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Test and Calculation Methods of Energy Consumption for Forestry Enterprises

林业企业能耗测试与计算方法

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Test and Calculation Methods of Energy Consumption for Forestry Enterprises

1 Scope

This Standard specifies the terms and definitions of test and calculation methods of energy consumption, the types of energy, and the scope of test and calculation, the general requirements for test and calculation, the test and calculation methods, as well as the classification and calculation of comprehensive energy consumption for forestry enterprises.

This Standard is applicable to the test and calculation of energy consumption for forestry enterprises.

2 Normative References

The following documents are indispensable to the application of this document. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 2589 General Principles for Calculation of the Comprehensive Energy Consumption

GB 17167 General Principle for Equipping and Managing the Measuring Instrument of Energy in Organization of Energy Using

GB/T 23331 Energy Management Systems - Requirements

3 Terms and Definitions

What is defined in GB/T 2589, and the following terms and definitions are applicable to this document.

3.1 Forestry Enterprises

Forestry enterprises is a collective term for various industrial enterprises related to the forestry industry. It includes enterprises in wood production, storage and transportation, wood and bamboo processing, wood-based panel production, chemical industry of forest products, forestry machinery and biomass energy preparation, etc.

5.3 All equipment for energy using shall receive the test and calculation of energy consumption within the same statistical reporting period. For equipment for energy using with periodic production process characteristics, the test and calculation of energy consumption shall be performed on the baseline of the same product output.

5.4 In terms of forestry enterprises that produce more than one type of products, the test and calculation of energy consumption shall be independently conducted for the main production system, the auxiliary production system and the subsidiary production system of the various products. The energy consumption of the shared auxiliary production system and the subsidiary production system shall be apportioned in accordance with the actual proportion of various products in production.

5.5 In terms of forestry enterprises that simultaneously produce more than one type of products, the test and calculation shall be conducted in accordance with the actual energy consumption of each type of products. When it is impossible to respectively calculate the energy consumption of each type of products, it shall be converted into a standard product for unified test and calculation or be apportioned in accordance with the ratio of output to energy consumption.

5.6 The comprehensive energy consumption of products shall not include the various items of energy consumption not used for production, such as: infrastructure construction and technological transformation, etc.

5.7 The types of energy included in the test and calculation of energy consumption shall satisfy the requirements for filling in the national energy statistical report; the various types of energy shall not be repeatedly counted or undercounted. All equipment for energy using of the main production system, the auxiliary production system and the subsidiary production system, and related energy-consuming working mediums and energy consumption used as raw material energy for a certain type of products also shall not be repeatedly counted or undercounted.

5.8 The principle of converting various types of energy into standard coal shall comply with the relevant stipulations of GB/T 2589.

6 Test and Calculation Methods

6.1 Test and Calculation of Energy Consumption of Main Production System

6.1.1 Test boundaries

For the whole production process, starting from the moment that raw materials enter the production plant, to the packaging and exit-factory of qualified products, conduct the test on the energy consumption of all equipment for energy using of the main production system, the energy used as raw materials and the energy consumption

6.1.4 Test and calculation methods

In accordance with the test items and test contents specified in Table 1 and the requirements of 6.1.2, conduct the test; obtain the various test results of the statistical reporting period.

The comprehensive energy consumption of the main production system shall be calculated in accordance with Formula (1):

$$E_a = \sum_{i=1}^{n} (e_{a,i} \times p_{a,i}) \quad \cdots\cdots\cdots\cdots (1)$$

Where,

E_a---the comprehensive energy consumption of the main production system;

n---the number of energy types consumed in the main production system;

$e_{a,i}$---the total physical quantity of the i^{th} type of energy consumed in the main production system;

$p_{a,i}$---the conversion coefficient of the i^{th} type of energy; converted in accordance with the calorific value of energy or the equivalent value of energy source.

6.2 Test and Calculation of Energy Consumption of Auxiliary Production System

6.2.1 Test boundaries

It includes test of energy consumption of all equipment for energy using of the auxiliary production system, such as: driving force, power supply, machine maintenance, water supply, compressed air, heating, refrigeration, instrumentation and raw material sites in the factory, as well as energy consumption formed by relevant energy-consuming working mediums.

6.2.2 Test requirements

6.2.2.1 The various equipment for energy using of the auxiliary production system shall

E_b---the comprehensive energy consumption of the auxiliary production system;

m---the number of energy types consumed in the auxiliary production system;

$e_{b,i}$---the total physical quantity of the i^{th} type of energy consumed in the auxiliary production system;

$p_{b,i}$---the conversion coefficient of the i^{th} type of energy; converted in accordance with the calorific value of energy or the equivalent value of energy source.

6.3 Test and Calculation of Energy Consumption of Subsidiary Production System

6.3.1 Test boundaries

It includes test of energy consumption of all equipment for energy using of the subsidiary production system, such as: office, central laboratory, central control room, finished product inspection room and canteen, as well as energy consumption formed by relevant energy-consuming working mediums.

6.3.2 Test requirements

6.3.2.1 The various equipment for energy using of the subsidiary production system shall have stable performance and good operating conditions; satisfy the normal operation of forestry enterprises' production activities.

6.3.2.2 The subsidiary production system and the main production system shall determine mutually consistent energy consumption statistical reporting period.

6.3.3 Test content and test frequency

Within the statistical reporting period, the test content and test frequency of energy consumption of the subsidiary production system shall comply with the stipulations of Table 3.

Table 3 -- Test Content and Test Frequency of Energy Consumption of Subsidiary Production System

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