none"> - Modal shift. - Rational use of resources. - Fleet renewal. - Transport to work. - Air corridors. <p>BUILDING AND EQUIPAMMIENT</p> <ul style="list-style-type: none"> - Bulding surrounding. - Thermal and lighting facilities. - High energy rating. - Appliances Renove Plan. <p>PUBLIC SERVICES</p> <ul style="list-style-type: none"> - Improved lighting. - Training of municipal energy managers. <p>AGRICULTURE AND FISHERY</p> <ul style="list-style-type: none"> - Improved efficiency in risk facilities. - Migration to conservation agriculture. - Drip Irrigation. <p>CHP</p> <ul style="list-style-type: none"> - Installation of new power. - Renewal of the existing park. - Cogeneration of small power and non industrial.
<p>Beneficiaries</p>	<ul style="list-style-type: none"> - Local public institutions that promote and publicize the Action Plan. - The research groups at universities or research institutes. - SMEs, SME associations or groupings of the sectors mentioned.

Website	http://www.idae.es/index.php/mod.documentos/mem.descarga?file=/documentos_11905_PAEE_2011_2020_A2011_A_a1e6383b.pdf
----------------	---

Regional Aids

In Valencia, the Energy Agency of Valencia, the AVEN, is the body of the Government of Valencia, attached to the Ministry of Economy, Trade and Industry, which aims at the management and implementation of the energy policy in the Community of Valencia.

The AVEN holds the energy planning and management in accordance with the general guidelines of the Valencian Government, **in coordination with the different authorities and in the framework of the common energy policy of the European Union**, in order to achieve the following objectives:

- Energy diversification.
- Efficiency and quality of supply.
- Energy saving.
- Self-sufficiency.
- Promotion of renewable energy.
- Promotion of infrastructure.
- Use of new technologies.
- Respect for the environment

Its **main tasks** include:

- Providing energy advice.
- Controlling facilities and supply through the implementation of certification systems to ensure quality, safety and proper functioning.
- Arranging and managing grants and financial incentives.
- Providing training and contributing to research.
- Establishing information campaigns.
- Collaborating with the European Union.

**ENERGY SAVING AND EFFICIENCY PLAN IN THE VALENCIAN COMMUNITY
PLAN 2008-2012**

Description	<p>Promoter: AVEN (Valencian Energy Agency).</p> <p>This Plan is intended to promote the realization of projects using renewable energy sources, promote the use of biofuels, promote the energy research, promote the installation of technologies to reduce energy consumption and encourage fuel substitution or diversification for others of greater efficiency in all economic sectors: agriculture, domestic services, industry and transport.</p>
Objectives	<p>The main objective of this Plan is to decrease 1.1% per year primary energy intensity. Its purpose is defined by 5 points:</p> <ol style="list-style-type: none"> 1. Reduce the final energy consumption of the Valencian Community to decrease the final energy intensity in all economic sectors. 2. Reduce the primary energy consumption in Valencia so that the ratio of the total primary energy per GDP unit decreases. 3. Improve the competitiveness of the Valencian companies, by reducing their energy costs by introducing more efficient technologies. 4. Reduce the energy dependence of Valencia. 5. Reduce the environmental impact by using less polluting energy in order to meet the commitments made by the European Union as a whole in the Kyoto summit.
Actions	<p>Energy Saving and Efficiency in Business 2011 Program - Investments in energy saving measures:</p> <p>Investments in energy saving measures: This action is intended to promote investments in equipment and facilities replacing energy consuming equipment and facilities that use high-efficiency technologies or the best available technology to reduce energy consumption and CO2 emissions.</p> <p>Energy Saving and Efficiency in Buildings 2011 Program:</p> <p>Energy rehabilitation of the thermal covering of existing buildings: this measure aims to promote energy rehabilitation of the thermal covering of the existing residential and tertiary buildings (offices,</p>

	<p>hotels, hospitals, sports facilities, commercial, schools, etc.) so that they meet at least the minimum requirements set by the Technical Building Code.</p> <p>Energy Saving and Efficiency in Public Services 2011 Program:</p> <p>Renovation of existing facilities of street lighting and traffic lights.</p> <p>Energy Saving and Efficiency in the field of Energy Transformation Program:</p> <p>Investments in non-industrial cogeneration: promote the construction of cogeneration plants of high efficiency in Valencia, in the tertiary and non industrial sectors, by granting financial assistance in order to diminish the extra cost of investment in cogeneration in relation to other more traditional industrial sectors, with equivalent benefits in terms of primary energy savings and CO2 emissions, even with lower fuel.</p> <p>Energy Saving and Efficiency in Agricultural Holdings 2011 Program:</p> <p>Investment in saving measures in agricultural holdings: renew energy consuming facilities such as Agricultural Holdings Irrigation Communities, agricultural farms, etc., for others that use high-efficiency technologies and the best available technology.</p>
<p>Beneficiaries</p>	<ul style="list-style-type: none"> - Companies that meet the requirements of each of the actions. - City councils, public institutions or public or private companies authorised of the outdoor lighting services. - Energy Service Companies. - Communities of owners. - Associations or public bodies or holders of outdoor lighting system whose luminous flux incides on a public road. - The beneficiaries must have their address, registered office or production facility in Valencia, and the projects must be located in that territory.
<p>Website</p>	<p>http://www.aven.es/index.php?option=com_content&view=article&id=3&Itemid=4&lang=castellanoindex.html</p>

3.2. Experiences in the EU: good practices of European Projects

The following section presents a set of projects that have been approved under the financial European programs mentioned above, and, therefore, can inspire the design of new projects through analogies and complementarities.

