

ICS 03.220.50
CCS F 01

MH

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

MH/T 5112-2016

**Guidelines for energy efficiency evaluation on civil airport
terminals**

(English Translation)

Issued on: January 27, 2016

Implemented on: May 1, 2016

Issued by: Civil Aviation Administration of China

Table of Contents

- Foreword
- 1 Scope
- 2 Normative references
- 3 Terms and definitions
- 4 General principles
- 5 Energy consumption intensity index and management of airport terminal
 - 5.1 Energy Consumption Intensity Index of Airport Terminal
 - 5.2 Constraint value and guide value of energy consumption intensity index for airport terminal
- 6 Energy efficiency indicators and management of the energy system of the airport terminal
 - 6.1 Energy efficiency indicators of airport terminal building energy system
 - 6.2 Constraints and guide values of energy efficiency indicators for energy systems

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed and interpreted by the Development Planning Department of the Civil Aviation Administration of China.

This standard was approved by the Aircraft Airworthiness Certification Department of the Civil Aviation Administration of China.

This standard is under the jurisdiction of the China Academy of Civil Aviation Science and Technology.

Drafting organizations of this standard. Beijing Capital Airport Energy Conservation Technology Service Co., Ltd., Civil Aviation Science and Technology Research Institute of China, Tsinghua University.

Drafters of this standard. Wang Zheng, Wang Tao, Gao Xiaohui, Du Bin, Tu Sidong, Fu Bo, Zhang Xin, Zou Wenbo, Sun Ling, Wei Qingpeng, He Cai, Zhang Hui.

Guidelines for Energy Efficiency Evaluation of Civil Airport Terminal Buildings

1 Scope

This standard specifies the general principles for the energy efficiency evaluation of civil airport terminal buildings, the calculation method of the energy intensity index of the airport terminal building, and the constraint values and Guide value, calculation method of energy efficiency index of airport terminal building energy system, constraint value and guide value, etc.

This standard is applicable to civil airport terminals and supporting cooling facilities that have been put into use and whose designed or actual annual passenger throughput is not less than 500,000 passengers.

Evaluation and management of energy consumption intensity and energy efficiency of thermal energy system operation.

For civil airports with a designed or actual annual passenger throughput of less than 500,000 passengers, refer to the implementation.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB 50189-2015 Energy-saving design standard for public buildings GB/T 17981-2007 Economic operation of air conditioning system GB/T 50155-2015 Heating ventilation and air conditioning terminology standard JG/T 358-2012 Building energy consumption data classification and representation method

3 Terms and definitions

GB 50189-2015, GB/T 17981-2007, GB/T 50155-2015, JG/T 358-2012 and the following terms and definitions Applies to this document.

Total energy use of airport the total energy consumption during the operation of the airport terminal, including the energy used to maintain the building environment of the airport terminal (such as heating, cooling, and ventilation) Wind, air conditioning, lighting, etc.) and various professional systems or equipment in the airport terminal (such as baggage system, flight information system, information data room, Domestic hot water equipment, elevator trails, etc.). Does not include energy supplied to mobile facilities such as aircraft and vehicles.

Energy use intensity indicator of airport terminal According to the nature of the energy consumption of the airport terminal, the energy consumption value obtained according to the standardized method, such as the comprehensive energy consumption intensity of the

airport terminal, the airport terminal the power consumption intensity of the station building, the annual cold consumption per unit area of the airport terminal, etc.

Energy efficiency indicator of energy system in airport terminal the ratio of the amount of heat and cold provided to the end user by the energy system of the airport terminal building to the amount of energy consumed, such as boiler efficiency, cold source operating energy efficiency Ratio, chilled water transport coefficient, etc.

Constraint value of indicator in order to realize the use function of the airport terminal, the index limit is set.

Leading value of energy indicator in order to realize the function of airport terminal building, the index limit is set with the goal of efficient use of energy.

Measured value of indicator Calculated by numerical calculation of the energy consumption of the airport terminal building and its energy system obtained from the actual measurement of the metering device that has undergone periodic verification (calibration) index.

Comprehensive annual heating energy consumption per unit area of the airport terminal system energy use for space heating in airport terminal in a complete calendar year, the total amount of energy consumed by the heating system to heat the terminal building is divided by the building area of the airport terminal.

Obtained indicators. The total energy includes the energy consumed by the heat source, the energy consumed by the heating circulating water pump, and the energy consumed by other auxiliary machines.

Annual heat consumption per unit area of airport terminal space heating demand in airport terminal in a complete calendar year, the heat provided by the heating system to the airport terminal is divided by the energy obtained by dividing the building area of the airport terminal.

Consumption intensity index.

System energy use for space cooling and air-conditioning in the annual cooling energy consumption per unit area of the airport terminal airport terminal in a complete calendar year, the amount of energy consumed by the refrigeration system to provide cooling to the airport terminal is divided by the floor area of the airport terminal.

Obtained energy consumption indicators. The amount of energy consumed by cooling includes the energy consumed by the refrigeration main engine, water pump, cooling tower and auxiliary machinery, and the airport terminal Energy consumed by the water pump of the internal refrigeration and air conditioning system.

For energy systems using non-electric cooling methods, the non-electric energy consumed by the non-electric cooling system should be converted into electricity consumption

according to the equivalent electric method.

Consumption.

3.10

Annual cooling demand per unit area of airport terminal space cooling demand in airport terminal in a complete calendar year, the cooling capacity provided by the refrigeration system to the airport terminal is divided by the energy obtained from the building area of the airport terminal.

Consumption indicators.

3.11

Energy efficiency of heating source in a complete calendar year, the heat output of the airport heat source station (factory) is divided by the fuel consumed.

3.12

Energy efficiency ratio of chiller plant in a complete calendar year, the cooling capacity produced by the refrigeration system in the airport terminal is divided by the energy consumption of the cooling host.

4 General principles

4.1

The statistical cycle of various energy and energy-carrying fluids (electricity, gas, coal, oil, chilled water, steam, hot water, etc.) in this standard is one A complete calendar year.

4.2

When calculating the comprehensive energy consumption indicators, the electricity, gas, oil, steam, and energy-carrying fluids used by the airport are converted into standard coal consumption.

Refer to Appendix A for the conversion factor. And should meet the following requirements.

- a) When the fuel coal is converted into standard coal, the conversion shall be carried out according to the actual measured calorific value of the coal; if there is no actual measured value, the conversion shall be carried out with reference to Appendix A;
- b) Equivalent conversion factor is used in power conversion;
- c) Air-conditioning chilled water, heating and domestic hot water used in the airport terminal building are supplied by the airport energy station, which can be calculated separately according to the service object. If the total energy consumption is measured, the comprehensive energy consumption shall be converted according to the actual measured primary and secondary energy;