INOVENERGY — A PROJECT FOR ENERGY EFFICIENCY IN THE AGRO-FOOD INDUSTRY SECTOR

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ABSTRACT

The Inovenergy Project - Energy Efficiency in the Agro-Food Industrial Sector aims at surveying the energy use profiles of six industry subsectors: meat, fish, dairy, wine, fruit & vegetables and food conservation & distribution. This project is particularly focused on accounting the energy use in the freezing and refrigerating chambers, since these energy intensive equipments are responsible for a major fraction of the energy demands in this industrial sector.

The Portuguese agro-food industry is mainly developed by small to medium industrial units where typically, the annual values of energy consumption are below the threshold limit stipulated by the Portuguese regulation for mandatory energy audits. Therefore, a good potential for energy savings in this sector is expected in this sector, as reported by IDAE – Instituto para la Diversificación y Ahorro de la Energía, for the same kind of industry in Spain. To date, there are no studies in Portugal that characterize this fundamental sector, hence the importance of conducting a nationwide energy survey to establish fundamental energy and environmental Key Performance Indicators (KPIs) that would also serve for benchmarking.

The presentation and preliminary findings of this project will be presented including the characteristics and operating features of the refrigeration chambers and equipments which will be cross-referenced with the annual energy bills and production volumes.

INTENDED OUTPUTS

- To summarize the business’s annual production, turnover and process features.
- To collect annual energy requirements and technical features of the main cold producing equipment’s.
- To assess building features of acclimatized areas (insulation type and state, doors sealing, dimension, etc.).

SCOPE OF THE PROJECT

Project Inovenergy – Energy Efficiency in the Agroindustry Sector (Financed by COMPETE-SIAC-AACI/11/2011-Project 18642) was classified as a project of exceptional relevance and intends to have an in-depth understanding of not only the energy use in this sector, but also to survey the cold producing equipment, as this is, in most cases, the primary factor in increased energy consumptions, a value estimated to be of about 30% of a company’s cost structure. This project involves a partnership between eight institutions among superior education teaching institutions, state laboratories and producers associations, namely IPCB – Instituto Politécnico de Castelo Branco as the project’s coordinator, IPV - Instituto Politécnico de Viana do Castelo, IPB - Instituto Politécnico de Bragança, Animafarum – Agrocluster from Ribatejo, UC – Universidade de Coimbra through ADAI-LAETA, ISQ – Instituto de Solidariedade e Qualidade, IPP - Instituto Politécnico de Portalegre and UBI – Universidade de Beira Interior in order to collect the required data throughout all of the continental Portugal. The fundamental idea behind the project is to address the lack of comprehensive information regarding energy use in cold production so that one can advocate proper energy efficiency measures to maximize company’s competitiveness and ultimately, to reduce the Portuguese energy import debt and greenhouse gas emissions (GHG).

RESULTS FOR THE PRELIMINARY ASSESSMENTS

GENERAL DATA

- Number of companies included so far
- Average annual production and turnover by rank
- Average annual energy inputs and sum of costs
- Average annual energy input by energy unit
- Average annual energy cost by energy unit

FIRST PHASE - ONGOING

Companies' general characteristics (CAE, dimension, annual turnover, etc.)
- Type, costs and amount of energy inputs
- Raw material and annual production
- Active and passive refrigeration related equipment’s characterization

SECOND PHASE

In-depth energy audits to two companies per rank and institution
- Assessment of collected data and study of energy efficiency measures
- Results publication through Workshops and Best Practice Guides – data for benchmarks
- Management software to quickly point to sector-specific energy efficiency measures

AUTOMATIC ENERGY AUDITS

- In-depth energy assessment of two companies per rank and institution
- Energy monitoring (cold production)
- Environmental footprint
- Economic measures
- Rehabilitation of industrial and institutional buildings

FIRST PHASE

- Preliminary characterization of Agrofood industry ranks
- More than one economic activity (CAE) for a high level – production/maintenance/transportation/processing/wholesale/retail, etc.
- Assessment results will be presented in Workshops and Best Practice Guidelines
- Comprehensive energy audits to selected companies
- Comprehensive energy audits to companies that have already represent the fair average values of each industry rank
- Government intervention in energy efficiency measures
- Results will be presented in Workshops and Best Practice Guidelines

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THIRD PHASE

- Results aggregation for future energy efficiency measures
- The previous phases will serve to build an energy management software tool to help managers in assessing measures best suited for their industrial unit
- Results publication that will serve as a sector specific benchmarking tool, helping managers in internal assessments.