As far as possible, this Guide has tried to come up with projects related to energy saving measures in industrial areas, namely:

- ✓ EPESUS Project: ECO-Industrial Park Environmental Support System.
- ✓ IGEIA Project: Integration of Geothermal Energy into Industrial Applications.
- ✓ GEO POWER Project: Geothermal energy to address energy performance strategies in residential and industrial buildings.
- ✓ RETS Project: Renewable Energies Transfer System.
- ✓ AIM 4 SME'S Project: Automatic Intelligent Metering for Small and Medium-sized Businesses.
- ✓ SURFENERGY Project: Advanced Tools for SURFace Finishing Processes to Optimise ENERGY Efficiency.
- ✓ EINSTEIN II Project: Expert-system for an INTElligent Supply of Thermal Energy in INdustry and other large scale applications.

EPESUS Project
ECO-Industrial Park Environmental Support System

Sector	Greening Business
Description of the project	<p>Eco-Industrial Park Environmental Support System - EPESUS is an Eco-Innovation project under the Entrepreneurship and Innovation Programme (EIP) component of Competitiveness and Innovation Framework Programme (CIP).</p> <p>The general aim of the system is to serve Small and Medium Size Enterprises (SMEs) within an industrial park or in any communication network, in improving their environmental requirements and competitiveness in international platform. The project aims at supporting the SMEs regarding their resource and energy efficiency by the aid of a software tool.</p>
Objective	<p>Eco-Industrial Park Environmental Support System (EPESUS) project aims to serve Small and Medium Size Enterprises (SMEs) within an industrial park or any communication network, in improving their environmental requirements, managing their resource usage and waste treatment and improving their energy efficiency.</p> <ul style="list-style-type: none"> - The project aims at designing industrial establishments named as the eco-industrial park (EIP). - The software is designed as a decision support tool in order to develop an eco-industrial park. - The project provides guidance for waste minimization and reuse, energy saving potential and optimization for the industrial establishments of an EIP. - Establishments of an EIP through utilization symbiotic relations. - The project system delivers a set of guidelines and best practices to the industrialists. - Software will be comprised of establishment, management, financial issues, sustainability and strategies on the design of EIPs. - The software will be consisting two modules: waste and energy.

	<p>The results – lessons learnt</p>	<ul style="list-style-type: none"> ✓ As a result of the project, decision makers will benefit at the stage of establishment of new industrial parks. ✓ Existing national industrial park managers are expected to be assisted in the decision making process among industrial parks. ✓ An increase in the awareness of industries on environmental liabilities and thus the implementation of the EU environmental Acquis within the national industry will also increase. ✓ Benefits such as, cleaner production, pollution and waste reduction and reuse, energy saving, inter-company co-operations are expected to be provided. ✓ Utilization of such symbiotic benefits among any group of industrial networks that are using the system.
	<p>Partners</p>	<ul style="list-style-type: none"> - General Directorate of Electrical Power Resources Survey and Development Administration. - Turkish National Committee on Solid Waste. - National Productivity Center of Turkey. - TEKPORT Ltd. - Dicon Group Ltd. - Bulgarian Business Network - LVI – Beratungs und Service GmbH. - ASO 1 OSB. - KOSGEB
	<p>Budget</p>	<p>1.097.642€ (EU contribution: 53%)</p>
	<p>Website</p>	<p>http://www.epesus.net/</p>

IGEIA PROJECT
Integration of Geothermal Energy into Industrial Applications

Sector	Heat production
Description of the project	<p>Integration of Geothermal Energy into Industrial Applications (IGEIA) is a project funded under the Intelligent Energy Europe Programme (IEE) component of Competitiveness and Innovation Framework Programme (CIP).</p> <p>Geothermal technology provides power, heating and cooling for single households, cities, for tourism, industry and agriculture. Geothermal energy may be used in a number of ways in the industrial field. Potential applications could include drying, process heating, evaporation, distillation, washing, desalination, and chemical extraction. While there are many potential industrial uses of geothermal energy, the number of European applications is relatively small.</p> <p>However, a fairly wide range of uses are represented: large retails and leisure, vegetable dehydration, fish processing and drying, and chemical recovery. Some large industrial applications exist in Europe: in Germany, in France and in Sweden. These systems provide the best present examples of industrial geothermal energy use.</p> <p>These examples have to be replicated in Europe. The IGEIA consortium will analyze the needs of the industry in order to provide an answer with a geothermal installation taking into account local aspects. The next step is to customize the answer, for disseminating the 'geothermal' products all over the EU industrial sector.</p>
Objective	<p>Industrial applications constitute the smallest sector of direct geothermal energy use. The industrial sector, at least in theory, offers a very attractive target for geothermal use. Historically this has not translated into extensive use however. The project aims at helping the development of geothermal heating and cooling into industrial sites.</p> <p>The IGEIA consortium plans to develop geothermal applications in the industrial sector in some countries. The consortium wants</p>

