

MODEL FOR AUDIT REPORT TABLE OF CONTENTS

Industrial energy audit

FINLAND

TABLE OF CONTENTS

Industrial Energy Analysis and Audits should be based on this model for the Table of Contents so that all the savings potentials and basis for potentials of different technical systems and equipment shall be clearly verified.

FOREWORD

Target of the analysis, name of the facility, funding, contact persons and auditors.

1 SUMMARY OF THE ENERGY ECONOMICS AND PROPOSED SAVING MEASURES

1.1 Audited Facility

Introduction of the facility with short descriptions of the processes and other important factors.

1.2 Energy Economics and Saving Potentials

Description of the energy consumption levels, saving potentials and proposed measures. These descriptions can be divided into subtitles such as heat/electricity/water.

Table 1. Summary of the Energy Consumption (heating, electricity, water) and savings potentials.

Table 2. Summary of the Proposed Measures

2 GENERAL INFORMATION

2.1 Facility

Name

Address

Buildings

-Building Register Code

-Construction year and renovation and/or extension year(s)

-Building type

-Volume and area

2.2 Production Structure, Volume of Production and Personnel

More detailed description of the production structure, volume of production and personnel of the audited facility.

2.3 Utilities and connections to networks

Description of the heating/electricity/water utilities or production.

2.4 Operation and Maintenance

Description on operation/maintenance organizations, consumption monitoring and maintenance contracts.

3 ENERGY AND WATER CONSUMPTION AND COSTS

Total consumption, consumption by energy types, specific consumption and development of consumption and costs during the last years. Important changes in factors such as production structure, volume of production or number of personnel (which have significant effect to energy consumption) should also be described.

3.1 Energy and Water Supply

Detailed description of energy and water supplies and/or production.

3.2 Total Consumption and Costs

Numerical and graphical presentation, also history data if available

3.2.1 Heating

3.2.2 Electricity

3.2.3 Water

3.2.4 Other consumption and costs

3.3 Division of Energies (IN THE AUDIT)

Division of all different energy types shall be presented numerically and all technical systems / equipment with an energy consumption share of more than 5 % shall be presented separately. The values can be based either on measurements or on calculations.

3.3 Energy Balance (IN THE ANALYSIS)

All primary and secondary energy flows shall be presented graphically (Sankey diagram or similar) and numerically. Balances for subprocesses/process equipment/production lines can also be presented in chapter 6.

3.3.1 Heating

3.3.2 Electricity

-consumption

-power

3.3.3 Water

3.3.4 Other balances

4 BASIC SURVEY AND ENERGY CONSUMPTION OF BUILDING SERVICES SYSTEMS

Description of building services systems, main equipment, functional criteria and functional condition (subtitle 4.x.1). All information shall be divided based on energy flow direction; production/transfer/supply point. The energy calculation criteria for the technical system should be based on at least annual totals.

4.1 District and Aerial Heating Systems

4.2 HVAC and Plumbing (Mechanical) Systems

4.3 Electrical Systems

- 4.4 Building Automation System
- 4.5 Cooling Systems
- 4.6 Other Building Services Systems
- 4.7 Building Envelope and Structures

5 BASIC SURVEY AND ENERGY CONSUMPTION OF PROCESS TECHNICAL SERVICES SYSTEMS

Description of process technical services systems, main equipment, functional criteria and functional condition (subtitle 5.x.1). All information shall be divided based on energy flow direction; production/transfer/supply point. The energy calculation criteria for the technical systems shall be based on at least annual totals.

- 5.1 Water Heating Systems
- 5.2 Steam Systems
- 5.3 Hot Oil Systems
- 5.4 Gas Systems
- 5.5 Pressured Air Systems
- 5.6 Process Ventilation Systems
- 5.7 Process Cooling Systems
- 5.8 Process Electrical Systems
- 5.9 Process Plumbing Systems
- 5.10 Other Process Technical Services Systems

6 BASIC SURVEY AND ENERGY CONSUMPTION OF PROCESS EQUIPMENT (IN THE ANALYSIS)

If the work classified as the "Industrial Energy Audit", the processes shall be described in chapter 2.2. In an "Industrial Energy Analysis" the processes shall be described by subprocess/equipment and energy balances presented accordingly.

- 6.1 Subprocess/Process Equipment A
 - 6.1.1 Functional Description
 - 6.1.2 Energy Balance

6.2-n Subprocess/Process Equipment B-n

7 ENERGY SAVINGS AND BASIS OF THE PROPOSED MEASURES

Description of all proposed energy saving measures. The savings and investment cost analyses to be presented as tables. Also measures not proposed to be activated can be presented with related calculations. Chapter 7.3 in "Industrial Energy analysis" only.

- 7.1 Building Services
- 7.2 Process Technical Services
- 7.3 Process Equipment (IN THE ANALYSIS)

APPENDICES

Information with significant importance which cannot be presented as a part of the text report (because of number of pages, quality of presentation, etc.) shall be presented as appendices. Critical attitude concerning number of appendices and informative value is necessary.

Following documents should not be published as appendices:

- a) full size plans - diagrams should be used instead*
- b) equipment schedules when this information is not collected in the audit*
- c) results of the measurements as graphical presentations when the information is not important or the graphics do not have titles or legends*
- d) simple calculation formulas - calculation criteria are very important instead*

The basic principle concerning appendices is that information in the appendices is important to the project and it has a reference in the text.