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ANSI/ASHRAE Standard 204-2020
Method of Test for Rating Micro Combined Heat and Power Devices

NOTE

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FOREWORD

Standard 204 provides a robust uniform laboratory test method for determining the net electrical power generating performance and thermal power recovery performance of micro combined heat and power devices whose maximum net electrical power output is less than 50 kW and whose maximum useful thermal power output is less than 300 kW. The standard specifies the equipment and instrumentation required, test methods, and calculation procedures.

A list of organizations represented on Standard Project Committee 204 is available upon request to the committee secretary.

This standard was prepared under the auspices of ASHRAE. It may be used, in whole or in part, by an association or government agency with due credit to ASHRAE. Adherence is strictly on a voluntary basis and merely in the interest of obtaining uniform standards throughout the industry.

1. PURPOSE

The purpose of this standard is to provide a uniform laboratory test method for determining the net electrical power generating performance and thermal power recovery performance of micro combined heat and power devices, referred to as "microcogeneration devices." The standard specifies the equipment and instrumentation required, test methods, and calculation procedures.

2. SCOPE

This standard provides a comprehensive set of procedures for micro combined heat and power devices whose maximum net electrical power output is less than 50 kW and whose maximum useful thermal power output is less than 300 kW. The maximum allowable ratio of thermal power output (exclusive of any auxiliary heating equipment) to net electrical power output is 15.

This standard applies to the following stationary micro combined heat and power devices that use, but are not limited to, an internal combustion engine, a turbine, a Stirling engine, or a fuel cell as the heat and power generating source. Only appliances that use natural gas, propane, or diesel as the fuel source are covered. Appliances that use biofuels or biogases as the fuel source are not covered, but the procedures and methods in this standard are applicable to the evaluation of those appliances. Separate tests are defined for stand-alone devices and devices that are part of a packaged system that includes ancillary heating equipment. These tests cover single stand-alone devices or single devices that are part of a package system. Groups of devices operating in parallel are not covered by this standard.

This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices to determine the applicability of regulatory limitations prior to use.

3. DEFINITIONS, ABBREVIATION, SYMBOLS, AND PREFIXES

3.1 Definitions

auxiliary electrical energy: external electrical power required to operate the device at design conditions.

combined heat and power (CHP): the simultaneous generation of electrical and useful thermal power from a single fuel source.

combustion air: air required to provide for the complete combustion of fuel and usually consisting of primary air, secondary air, and excess air.

condensing micro heat and power device: a micro heat and power device, which condenses the flue gas and claims the latent heat of vapor as useful heat.

device: piece of equipment or a mechanism designed to serve a special purpose or to perform a special function.