	<p>to convince the industry that the geothermal energy could offer solutions to its energy problems.</p> <p>The following are the objectives of this proposal:</p> <ul style="list-style-type: none"> - Identify energy needs from the industrial sector. - Investigate industrial sites that permit the use of geothermal application and evaluate its energy usage. - Presentation of local conditions permitting to install geothermal heating. Identify new energy savings in heating & cooling on sites. - Feasibility Study of the geothermal application. - Develop a European solution customized by country. - Inform the industrial sector on geothermal potential and its advantages (everywhere, every time).
<p>The results – lessons learnt</p>	<ul style="list-style-type: none"> ✓ A first important lesson learnt involves the financial incentives that can be granted to help an industrial in integrating geothermal energy into its applications. Being a solution with relatively high investment costs, it was crucial to inform key actors about the possibility to have their project financed and the way to apply for subsidies. ✓ Project meetings offer a great opportunity to discuss project management but also to share information about different techniques. A presentation of several innovative tools was held: simulation software, applications (Underground Thermal Energy Storage), Thermal Response Test... They learnt about other technologies developed across Europe. ✓ The results for the Mediterranean climatic conditions showed that geothermal energy use is not profitable unless cooling and heating needs are present simultaneously. Consequently, the geothermal system would be designed to provide the site minimum needs.
<p>Partners</p>	<ul style="list-style-type: none"> - EnPro Engineers Bureau Ltd, Estonia. - UBeG Dr. Erich Mands & Marc Sauer GbR, Germany. - Escola Superior de Tecnologia de Setúbal, Portugal. - SWECO VIAK AB, Sweden.
<p>Budget</p>	<p>703.692 € (EU contribution: 50%).</p>
<p>Website</p>	<p>www.saunier-associes.com/igeia/</p>

GEO POWER PROJECT
Geothermal energy to address energy performance strategies in residential and industrial buildings

Sector	Energy and sustainable transport
Description of the project	<p>Priority : Environment and risk prevention</p> <p>Geothermal energy is one of the most environmental-friendly and cost-effective energy resources in use and has the potential to help mitigate global warming if widely deployed in place of fossil fuel. Recent technological progress, the variability of the cost and the difficult of oil and gas supply, the need to reduce the use of fossil fuels to cut pollution and our reliance on supplies from foreign countries have made the exploitation of geothermal energy, especially low-enthalpy power generation utilizing GCHP (Ground Coupled Heat Pumps) an attractive and viable alternative.</p> <p>Technological advances have dramatically expanded the range and size of viable resources, especially for applications such as home heating and cooling, opening a potential for widespread exploitation (e.g. GE application to curb energy consumption of industries and SMEs).</p> <p>The GEO.POWER partners, being aware of energy challenges, decided to develop a capitalisation project on geothermal energy to fill their legislation gaps and in that way actively contribute to the EU "20-20-20" objective as well as to international climate agreements like Kyoto and Copenhagen protocols.</p>
Objective	<p>The general objective of GEO.POWER project, is exchange best practices related to low enthalpy energy supply and - after a technical and cost/benefit assessment to evaluate the potential of reproducibility - to prepare the ground to the transfer of some of the selected best practices within the Mainstreaming Programmes of the regions participating into the project by addressing applications mainly during the current programming period 07-13 as well as in the future regional framework instruments.</p> <p>This will be achieved through the development of one action</p>

	<p>plan per each involved region where technical guidelines, potential regional legislation and financing schemes will be transferred to the Managing Authority/Intermediate Body responsible of the EU Structural Funds mainstreaming programmes: according to these action plans, every MA could subsequently shape their political endorsement and address call for the concession of grants or negotiating procedures between local authorities and public-private stakeholders for spreading GCHP (Ground Coupled Heat Pumps) within its administrative boundaries. The specific objectives are:</p> <ul style="list-style-type: none"> - Investigation over the present status and future potential towards reducing greenhouses emissions and primary energy consumption/demand by spreading geothermal energy option in the regions involved in the project. - Evaluation of some of the best practices experienced all over Europe and analyses of their potential contribution/adaptation at local scale in line with EU environmental and sustainable energy legislation. - Development of legislative, technical, economic and marketing initiatives and measures to address the introduction and/or spread of the heat pump techniques in the housing & industrial sector within every regional operational plans; and improvement of the expertise and capacity building of policymakers, local technicians & professionals by delivering training actions and by sharing knowledge based on the best practices under evaluation. - Realization of a broad promotional campaign addressing the awareness and attitudes of key public and private stakeholders and professional groups (e.g. energy agencies, technicians, representatives of the managing authorities, house-yards associations, chamber of commerce, urban planners etc..) towards the potentialities of GCHP as effective instruments to improve the local energy balance and reduce greenhouses emissions.
<p>The results – lessons learnt</p>	<ul style="list-style-type: none"> ✓ Following a shortlist of 27 best practices that were examined during the project preparation phase, the partnership chose the most representative 12 BPs concerning GE for private and public buildings, industry and agricultural plants and crosscutting installations. ✓ In this frame, in every project area PPs formed up local

	<p>delegations (composed by an average number of 5 experts / stakeholders) that get exposed to information flows over the new GCHP technologies and their potential of application.</p> <ul style="list-style-type: none"> ✓ Main outcomes of the DD workshops and the benchmark reports (that identifies criteria for the application of ground source heat pumps - GCHP and the degree of homogenization of regulations, standards, guidelines, topography and land uses of the area, geological and hydrogeological settings, ground properties, weather conditions, building stock) developed by all PPs were used by the partnership to prepare the SWOT analysis aimed to measure the degree of transferability of the selected BPs. ✓ The project official website (including also the best practices database) is set out, operative and constantly updated. ✓ 3 local forums, to spread awareness about GCHP technologies and environmental benefits among MAs and local stakeholders, have been organized in UK, Hungary and Sweden.
<p>Partners</p>	<ul style="list-style-type: none"> - Province of Ferrara, Italy (Lead Partner). - Centre for Renewable Energy Sources and Saving, Greece. - Ministry of Regional Development and Public Works, Bulgaria. - ENEREA Észak-Alföld Regional Energy, Hungary. - Reading Borough Council, United Kingdom. - SP Technical Research Institute of Sweden. - National Environmental Protection and Energy Centre Nonprofit Ltd., Hungary. - Department of Energy Technology, Royal Institute of Science (KTH), Sweden. - Emilia-Romagna Region, Italy. - Institute of Geology at Tallinn University of Technology, Estonia. - VITO Flemish Institute for Technological Research, Belgium. - Geological Survey of Slovenia.
<p>Budget</p>	<p>€ 2.031.530 (EU contribution: 80%).</p>
<p>Website</p>	<p>www.geopower-i4c.eu</p>

