Gas Turbines for the Petroleum, Chemical, and Gas Industry Services

API STANDARD 616
FIFTH EDITION, JANUARY 2011

AMERICAN PETROLEUM INSTITUTE

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Downstream Segment

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Foreword

This standard is based on the accumulated knowledge and experience of manufacturers and users of gas turbines. The objective of this standard is to provide a purchase specification to facilitate the procurement and manufacturer of gas turbines for use in petroleum, chemical, and gas industry services.

Energy conservation is of concern and has become increasingly important in all aspects of equipment design, application, and operation. Thus innovative energy conserving approaches should be aggressively pursued by the manufacturer and the user during these steps. Alternative approaches that may result in improving energy utilization should be thoroughly investigated and brought forth. This is especially true of new equipment proposals, since the evaluation or purchase options will be based increasingly on total life costs as opposed to acquisition cost alone. Equipment manufacturers, in particular, are encouraged to suggest alternatives to those specified when such approaches achieve improved energy effectiveness and reduced total life costs without sacrifice of safety or reliability.

This standard requires the purchaser to specify certain details and features. Although it is recognized that the purchaser may desire to modify, delete, or amplify sections of this standard, it is strongly recommended that such modifications, deletions, and amplifications be made by supplementing this standard, rather than by rewriting or incorporating sections thereof into another standard.

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Shall: As used in a standard, “shall” denotes a minimum requirement in order to conform to the standard.

Should: As used in a standard, “should” denotes a recommendation or that which is advised but not required in order to conform to the standard.

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Suggested revisions are invited and should be submitted to the Standards Department, API, 1220 L Street, NW, Washington, DC 20005, standards@api.org.

Important Information Concerning Use of Asbestos or Alternative Materials

Asbestos is specified or referenced for certain components of the equipment described in some API standards. It has been of extreme usefulness in minimizing fire hazards associated with petroleum processing. It has also been a universal sealing material, compatible with most refining fluid services.

Certain serious adverse health effects are associated with asbestos, among them the serious and often fatal diseases of lung cancer, asbestosis, and mesothelioma (a cancer of the chest and abdominal linings). The degree of exposure to asbestos varies with the product and the work practices involved.

Consult the most recent edition of the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, Occupational Safety and Health Standard for Asbestos, Tremolite, Anthophyllite, and Actinolite, 29 *Code of Federal Regulations* Section 1910.1001; the U.S. Environmental Protection Agency, National Emission Standard for Asbestos, 40 *Code of Federal Regulations* Sections 61.140 through 61.156; and the U.S. Environmental Protection Agency (EPA) rule on labeling requirements and phased banning of asbestos products (Sections 763.160-179).

There are currently in use and under development a number of substitute materials to replace asbestos in certain applications. Manufacturers and users are encouraged to develop and use effective substitute materials that can meet the specifications for, and operating requirements of, the equipment to which they would apply.

SAFETY AND HEALTH INFORMATION WITH RESPECT TO PARTICULAR PRODUCTS OR MATERIALS CAN BE OBTAINED FROM THE EMPLOYER, THE MANUFACTURER OR SUPPLIER OF THAT PRODUCT OR MATERIAL, OR THE MATERIAL SAFETY DATASHEET.

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Gas Turbines for the Petroleum, Chemical, and Gas Industry Services

1 Scope

1.1 General

This standard covers the minimum requirements for open, simple, and regenerative-cycle combustion gas turbine units for services of mechanical drive, generator drive, or process gas generation. All auxiliary equipment required for operating, starting, controlling, and protecting gas turbine units are either discussed directly in this standard or referred to in this standard through references to other publications. Specifically, gas turbine units that are capable of firing gas or liquid or both are covered by this standard. This standard covers both industrial and aeroderivative gas turbines.

NOTE A bullet (●) at the beginning of a paragraph indicates that either a decision is required or further information is to be provided by the purchaser. The information should be indicated on the datasheets (see Annex A); otherwise, it should be stated in the quotation request or in the order.

1.2 Alternative Designs

The vendor may offer alternative designs.

1.3 Conflicts

In case of conflicts between this standard and the inquiry, the information in the inquiry shall govern. At time of order, the order shall govern.

2 References

2.1 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API *Manual of Petroleum Measurement Standards* (*MPMS*) Chapter 15:2001, *Guidelines for the Use of the International System of Units (SI)*

API Standard 541:2004, *Form-Wound Squirrel Cage Induction Motors—500 Horsepower and Larger*

API Standard 546:2008, *Brushless Synchronous Machines—500 KVA and Larger*

API Standard 547:2005, *General-Purpose Form-Wound Squirrel Cage Induction Motors—250 Horsepower and Larger*

API Standard 611:2008, *General-Purpose Steam Turbines for Petroleum, Chemical, and Gas Industry Services*

API Standard 612:2005, *Special-Purpose Steam Turbines for Petroleum, Chemical, and Gas Industry Services*

API Standard 613:2003, *Special-Purpose Gear Units for Petroleum, Chemical, and Gas Industry Services*

API Standard 614:2008, *Lubrication, Shaft-Sealing, and Oil-control Systems and Auxiliaries*

API Standard 670:2000, *Machinery Protection Systems*