

MODEL REPORT FOR BUILDING ENERGY AUDIT FINLAND “KIINTEISTÖKATSELMUKSEN ESIMERKKIRAPORTTI” Motiva publication B1/2000

The model report describes the content and presentation of a building audit in a service sector building. The site in the report is fictional (a school building) but based on a real case. The model report shows the report text and "speech bubbles" with comments and instructions to the writer.

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Introduction

(1 page)

- description of a building audit
- method of work
- Finnish EAP, subsidy policy
- auditors' contact information, authorisation ID
- date of report

1. Summary of the energy use of the building and suggested saving measures **(4 pages)**

- introduction of the present consumption level, specific consumptions
- main saving measures in heating, electricity and water
- summary Table 1 (present situation, saving potential, investments)
- summary Table 2 (all suggested saving measures, their effect on energy and costs, payback time for each measure)

2. Basic data of the building

(11 pages)

2.1. Site information

2.2. Connections to networks

2.3. Consumption of energy and water

2.3.1. Heating energy

- energy use from 3 years
- monthly energy use (summer winter)
- costs
- tariff
- consumption breakdown

2.3.2. Electricity

- with similar subtitles as 2.3.1
- peak capacity
- daily energy use (day/night)
- tariff components

2.3.3. Water

- with similar subtitles as 2.3.1

2.4. Operation, maintenance and facility management

2.4.1. Use of the building

2.4.2. Operation and maintenance organisation

2.4.3. Monitoring of energy consumption

2.4.4. Maintenance contracts

2.4.5. Building automation and control system

3. Audit on the mechanical and electrical systems

(13 pages)

(describing the existing situation)

3.1. Heating system

3.1.0. System description

3.1.1. Heat production

3.1.2. Heat distribution (network, pumps, valves)

3.1.3. Room equipment (radiators, convectors)

3.1.4. Insulation

3.1.5. Room temperatures (with reference to Appendix with measured temperatures)

3.1.6. Control system for heating (with setpoints)

3.2. Water and sewage system

3.2.1. Water treatment

3.2.2. Water supply network (network, pressure level, valves, hot water circulation)

3.2.3. Faucets and fixtures (with reference to Appendix with measured water flows)

3.2.4. Insulation

3.2.5. Pump stations

3.2.6. Control system for domestic hot water

3.3. Ventilation and air conditioning systems

3.3.0. System description

3.3.1. Air handling units and processes

- list of units
- service areas and air flows
- energy consumption of units
- operating times
- heat recovery systems
- humidification

3.3.2. Ducts and insulation

3.3.3. Room equipment

3.3.4. Control system for air handling units

3.4. Cooling systems

3.4.1. Cooling for air handling units

3.4.2. Space cooling

3.4.3. Cool storages

3.4.4. Other cooling systems

3.5. Electrical systems

3.5.1. Power distribution

3.5.2. Equipment and their capacities

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- kitchen
- ventilation units and pumps
- electrical heating
- frost protection
- special equipment

3.5.3. Electricity metering

3.5.4. Reactive power compensation

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3.5.5. Building automation system connections to electrical system

3.6. Building envelope

3.6.1. Windows

3.6.2. Doors

3.6.3. Walls and roof

3.7. Other systems

3.7.1. Swimming pool

3.7.2. Local extract units (laboratory)

4. Suggested energy saving measures and their profitability (12 pages)

(all titles are covered even if there is no saving possibility, this is to show that the auditor has noted all the typical saving elements)

4.0. Tariffs used in energy saving calculations

4.0.1. Heating energy

4.0.2. Electricity

4.0.3. Water

4.1. Heating systems

4.1.1. Heat production

4.1.2. Reducing room temperature and improving control

- summertime heating
- changes in indoor temperature
- balancing the heating network
- thermostatic radiator valves

4.1.3. Control system for heating

- temperature settings
- improving control functions
- changing control principles

4.1.4. Pipe and boiler insulation

4.1.5. Other saving possibilities

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4.2.2. Reducing pressure level

4.2.3. Faucet retrofit

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4.2.5. Other saving possibilities

4.2.6. User behaviour

4.3. Ventilation and air conditioning systems

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- changing control principle (demand based control)
- night time ventilation

4.3.2. Air flows

- balancing air flows
- demand based air flows
- use of half and full capacity of units

4.3.3. Service areas

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 - fan motors
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 - 4.5.8. User behaviour
- 4.6. Building envelope
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 - 4.6.2. Reducing transmission losses
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2. Tariff comparison
3. Measured temperatures and lighting levels
4. Measured water flows from faucets
5. Air handling units (air flow, operating time, temperatures, control principles...)
6. Measured power and reactive power (week)
7. Measured power and reactive power (day)
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AUDIT II