RETS PROJECT
Renewable Energies Transfer System

Sector	Renewable energies.
Description of the project	<p>RETS project (Renewable Energies Transfer System) is funded through the INTERREG IV C programme.</p> <p>The aim of the project is to improve the knowledge and competencies of local and regional policy makers in renewable energy systems, and by doing so facilitate a greater deployment of effective renewable energy policies at local and regional levels. Through encouraging the set-up of sustainable development policies, the RETS project provides a way to anticipate European and international legislation, thus participating in the EU 2020 commitments: 20/20/20.</p> <p>RETS aims to tackle the challenges of renewable energies (RES) for local and regional authorities (in particular those with less than 25,000 inhabitants) in association with the expertise of existing competency centres that produce research, provide services, and use competitive intelligence tools on renewable energies. These small-sized authorities have to combat issues linked to their territorial competitiveness and access to project management skills for the implementation of complex projects (energy-mix).</p> <p>The RETS project will benefit local and regional authorities through the creation of simple usable tools to help them make informed choices for the implementation of the right renewable energy strategy within their territories. These tools include:</p> <ul style="list-style-type: none"> - The publication of collected and analysed regional renewable energies initiatives in a good practice guidebook. - Study visits to exchange ideas and practices between members of the RETS community. - Tailored RES seminars for local authorities to transfer knowledge, good practices and stimulate policy implementation - The creation of an online community through a

	<p>collaborative IT platform.</p>
<p>Objective</p>	<p>The objective of the RETS project is to improve the knowledge and competencies of local and regional policymakers in renewable energies through the effective collection, analysis, exchange and transfer of good practices in renewables.</p> <p>This will be realised through the creation of a European community for local authorities on renewable energies, comprised of two key elements: physical tools for meeting and exchanging viewpoints and a virtual platform for collaborative exchange and transfer of good practice through an innovative online approach.</p>
<p>The results – lessons learnt</p>	<p>RETS diffuses its activities in a two-step approach:</p> <ul style="list-style-type: none"> - In a first step, the activities developed concern the partners participating in the project: collection and analysis of renewable energy initiatives. - In a second step, the activities are widened to all policymakers in the partner regions and to other regions in Europe: publication on RETS website, and production of a Good Practice Guidebook regrouping and sharing the project results, targeting a wide European audience. <p>A total of 54 practices are available. The practices can be broadly divided into two main ways:</p> <ul style="list-style-type: none"> a. By six different types of technology (biomass, waste, wind, hydro, geo, solar). b. By five different types of intervention (Business support, Community energy, Local authority, Planning and Policy, Training and Accreditation). <p>The RETS project has created an online community in renewable energies (www.rets-community.eu), bringing together local authorities and renewable experts through the use of collaborative tools (Web 2.0 applications, such as a Wiki). In this way, members of the community can find, exchange, discuss and transfer information on renewables in a much more innovative way.</p>

<p>Partners</p>	<ul style="list-style-type: none"> - ADEC (Project lead) in Alsace, France (Lead Partner). - Pézenas city in Hérault, France. - IHK ZETIS GmbH in Rhenanian Palatinat, Germany. - Vescés Town near Budapest, Hungary. - Province of Varese in Lombardy, Italy. - City of Sittard-Geleen in the Limburg Province, Netherlands. - Sertã Town Council in the Pinhal Interior Sul Region, Portugal. - Pinhel Town Council in the Beira Interior Norte Region, Portugal. - ICEMENERG in Bucharest, Romania. - ENERGAP in Maribor, Slovenia. - IESR (Staffordshire University) in the West Midlands Region, UK. - Eco Centre Wales, UK.
<p>Budget</p>	<p>€ 1.908.715 (ERDF contribution: € 1.484.053).</p>
<p>Website</p>	<p>www.rets-project.eu</p>

AIM 4 SME'S PROJECT
Automatic Intelligent Metering For Small and Medium-sized Businesses

Sector	Advice and training in Energy Efficiency in SMEs
Description of the project	<p>With rising fuel prices there is a need for SMEs to have access to independent energy efficiency advice and training in order to reduce costs to help maintain their competitiveness.</p> <p>The project involves supporting small/medium businesses to use automatic detailed monitoring and targeting technology (intelligent metering).</p> <p>The detailed metering will be established for a range of business types and sizes in the small/ medium business sector and the resulting detailed energy and water use data will be analysed to identify energy saving opportunities.</p> <p>This information will help with providing energy awareness training to staff of the business, and in providing an on-site energy survey. It is intended that the training will form part of a certified training programme, and the training will give staff the ability to continue to analyse the data themselves beyond the duration of the project.</p>
Objective	<p>The project set out to demonstrate the potential for energy savings from automatic intelligent metering and to increase the uptake of intelligent metering in SMEs. The project's objectives/aims were:</p> <ul style="list-style-type: none"> - To automatically monitor energy (electricity, gas, heat, etc.) and water data in 75-100 SMEs from a range of sectors (manufacturing, commercial, etc.) in 5 different European countries. - To identify energy saving opportunities from the intelligent metering data, and to investigate the savings potential from using intelligent metering in SMEs. - To provide a bureau service to SMEs. - To train and raise awareness of the employees of the businesses with the help of the detailed monitoring information and high quality visual materials.

