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

GB/T 8117.1-2008

Replacing GB/T 8117-1987

**Rules for steam turbine thermal acceptance tests -- Part 1:
Method A -- High accuracy for large condensing steam turbines**

汽轮机热力性能验收试验规程 第1部分: 方法A 大型凝汽式汽轮机高准确度试验
(English Translation)

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Foreword

Standard GB/T 8117 "steam turbine thermal acceptance tests" is divided into several sections, including.

--- Part 1. Method A --- for large condensing steam turbine with high accuracy test;

--- Part 2. Method B --- various types and sizes of turbines Wide range of accuracy;

--- Part 3. Thermal performance turbine transformation method C --- verification test.

This section GB/T 8117 Part 1.

This section identical with IEC 60953-1:1990 "steam turbine thermal acceptance tests -

Part 1. Method A --- large condensing steam High accuracy turbine test "(in English).

In this part of the drafting process, it stated the IEC 60953-1:1990 original several mistakes reply IEC Technical Committee, Accordingly we made the following changes.

- a) IEC 60953-1 Original Notes to Table 51's, "3kPa" to "0.3kPa";
- b) IEC 60953-1 description Figure 3a) and Figure 3b), the graphic symbol "tracer injection" and "water-like" anti-Note;
- c) IEC 60953-1 description in Figure 4, the graphic symbol "seal water outlet temperature" and "seal the outlet water flow" anti NOTE;
- e) IEC 60953-1 description Figure B. 4, "0.25mm" to "0.025mm".

For ease of use, this section made the following editorial changes.

- a) Delete the original IEC 60953-1 "preface" and "Preamble";
- b) newly added "Normative References" section, and re-ordering of IEC 60953-1 chapter;
- c) the original text of the IEC 60953-1 table reordering;
- d) to IEC 60953-1 Part of the original figure to be recompiled;
- e) the original text of the IEC 60953-1 footnotes reordering.

This Part replaces GB/T 8117-1987 "steam turbine thermal acceptance testing procedures." the newly revised GB/T 8117 series of standards and GB/T 8117-1987 compared to the scope, structure, content and requirements, etc.

There are great changes. The former according to IEC 60953 is divided into sections corresponding with a different method of steam turbine thermal acceptance test Inspection and assessment of Turbine Performance and each part can be used alone, and more applicable to different units and different requirements for an acceptance test want. GB/T 8117-1987 is relatively simple common test standards.

This section mainly for large condensing steam turbine with high accuracy thermal acceptance tests, test more stringent requirements, instrument calibration to Demand is high, the measurement uncertainty is high, the measurement results can be directly compared with the standard value, and taking into account measured radiation and nuclear safety wet steam enthalpy, etc.

problem.

This section of the Appendix A, Appendix B, Appendix C are normative appendix.

This part is proposed by the China Electricity Council.

This part of the National Standardization Technical Committee turbine (SAC/TC172) centralized.

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This section replaces the following previous release case.

--- GB/T 8117-1987.

GB/T 8117.1-2008/IEC 60953-1:1990

Introduction

With the increase in testing technology and the rapid development of the capacity of the turbine, it is necessary to test the relevant acceptance criteria GB/T 8117-1987 into Line revision.

To meet the needs of China's power industry development and international trade, so the whole will correspond to IEC 60953 standard is divided into several parts, with if Different method of dry steam turbine thermal acceptance tests and evaluation of Turbine Performance and each part can be used alone.

This section applies to large condensing steam turbine with high accuracy thermal acceptance tests.

1) uncertainty about the basic principles of data Standard Part 1 (Method A) turbine performance level suitable for obtaining high accuracy of the test, the measurement uncertainty to a minimum, the operating conditions during the test must be strictly adhered to, and enforcement.

A method is calibrated using the most accurate special instrument and using the best available testing methods. Uncertainty of the test results of phase when the small and test results when compared with the guaranteed value need not be considered. For thermal power units, the uncertainty of not more than 0.3%; for nuclear Motor group, no more than 0.4%.

Required for preparation and implementation of test instrumentation and labor costs for large capacity units or the first unit in the general economy or closed Calculated.

Standard Part 2 (Method B) applies to all types and sizes of turbines, there are performance acceptance tests appropriate measurement uncertainty.

Test instruments and measurement methods should follow the provisions of this standard, using the standard test method main instruments and standards, it can be fully adopted by check High accuracy instruments. Measurement uncertainty of test results determined by

the calculation of the standard offer. Unless otherwise specified in the contract, through Often the test results and to ensure that values are compared when considering the results of the measurement uncertainty, and thus the total cost of testing and acceptance to be determined About the economic value of guaranteed value.

In Method B, the provisions of the testing process more flexible operating conditions, and when those provisions are not met, also recommended a these approaches.

Such as the use of the instrument and test methods meet the standards for large condensing steam thermal power units, test results measurement uncertainty is usually Between 0.9% -1.2%; nuclear power units between 1.1% ~ 1.4%; on the back pressure, and the small-capacity steam extraction condensing steam unit, in Between 1.5% to 2.5%. By increasing the accuracy of the instrument, mainly through the addition of the primary flow measuring point and check the main flow measuring device can enter a Further reduce the measurement uncertainty.

2) The main difference between Method A and Method B in Method A, the content ready for instructions guide test personnel to test, implementation and measurement techniques and other aspects of the methodology for B More detail. In Method B, the details of such treatment more left to their own judgment and the test personnel decisions, which requires test people who have enough experience and expertise.

3) guiding principles in Method A, the test preparation and test conditions, in particular, such as the duration of the test, the test conditions and stability to deviate Between the measuring point and double the value of the allowed difference, etc. are more stringent.

It is preferably carried out after the start of the test and put into operation eight weeks. It aims to reduce the risk of deterioration in the performance of the turbine and the steam turbine damage occurs to a minimum.

During this period should be (including enthalpy drop test included) a few preliminary tests to monitor the high pressure turbine and the intermediate pressure cylinder performance becomes of. However, these tests do not get the performance of low-pressure cylinder, thus acceptance tests should be carried out as soon as possible.

In any case, when using the method A, if the enthalpy drop test showed high pressure cylinder or the pressure cylinder performance degradation, or due to the power plant Article Members requested that preliminary tests were postponed to the first start after four months, the acceptance tests should be postponed.

When using the method A, it does not allow the results of the test Heat Rate Press Start enthalpy drop efficiency test is corrected or aging amended.

GB/T 8117.1-2008/IEC 60953-1:1990 If the trial had to be postponed, Method A test is recommended after the first overhaul, and recommended before the test to determine the turbine is substantially shaped Several methods conditions.