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Work Package:	WP 3 / Implementation of Energy Services in SMEs
Deliverable:	D7 Evaluation report of the energy checks
Partner:	Ambiente Italia srl
Region:	Lombardy

Summary

The energy check carried out in the premises of the involved companies have been performed following a common methodology, whose main purpose was to correlate the energy supply and demand by estimating, as closely as possible the distribution of final energy use.

The site investigation at each property are useful to know in detail all energy aspects of the company, the ones closely linked to the production cycle at one hand, and the type of supply at the other hand. The analysis of energy bills, and more generally of all energy-related documentation, has completed the cognitive picture, taken as a basis for defining measures to improve the energy system.

These were elaborated considering all aspects of potential improvement, from the stage of the production cycle, generation from renewable energy to the analysis of building envelopes.

The conducted studies let arise some common issues to all business and they characterize somehow the food sector.

Among the main aspects, the most common is the heat production. All examined realities are characterized by a high heat demand, primarily for the industrial process. In most cases, the heat production systems appeared oversized compared to actual needs, effectively lowering the overall efficiency of the thermal system. The replacement of heating systems is nevertheless very difficult, because in most cases they are recent, or far away from the end of their life cycle. For these situations it is therefore preferable to minimize the operational time, possibly concentrating it in a very short period of high intensity.

The integration of a pre-warming system for the water, such as solar heating or waste heat recovery, would provide significant energy savings because in certain periods of the year the solar gain alone may be sufficient for many final uses.

Another important aspect is the continuous and simultaneous use throughout the year both heating and cooling energy and therefore the use of natural gas and electricity. The CHP could make in these cases the energy system more efficient, but collides both with the recent installation of plant, and with a not sustainable initial financial burden as well. To reduce the electrical load is therefore preferable to act on final energy use, improving the thermal insulation of storage tanks and heated premises, and reducing where possible the volumes to be cooled through dummies. The large surface area available in the companies let us also deepen the idea of integration of photovoltaic plants grid connected, with a high initial investment, but currently receiving a good incentive that allows a quite acceptable pay back time.

Also aspects related to the efficiency of air compression systems, circulating pumps and envelopes of air conditioned facilities are evaluated. Companies have generally shown a special attention to these issues, more with regard to the first two aspects rather than on the third. In fact, the heat requirements (hot and cold) of the offices or work areas generally absorb a percentage of consumption very low compared to usage for the process, and therefore are less relevant in terms of attention. Where possible, some suggestions are however given in relation to this issue, often improved by simple low cost measures compared to total business costs.

The energy checks carried out gave following results:

Company	Total energy use	Electricity	Gas	Oil	Total savings	
	MWh/year	MWh/year	MWh/year	MWh/year	MWh/year	%
Caseificio Zani F.lli	11200	2600	8600	0	2520	23%
Cesari Vini	1370	600	770	0	285	21%
Centro Agricolo Fondazione	3847	700	2970	177	430	11%
Caseifici Gelmini	4800	2200	2600	0	1205	25%
Cesari Amarone	100	80	20	0	11	11%
Cesari Appassimento	110	110	0	0	16	15%

October 2007 – March 2010

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