	<p>How the aims were achieved:</p> <ol style="list-style-type: none"> 1) Partners recruited a range of types and size of SMEs to be monitored in the project. 2) Intelligent/ ½ hourly energy/water monitoring equipment was set up in participating SMEs. 3) A common database was set up to hold data collected in the project, and partners arranged to send data to the database. 4) The first data collected for a certain SME was analysed to gain an understanding of energy use in the organization and to identify possible savings opportunities. Consumption graphs and possible savings opportunities were reported back to the SME. 5) Partners provided an energy monitoring bureau service to SMEs in the project. Consumption was monitored on an ongoing basis and unusual consumption or faults were reported to the business. 6) A training programme was prepared and energy efficiency-related training was delivered to users of the SME premises with the help of the detailed energy consumption information, which was fed back to the SMEs. 7) Information on the potential for energy savings opportunities from intelligent metering with SMEs, the project's experiences and results have been communicated and widely disseminated.
<p>The results – lessons learnt</p>	<ul style="list-style-type: none"> ✓ Detailed (e.g. 1/2 hourly) monitoring of energy (electricity, gas, heat)/water data in over 75 SMEs from a range of sectors (manufacturing, commercial, etc.). ✓ Energy and CO2 savings in participating SMEs. ✓ Businesses have been helped to analyse their energy use data. ✓ About 80 training sessions delivered, with over 300 SME facility users receiving energy efficiency-related training with relevance to their own building. ✓ Increased take up of intelligent metering in small/medium sized businesses and community groups. ✓ Over 20 case studies produced, 37 presentations given, 13 workshops held, over 20 press releases and 8 articles prepared. ✓ Increased awareness by SMEs of automatic intelligent metering, its applications, benefits and its potential for savings.

	<ul style="list-style-type: none"> ✓ Train building users in energy efficiency with relevance to their own building. ✓ A bureau service to support the participating SMEs on energy monitoring and analysis. ✓ Increased awareness by SMEs of automatic intelligent metering, its applications, benefits and potential for savings. ✓ Energy and CO² savings of about 10-25% in participating businesses. <p>Lessons learnt:</p> <ul style="list-style-type: none"> ✓ Despite rising fuel prices many SMEs do not recognise the value of intelligent metering. SMEs need to have the benefits of intelligent metering explained to them. Using case studies is a useful way of doing this. Furthermore it is need to be aware of the nature of the SME and of key persons within the SME to promote intelligent metering. ✓ Many SMEs are not willing to fund the installation of intelligent metering because there is no guarantee of the level of savings that can be achieved. Therefore, no payback period can be determined from the outset. ✓ As many of the grants available do not fund the actual installation of metering technology, having the support of local public service companies is a valuable way of setting up intelligent metering in SMEs at no cost to SMEs.
<p>Partners</p>	<ul style="list-style-type: none"> - Leicester City Council, United Kingdom (Lead Partner) - Energieagentur Waldviertel, Austria - Sonnenplatz Großschönau GmbH, Austria - EAV - Energetická Agentura Vysociny, z. s. p. o., Czech Republic - Association of Municipalities Polish Network "Energie Cités" (PNEC), Poland - Instituto de Engenharia Mecânica, Portugal - LABLEC - estudos, desenvolvimento e actividades laboratoriais, S.A., Portugal - De Montfort University, United Kingdom - Energy Control Group Ltd, United Kingdom
<p>Budget</p>	<p>€ 865.668 (EU contribution: 50%).</p>
<p>Website</p>	<p>http://www.aim4smes.com/</p>

SURFENERGY PROJECT
Advanced Tools for SURface Finishing Processes to Optimise ENERGY Efficiency

Sector	Surface Finishing and Printed Circuit
Description of the project	<p>SURFENERGY supports the introduction of energy efficiency measures by SMEs in the Surface Finishing and Printed Circuit manufacturing industry sectors.</p> <p>The aim is to increase the awareness of manufacturing companies to the introduction of energy management systems and the potential benefits that could result. The project outputs provide options for energy efficiency solutions, based on analysis and detailed understanding of generic production processes currently in use.</p> <p>SURFENERGY addresses non-technological barriers to the introduction of energy efficiency measures through the main project actions: an interactive software toolkit; process benchmarking; intelligence on emerging technologies; integration with environmental assessment. The toolkit will be rigorously evaluated in SME end-user applications testing during the second half of the project.</p> <p>Targeted dissemination through trade associations and other routes have increased awareness directly within industrial manufacturing SMEs.</p>
Objective	<p>This project will address non-technical barriers to the implementation of efficient energy management in these SME dominated "kindred" sectors. Information and advice on energy use is generally not available to these industries, and significant energy reductions could be achieved using established and new process technologies, materials and equipment, which are available industrially.</p> <p>The project objectives are to overcome the key barriers:</p> <ul style="list-style-type: none"> - Increasing the awareness of manufacturing companies to the possibility of introducing energy management systems and the potential benefits that could result. - Providing options for energy efficiency solutions to manufacturing companies, based on analysis and

