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

GB/T 33653-2025

Replacing GB/T 33653-2017

**Energy consumption test and calculation method for oilfield
production systems**

油田生产系统能耗测试和计算方法

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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 replaces GB/T 33653-2017 "Energy Consumption Testing and Calculation Methods for Oilfield Production Systems" and is consistent with GB/T 33653-2017. Compared to previous versions, aside from structural adjustments and editorial changes, the main technical changes are as follows:

- a) The scope has been changed, dividing the oilfield production system into mechanical production system, crude oil gathering and transportation system, and injection system (see Chapter 1, 2017). Chapter 1 of the 2018 edition);
- b) The definitions of the terms "mechanical oil production system" and "crude oil gathering and transportation system" have been changed (see 3.1, 3.2, and 3.2 in the 2017 edition);
- c) The term "injection system" has been added (see 3.3);
- d) The terms "water injection system," "polymer injection system," and "steam injection system" have been deleted, and their relevant content has been merged into the definition of "injection system." (See sections 3.3, 3.4, and 3.5 in the 2017 edition);
- e) Added relevant requirements for the preparation of the "gas injection system" test [see 4.1.2e)];
- f) The general requirements for test instruments and meters, as well as the requirements for temperature, flow rate, and other test instruments and meters, have been changed (see 5.1, 5.2, 5.3). 5.6 (5.1, 5.2, 5.3, and 5.6 of the 2017 edition);
- g) The test items and test methods for mechanical oil recovery systems have been changed (see 7.1.1, 7.1.2, and 7.1.2 in the 2017 version);
- h) Modified the "produced fluid density", "effective head", "output power", and "average of a certain type of mechanical oil production system in the tested block" of the mechanical oil production system. The calculation methods for "system efficiency" and "average system efficiency of the mechanical oil production system in the tested block" are described in sections 7.2.3, 7.2.4, 7.2.5, and 7.2.13. 7.2.14, and 7.2.3, 7.2.4, 7.2.5, 7.2.12, and

1 Scope

GB/T 33653-2025 is the Chinese national standard covering the energy an oilfield uses to lift and move what it produces - the pumping units, the water injection and the gathering and heating, the boundary of the system, the measurements taken and the consumption

per tonne of oil that comes out of them. Issued on 31 October 2025, it has been in force since 1 May 2026, replacing GB/T 33653-2017.

This document specifies the main energy-consuming equipment and energy consumption units in the mechanical oil production system, crude oil gathering and transportation system, and injection system of the oilfield production system. Requirements and methods for energy consumption testing and calculation of components and systems. This document applies to the main energy-consuming equipment and energy consumption units in the mechanical oil production system, crude oil gathering and transportation system, and injection system of the oilfield production system. Energy consumption testing and calculation for components and systems.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 1884 Laboratory Determination of Density of Crude Oil and Liquid Petroleum Products (Density Meter Method)

GB/T 2589-2020 General Rules for Calculating Comprehensive Energy Consumption

GB/T 3214 Method for determining the flow rate of water pumps

GB/T 4756 Manual Sampling Method for Petroleum Liquids

GB/T 8929 Determination of water content in crude oil by distillation method

GB/T 9109.5 Dynamic measurement of petroleum and liquid petroleum products - Part

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Artificial-lift system Composed of a downhole pump, tubing string, electric motor, transmission, and auxiliary devices, it is an oil production device used to lift the produced fluid from the well to the surface. The system consisting of the overall structure and oil wells.

Note. This mainly includes types such as pumping unit oil production systems, electric submersible pump oil production systems, and surface-driven screw pump oil production systems.

3.2 The entire process system for collecting, processing, and transporting oil well produced

materials.

Note. The scope of the crude oil gathering and transportation system is from the wellhead of the oil well to the first station for exporting commercial crude oil (product gas).

3.3 injection system A system that injects oil displacement media into the formation to drive out oil and enhance oil recovery.

5 Calculation of oil quantity

GB/T 16666-2012 Energy-saving monitoring of pump-type liquid transfer systems

GB/T 17357 Field determination of surface heat loss of insulation layers for equipment and pipelines - heat flux meter method and surface temperature method SY/T 6381 Thermal Determination of Heating Furnaces for Petroleum Industry SY/T 6814 Calibration Method for Dual-Channel Echo Tester SY/T 6835 Energy-saving monitoring specification for steam injection systems in oilfield thermal recovery