i'Tec_E6
January 2002

Keywords: Audit – Energy - Plant

Energy pre-diagnosis in an animal feed manufacturing plant

1. Objectives

The objectives of an energy pre-diagnosis are:

- to increase the awareness of company executives of various energy-related aspects
- to produce an energy, technology and regulatory balance sheet for an animal feed plant, by means of a brief inventory
- to assess the plant's potential energy savings
- to guide the company's "energy" approach by suggesting areas for improvement (simple actions, actions requiring investment, etc.) and/or by preparing one or more in-depth studies (a general well-instrumented diagnosis or specialist diagnosis relating to a part of the manufacturing process, compressed air, steam, etc.)
- and/or to respond to a specific energy-related problem (for example: optimisation of the operation of a centralised metering and energy management system).

2. Cost of the study

The Ademe (the French Environment and Energy Management Agency) offers financial support for conducting an energy pre-diagnosis.
This funding equates to 90 % of the total cost of pre-diagnosis. This funding is not subject to VAT.
The total cost (including travel costs) of an energy pre-diagnosis is 2300 Euros, excluding VAT.
With the ADEME's financial support, the cost price of the study for industrial operators is 230 Euros excluding VAT.

3. Sequence

A pre-diagnosis involves 3 stages:

- Stage 1: Preparation,
- Stage 2: Site study,
- Stage 3: Study report.

3.1. Preparation

Preparation consists of the external agent:

- identifying people and their responsibilities within the company,
- setting a date for his/her visit,
- sending the company:
  - a list of information to be gathered (thereby saving time during the visit),
  - a detailed programme of work listing the people to be interviewed during the visit.

3.2. Site study

The external agent makes a 2-day visit to the site (the duration of the visit can be altered depending on the site). This visit proceeds in accordance with the programme of work sent to the company in advance.
The site study has 3 distinct parts:
① the opening meeting,
② the site assessment,
③ the closing meeting.

3.2.1. Opening meeting

The site visit begins with an opening meeting. The meeting brings together the plant's management, the people to be interviewed during the site assessment and the external agent.
The primary aims of this meeting are:

- to present energy to the company in its current context (international, national, sector-specific and regulatory contexts, the link between energy and the environment, etc.),
- to assess the company's sensitivity and general concerns in relation to energy,
- to recap on the programme of work for the 2 day visit.

3.2.2. Site assessment

The aim of the site assessment is to identify the plant's issues and problems relating to energy. The site assessment is conducted on the basis of a specific investigation protocol for the industrial animal feed sector.
This protocol was drawn up by TECALIMAN on the basis of its 15 years experience in the field of energy and the environment.
The investigation protocol includes:

- an examination of data relating to the plant's overall activity,
- an examination of the plant's overall energy performance,
- a technical and functional examination of the facility,
- an examination of the regulatory situation.

An examination of the each of the points outlined above is conducted on the basis of a survey questionnaire.
This survey questionnaire is completed by means of observations, interviews with personnel and consultation of the available documentation.

3.2.2.1 Examination of data relating to the plant's overall activity

This examination relates to:

- the company's organisation and structure,
- existing management systems,
- future prospects (changes in production, investment projects, etc.),
- site-specific constraints, etc.

3.2.2.2 Examination of the plant's overall energy performance over one year

The aim is to assess the plant's potential energy savings.
The examination of the plant's situation relates to:

- specific electricity consumption and specific heat consumption,
- the purchase prices of electrical and heat energy,
- production characteristics (the nature of production, quantity, quality constraints imposed on the feed produced, etc.),
- internal energy management (existing meters, control panel, choice of energy and contracts, reactive power, etc.).

The plant's energy situation is assessed in relation to the sector's energy scorecard (frame of reference established by TECALIMAN).

3.2.2.3 Technical and functional examination of the facility

This examination relates to:

- the manufacturing process,
- electricity generation and distribution facilities,
- steam production and distribution facilities,
- air production, distribution and use facilities,
- recovery of energy flows,
- the management and operation of facilities (maintenance, staff training, etc.).

3.2.2.4 Examination of the regulatory situation

This examination relates to compliance with statutory obligations in terms of preventing risks associated with the use of energy (fuel storage, atmospheric discharges, etc.).

3.2.3. Closing meeting

The site visit closes with a meeting, the key aim of which is to conduct a "hot" review of:

- the observations made during this phase,
- the work that still needs to be carried out (possible additional information to be obtained by the company, date for submission of the study report, etc.).

3.3. Study report

At the end of each site fact-finding visit, the external agent analyses the data gathered and produces a report recording the results of his/her analysis.
This report contains specifically:

- a simplified description of the main facilities,
- information on the key ratios used for the energy analysis
- an energy balance sheet for one year,
- an assessment of internal energy monitoring
- a summary assessment of the main energy consuming workshops
- an assessment of the primary fluid and metering networks (electricity, gas, water, etc.),
- an assessment of energy use within the manufacturing process, in annexes, etc.
- proposals for possible actions to improve the situation. Each proposal specifies the nature and extent, as well as the expected and potential benefits, of the recommended action.