	<p>detailed understanding of the generic production processes currently in use.</p> <p>Tools will be developed to enable these industry sectors to pick the best and most efficient chemical and process combinations for a comprehensive range of generic applications in the knowledge that they are optimised for both energy efficiency and environmental impact.</p>
<p>The results – lessons learnt</p>	<ul style="list-style-type: none"> ✓ The main project output is the development of an interactive software toolkit, based on technological analysis of generic processes, to facilitate options for energy efficiency solutions. The great majority of companies in these groups are SMEs, therefore the project is essentially addressed to the non-technological barriers to the introduction of energy efficiency to this type of organisation. ✓ An energy efficiency benchmarking component of the toolkit has been developed and applied to the collection, analysis and reporting of data for generic processes currently in industrial use. This approach enables industrial manufacturers to compare performance to an industry standard and acts as an important stimulus for the implementation of energy monitoring and management. ✓ Intelligence gathering on new, emerging technologies and market drivers have been carried out. SMEs in the target groups do not have sufficient resources to keep up to date with new technological developments that may have a strong impact on their future operations. Therefore an important aim is to inform the target audience about the energy efficiency implications of emerging technologies and market/economic/societal drivers that may have an impact on their operations in the short to medium term. ✓ In addition to achieving excellence in industrial energy efficiency, all processes must be sustainable with a low environmental impact. In order to establish the environmental issues related to materials flow, including emissions to air and water, a simplified/streamlined Life Cycle Analysis approach has been applied to complement the detailed energy flow assessment. ✓ Targeted dissemination through trade associations and other routes have been applied to increase awareness in the targeted manufacturing sectors with high levels of 'market penetration'. These are traditional SME intensive industries, which are closely related technologically in that they operate many very similar industrial processes with

		overlapping issues in respect of the need to reduce energy consumption.
	Partners	<ul style="list-style-type: none"> - C-Tech Innovation Limited, United Kingdom (Lead Partner) - PROTECTION DES METAUX, France - SYNDICAT NATIONAL DES ENTREPRISES D'APPLICATIONS DE REVETEMENTS ET TRAITEMENTS DE SURFACE, France - European Institute of Printed Circuits, Netherlands - BESEL. S.A., Spain - ENV-AQUA SOLUTIONS LTD, United Kingdom
	Budget	€ 1.075.861 (EU contribution: 50%).
	Website	http://surfenergy.eu

EINSTEIN II PROJECT
Expert-system for an INtelligent Supply of Thermal Energy in INdustry and other large scale applications

Sector	Thermal energy
Description of the project	<p>Industrial thermal energy (heat and cold) demand constitutes about 28 % of the total final energy demand and produces about 21 % of the CO2 emissions in Europe. Space heating and cooling in buildings contributes another 27 % to the final energy demand.</p> <p>Despite improvements in energy efficiency across Europe over the last decades, there remains a large unexploited potential for reducing energy demand which can be achieved by the intelligent combination of existing solutions and technologies. However, frequently the required investments are not made due to e.g. lack of knowledge and too few resources available for energy auditing.</p> <p>EINSTEIN II builds on the thermal energy auditing toolkit developed within the previous IEE project EINSTEIN. The toolkit, based on expert system software, guides the user through the whole procedure from auditing (visit, data acquisition etc.) and data processing, to the elaboration, design and quantitative evaluation of different solutions.</p>
Objective	<p>EINSTEIN II aims at a wider implementation of integral energy-efficient solutions for thermal energy supply in industrial companies with a high fraction of heat demand and for non-industrial users of similar demand profiles, such as hospitals, commercial buildings, district heating and cooling networks, etc.</p> <p>To further optimise thermal energy supply, a holistic approach is required with possibilities of heat recovery and process integration and by an intelligent combination of existing economically viable technologies.</p> <p>The EINSTEIN II project will go beyond what was achieved in the previous project, setting the following objectives:</p>

	<ul style="list-style-type: none"> - Consolidate the EINSTEIN thermal energy audit methodology and extend it to non-industrial uses. - Realise an intensive training programme with relevant actors (energy auditors) in additional countries. - Test and validate the improved and consolidated methodology in an audit campaign in the participating countries. - Develop of standards and contribution to standardisation activities ongoing in the European Committee for Standardization.
<p>The results – lessons learnt</p>	<ul style="list-style-type: none"> ✓ Introductory and advanced training courses for at least 200 energy auditors, industrial technicians and other relevant actors in the field of industrial energy efficiency for the use of this expert system and on innovative energetic solutions. ✓ Implementation of auditing campaigns in 72 companies in all participating countries that will have as an outcome innovative best-practice examples, and future energy audits induced by the project with an estimated primary energy saving of 10 TWh/year. The main steps of the audit procedure are: 1. data acquisition and visualization of the status quo; 2. Energy demand reduction through process optimization; 3. Heat recovery through an intelligent combination of heat exchangers, estimated through the pinch analysis; 4. Integration of renewable energy sources and high technology equipment, such as solar heating and cooling; heat pump technologies, CHP systems, efficient boilers and burners, efficient cooling and air condition, efficient heating and cooling supply to buildings. ✓ Publication of a European Committee for Standardization - CEN Workshop Agreement, initiation of new standardisation activities on the European level in the form of proposals for new work items, documented in the proceedings of the trends analysis workshop to be realised, and providing input to ongoing standardisation activities in Europe based on EINSTEIN II knowledge. ✓ Further development and dissemination of the EINSTEIN thermal energy auditing tool kit (expert system software tool and guidelines) that helps to reduce cost and to improve quality of energy audits by using a holistic approach. ✓ Dissemination activities for raising awareness and for widespread dissemination of the results.

