

ICS 27.040
CCS K 56



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

GB/T 43318-2023

**Gas turbine combined cycle power plants - Thermal
performance tests**

燃气轮机联合循环电站 热力性能试验

(English Translation)

Issued on: November 27, 2023

Implemented on: June 1, 2024

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting:

This document is equivalent to ISO 18888:2017 "Thermal Performance Test of Gas Turbine Combined Cycle Power Plant":

This document has made the following minimal editorial changes:

---Note added in Chapter 2:

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

Introduction

To determine and/or verify the power, thermal efficiency (heat rate) and/or other performance test parameters of gas turbine driven combined cycle power plants this document establishes guidelines for the preparation, performance, evaluation and reporting of thermal performance tests and describes measurement methods and evaluation

methods that take into account uncertainty:

Method of correction of results obtained under test conditions for comparison with guaranteed or specified conditions:

The purpose of the performance test is to determine the thermal performance parameters of the combined cycle based on a pre-signed agreement, such as a purchase agreement, test evaluation criteria rules, general contracting (EPC) requirements, power purchase agreements, power and water purchase agreements, and contractual service agreements:

This document also establishes comparative tests to be conducted before and after a modification, upgrade or overhaul to determine the performance differences between combined cycle and thermal power plants:

test criteria: Combined cycle performance improvements include modification/replacement of major components and addition of components within test boundaries: comparative test the principle can also be used in periodic testing of power stations to monitor the performance aging of the entire power station, taking due account of relevant test uncertainties:

Determination:

Thermal Performance Test of Gas Turbine Combined Cycle Power Plant

1 Scope

This document specifies standards for the preparation, execution, evaluation and reporting of thermal performance tests of gas turbine driven combined cycle power stations and thermal power stations:

Then, the test is carried out at base load or part load, with or without supplementary combustion:

This document applies to:

---General requirements for thermal performance testing;

---According to the contract guarantee, the acceptance test to determine the thermal performance of the combined cycle power station;

--- Comparative tests conducted before and after transformation, upgrade or overhaul to determine the performance difference between combined cycle power plants and thermal power plants:

Within the specified test boundaries, and under specified operating conditions and reference conditions, this document can be used to determine the following thermal performance test objectives and expected value:

---Electric power;

---Heat rate or thermal efficiency;

---Heating steam and/or heating hot water:

This document does not apply to component testing of individual equipment, as relevant standards provide otherwise:

This document does not apply to the following test objectives:

---Environmental testing, such as: emissions, noise;

---Vibration test;

---Run the test;

---Absolute or comparative performance of specific components of the combined cycle specified by specialized standards (for example: gas turbines):

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, the dated quotations for undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document:

GB/T 14100-2016 Gas turbine acceptance test (ISO 2314:2009, IDT) Note: GB/T 1884-2000 Laboratory determination of density of crude oil and liquid petroleum products (densitometer method) (eqvISO 3675:1998) ISO 5167 (all parts) Measurement of full pipe fluid flow by differential pressure devices installed in pipes of circular cross-section (Measurement of running in full) Note: GB/T 2624 (all parts) Measurement of full pipe fluid flow using a differential pressure device installed in a circular cross-section pipe [ISO 5167 (all parts)] ISO 6974-1 Determination of composition of natural gas by gas chromatographic method and calculation of associated uncertainties Part 1: General guidance and composition calculation Note: GB/T 27894.1-2020 Determination of composition and calculation of related uncertainties of natural gas by gas chromatography Part 1: General guidance and calculation of composition (ISO 6974-1:2012, IDT) ISO 6975 Natural gas-Extended analysis-Gas-chromato-