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**Construction machinery - Testing and calculation methods for
basic energy consumption data in operation**

工程机械 运行能耗基础数据测试与计算方法

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting: Please note that some of the contents of this document may involve patents: The issuing organization of this document does not assume the responsibility for identifying patents: This document was proposed by the National Green Manufacturing Technology Standardization Technical Committee (SAC/TC337): This document was jointly issued by the National Green Manufacturing Technology Standardization Technical Committee (SAC/TC337) and the National Earthmoving Machinery Standardization Technical Committee (SAC/TC334) jointly under the jurisdiction of the Commission: The main drafting units of this document are: China Machinery Productivity Promotion Center Co., Ltd., Chongqing Technology and Business University, Xuzhou Xugong Excavator Co., Ltd., Jiangsu Xugong Engineering Machinery Research Institute Co., Ltd., Tianjin Engineering Machinery Research Institute Co., Ltd., Chongqing University, Beijing Foton Cummins Engine Co., Ltd., State-owned Sichuan West Machinery Factory, Hebei Beijing-Tianjin-Hebei Remanufacturing Industry Technology Research Co., Ltd., and Shandong Yujie Bearing Manufacturing Co., Ltd: The main drafters of this document are: Sun Tingting, Tuo Junbo, Xu Yubing, He Ting, Li Guangqing, Li Congbo, Zhang Bo, Li Haiyi, Zhou Qun, Liu Weiliang, Cai Meigui, Lü Lei, and Jin Yuxi: Basic data testing and analysis of energy consumption of construction machinery Calculation method

1 Scope

China's national testing and calculation methods for the basic energy consumption data of construction machinery in operation. Measuring the fuel consumption of an excavator or a loader is harder than measuring a vehicle's, and the difference is the duty cycle. A vehicle drives, and a standardised drive cycle represents that adequately; a construction machine digs, lifts, travels, idles and waits, in proportions that depend entirely on what it is doing, and a machine that is efficient in one duty may not be in another. So the methods have to

define representative operating cycles for each machine type and each application, measure consumption over them, and provide the calculation that turns the result into a comparable figure. The reason it matters now is that these figures are entering regulation and procurement, and that electrification makes the comparison between a diesel and a battery machine unavoidable and currently unstandardised.

This document specifies the general requirements, test methods and calculation methods for testing basic data on energy consumption of construction machinery operation: This document applies to construction machinery and equipment, earth-moving machinery, industrial vehicles, lifting work, etc: that use internal combustion engines or electric motors as power sources: Energy consumption test and calculation of platform, mobile crane, tower crane, rock drilling machinery, elevator and other construction machinery: Engineering machinery can be used for reference:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document:

GB/T 1885 Petroleum meter

GB/T 6104 Terminology for Powered Industrial Trucks GB/T 6974:

2 Crane terminology Part 2: Mobile cranes GB/T 6974:

3 Terms and definitions

Definitions of GB/T 6104, GB/T 6974:2, GB/T 6974:3, GB/T 7024, GB/T 8498, GB/T 18576 and JB/T 12786 The following terms and definitions apply to this document: 3:

1 The energy consumed by construction machinery to complete specific tasks during its service life:

Note: Operating energy consumption consists of standby energy consumption, no-load energy consumption and load energy consumption: 3:

2 Standby The state of construction machinery after it is started, when the power system is not running or is running at minimum load:

Note 1: The power system is an internal combustion engine or an electric motor:

Note 2: Idle state belongs to standby state: 3:

3 Unloaded The construction machinery is in a non-standby operating state when it is

no-load:

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