	<p>Lessons learnt:</p> <ul style="list-style-type: none"> ✓ The uptake of the methodology by the nearly 200 trained energy auditors was very positive: 78 % of the trained auditors considered the overall concept of EINSTEIN as good or very good. ✓ The software tool has been substantially improved with respect to Version 1.1 (EINSTEIN-I project) both with respect to its functionality (new features added) and with respect to its stability and user friendliness. Further effort has to be dedicated especially to the aspects of stability and user friendliness rather than to the addition of new features and functionalities. ✓ The recruiting of companies for energy audits has been difficult in some countries, even if energy audits have been offered for free or for very low cost.
<p>Partners</p>	<ul style="list-style-type: none"> - energyXperts.NET (SPAIN, Germany) Lead Partner. - Joanneum Research Forschungsgesellschaft mbH (JOANNEUM), Austria. - Österreichische Energieagentur (AEA), Austria. - West Midlands in Europe (WMEC), Belgium. - Angel Kunchev University of Ruse (AKU), Bulgaria. - Chamber of Commerce and Industry-Drôme (CCI DROME), France. - Branderburg Economic Development Board (ZAB), Germany. - DIN German Institute for Standardization, Germany. - Cork Institute of Technology (CIT), Ireland. - TECNOALIMENTI (TCA), Italy. - Public Research Center Henri Tudor (CRP HENRI TUDOR), Luxembourg. - SCPC, s.r.o., Slovakia. - E4-Experts energía exergía economía ecología SL, Spain. - Madrid Chamber of Commerce and Industry (COCIM).
<p>Budget</p>	<p>€ 1.923.107 (EU contribution: 75%).</p>
<p>Website</p>	<p>http://www.einstein-energy.net</p>

OPTIMAGRID

ENERGY SAVING GUIDE IN INDUSTRIAL AREAS

4. Links and contacts

European Programs

Competitiveness and Innovation Program

- ✓ Official website: <http://ec.europa.eu/cip/>

Entrepreneurship and Innovation Program

- ✓ Official website: http://ec.europa.eu/cip/eip/index_en.htm

European Commission – Enterprise & Industry Directorate General
B-1049 Brussels
Belgium
Fax: +32 (0)2 299 80 16
E-mail: entr-cip@ec.europa.eu

European Investment Fund
Manager of the Program SME Guarantee Mechanism
43, Avenue J. F. Kennedy
L-2968 - Luxemburgo
Tel.: (35-2) 426 68 81
Fax: (35-2) 426 68 83 00
E-mail: info@eif.org

ICT Policy Support Programme

- ✓ Official website:
http://ec.europa.eu/information_society/activities/ict_psp/index_en.htm
- ✓ Database of financed projects:
http://ec.europa.eu/information_society/activities/ict_psp/cf/partner/login/index.cfm

European Commission – Information Society and Media Directorate General
B-1049 Brussels
Belgium
Tel.: +32 2 296 8596
Fax: +32 2 296 8388
E-mail: info-cip-ictpsp@ec.europa.eu

APROTECH/AETIC
Julian Seseña Navarro
C/ Príncipe Vergara, 74
28996 Madrid, España

Tel.: +34 91 590 2300
E-mail: jsesena@ametic.es

Instituto Nacional de Tecnologías de la Comunicación
Ignacio Caño Luna
C/ José Aguado, 41
24006 León
Tel.: +34 987 798 7877
E-mail: ignacio.luna@inteco.es

Intelligent Energy for Europe Program

- ✓ Official website: <http://ec.europa.eu/energy/intelligent/>
- ✓ Database of financed projects: <http://eaci-projects.eu/iee/page/Page.jsp>

Executive Agency for Competitiveness and Innovation
Marisa Olano
IDAE (Institute for the Energy Diversification and Saving)
Tel: +34 (91) 456 50 25 / 22, Fax: +34 (91) 555 13 89
molano@idae.es

Mr. Angel Chamero
Ministry of Economy
Dirección General de Energía y Minas
Tel: +34 (91) 349 74 26, Fax: +34(91) 349.75.55
achamero@mityc.es

Eco-innovation Program

- ✓ Official website: http://ec.europa.eu/environment/eco-innovation/index_en.htm
- ✓ Database of financed projects: <http://eaci-projects.eu/eco/page/Page.jsp>

INTERREG SUDOE Program

- ✓ Official website: <http://www.interreg-sudoe.eu/ESP>
- ✓ Database of financed projects: <http://www.interreg-sudoe.eu/ESP/f/138/Los-Proyectos-SUDOE/Los-proyectos-aprobados>
<http://www.interreg-sudoe.eu/contenido-dinamico/libreria-ficheros/300E1DE2-CC2B-3868-7EEC-2108B93D5ABC.pdf>

Joint Technical Secretariat
Plaza del Príncipe, nº 4, 1ª planta
39003 Santander

Tel.: +34 942 23 83 62
Fax: +34 942 23 84 28
Email: stcsudoe@interreg-sudoe.eu

Ministerio de Hacienda y Administraciones Públicas
Dirección General de Fondos Comunitarios
María Jesús VIDAL
Paseo de la Castellana 162
28046 Madrid
Tel: +34 91 5835267
Fax: +34 91 583 73 17
E-mail: MJVidal@sepg.minhap.es

Programa: INTERREG IV B MED

- ✓ Official website: <http://www.programmemed.eu>
- ✓ Database of financed projects:
<http://www.programmemed.eu/en/projects.html>

Ministerio de Economía y Hacienda DG Fondos Comunitarios
Marian URIARTE
E-mail: muriarte@sgpg.meh.es,
Teléfono: +34 91.583.50.91

Programa: Séptimo Programa Marco de Investigación y Desarrollo

- ✓ Official website: <http://ec.europa.eu/research/fp7/>
- ✓ Official website: http://cordis.europa.eu/fp7/home_es.html
- ✓ Database of financed projects: http://cordis.europa.eu/projects/home_en.html

Programa: INTERREG IVC

- ✓ Official website: <http://www.interreg4c.eu>
- ✓ Database of financed projects:
http://www.interreg4c.eu/approved_projects.html

Ministerio de Economía y Hacienda - DG FONDOS COMUNITARIOS
Mariano Paya
Ana Burgos
Paseo de la Castellana, 162
Madrid 28071
Tel.: + 34 91 583 5339
Fax: + 34 91 583 7317
Email: MPaya@sgpg.meh.es

Email: ABurgos@sgpg.meh.es

Programa: ENPI CBC MED

- ✓ Official website: <http://www.enpicbcmed.eu/>
- ✓ Base de Datos de proyectos financiados:
<http://www.enpicbcmed.eu/projects/running-projects>

ENPI CBCMED Office in Valencia
Generalitat Valenciana
C/ Cronista Carreres 11, 4º
46003 Valencia - Spain
Tel: +34 96 192 26 31
Fax: +34 96 192 26 11
enpicbcmed_valencia@gva.es
Eduardo Lázaro, Coordinador
lazaro_edulec@gva.es
Tel: +34 96 192 26 31
Vincent Ernoux
ernoux_vinc@gva.es
Tel: +34 96 192 26 30

PROGRESS

- ✓ Official website: <http://ec.europa.eu/social/main.jsp?catId=987&langId=en>

European PROGRESS Microfinance Guarantee

- ✓ Official website: <http://ec.europa.eu/social/main.jsp?langId=en&catId=836>

Instituto de Crédito y Finanzas Región de Murcia (Provider of PROGRESS Microfinance in Spain)

- ✓ Official website: <http://www.icrefrm.es/>

Instituto de Crédito y Finanzas de la Región de Murcia
Edificio Díaz Cassou
Santa Teresa 21, 2ª planta
30005 Murcia
Tel: 968375325
Email: info@icrefrm.es

European Investment Bank

- ✓ Official website: <http://www.eib.org/>
- ✓ EIB intermediary entities: http://www.eib.org/attachments/lending/inter_es.pdf

Luxembourg
98-100, boulevard Konrad Adenauer
L-2950 Luxembourg
Tel.: +352 43 79 1
Fax: +352 43 77 04
<http://www.eib.org/>

Madrid
Calle Ortega y Gasset 29, 5
E-28006 Madrid
Tel.: (+34) 914 31 13 40
Fax: (+34) 914 31 13 83

JESSICA

- ✓ Official website: <http://www.eib.org/products/jessica/index.htm>

European Investment Bank
100, boulevard Konrad Adenauer
L-2950 Luxembourg
Tel.: +352 43 79 – 83069
Fax: +352 43 79 – 63099
Email: jessica@bei.org

JEREMIE

- ✓ Official website: http://www.eif.org/what_we_do/jeremie/index.htm

European Investment Fund (JEREMIE Team)
96, boulevard Konrad Adenauer
L-2968 Luxembourg
Tel.: +352 42 66 88 1
Fax: +352 42 66 88 301
E-mail: jeremie@eif.org

España (Madrid)
Calle José Ortega y Gasset, 29
E-28006 Madrid
Tel.: (+34) 91 436 08 63
Fax: (+34) 91 578 00 07

IDAE – Valencian Institute for the Energy Diversification and Saving



- ✓ Official website: <http://www.idae.es/>

Information Service for Citizens on Energy Efficiency and Renewable Energies (SICER)

ciudadano@idae.es

Tel: 913 14 66 73

Fax: 91 523 04 14

Energy Agency of Valencia

- ✓ Official website: <http://www.aven.gva.es>

C/ Colón, 1-4ª planta

Tel: 963 427 900

Fax: 963 427 901

info_aven@gva.es

46004 Valencia

European projects

1. EPESUS – ECO-Industrial Park Environmental Support System

- ✓ Project file from Eco-innovation data base: http://eaci-projects.eu/eco/page/Page.jsp?op=project_detail&prid=11
- ✓ Project website: <http://www.epesus.net/>

2. IGEIA – Integration of Geothermal Energy into Industrial Applications

- ✓ Project file from Intelligent Energy Europe data base: http://eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=1609
- ✓ Project website: www.saunier-associes.com/igeia/

3. GEO POWER- Geothermal energy to address energy performance strategies in residential and industrial buildings

- ✓ Project file from Interreg IV C Programme data base: <http://www.interreg4c.eu/showProject.html?ID=102489>
- ✓ Project website: www.geopower-i4c.eu

4. RETS (Renewable Energies Transfer System)

- ✓ Project file from Interreg IV C Programme data base: <http://www.interreg4c.eu/showProject.html?ID=102121>
- ✓ Project website: www.rets-project.eu

5. Automatic Intelligent Metering For Small and Medium-sized Businesses (AIM 4 SME'S)

- ✓ Project file from Intelligent Energy Programme data base: http://eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=1431
- ✓ Project website: <http://www.aim4smes.com/>

6. Advanced Tools for SURFace Finishing Processes to Optimise ENERGY Efficiency (SURFENERGY)

- ✓ Project file from Intelligent Energy Programme data base: http://eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=1786
- ✓ Project website: <http://surfenergy.eu>

7. EINSTEIN II - Expert-system for an Intelligent Supply of Thermal Energy in INdustry and other large scale applications (EINSTEIN II)

- ✓ Project file from Intelligent Energy Programme data base: http://eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=2398

- ✓ Project website: <http://www.einstein-energy.net>