



Compressor seal vent gas flow rate testing and recording



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CSA Z620.2:20

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Preface

This is the first edition of CSA Z620.2, *Compressor seal vent gas flow rate testing and recording*.

This Standard outlines procedures and methods to determine vent gas flow rates from reciprocating compressor rod packings and centrifugal compressor seals in the petroleum and natural gas production, processing, and transmission industry.

CSA Group acknowledges that the development of this Standard was made possible, in part, by the financial support of Alberta Energy Regulator, Climate Change Division (Alberta Environment and Parks), BC Oil and Gas Commission and Environment and Climate Change Canada.

This Standard was prepared by the Technical Committee on Vent Gas Metering under the jurisdiction of the Strategic Steering Committee on Petroleum and Natural Gas Industry Systems and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

Notes:

- 1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
- 2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*
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 - b) *provide an explanation of circumstances surrounding the actual field condition; and*
 - c) *where possible, phrase the request in such a way that a specific “yes” or “no” answer will address the issue.*

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 - b) *relevant clause, table, and/or figure number;*
 - c) *wording of the proposed change; and*
 - d) *rationale for the change.*

CSA Z620.2:20

Compressor seal vent gas flow rate testing and recording

0 Introduction

0.1 General

This Standard outlines procedures and methods to determine compressor seal vent gas flow rates from reciprocating compressor rod packings and centrifugal compressor seals in the petroleum and natural gas production, processing, and transmission industry.

Temporary or periodic measurement of compressor seal vent gas flow rates is referred to as “testing” flow rates, and is explicitly distinct from continuous measurement, which might be referred to more generally as metering. This Standard addresses compressor seal vent gas flow testing as per this definition and is not intended for continuous measurement installations and procedures.

This Standard does not attempt to produce results with a defined uncertainty target. Due to the variable nature of compressor seal vent gas flows contemplated here, this Standard sets limits for meter accuracy, and sets forth requirements to minimize other sources of error that cannot be otherwise easily quantified.

This Standard is applicable to testing compressor seal vent gas flows that can be characterized by low pressure differentials, low flows, and/or variable flow parameters. These flow rates are often sensitive to the backpressure imposed by testing systems, or are particularly susceptible to compressor seal vent gas system leaks or unintended alternate flow paths. Without proper consideration of these factors, the test results can be rendered inaccurate for their intended purpose. This Standard is intended to reduce the error caused by the above factors and improve test repeatability.

This Standard is not intended to replace or encroach on existing measurement standards that might also be applicable to compressor seal vent gas measurement, rather it is to augment procedures to improve repeatability and accuracy of results.

0.2 Users

This Standard is intended to be used by companies operating in the petroleum and natural gas industry (operating companies), regulatory authorities, industry associations, researchers, and organizations that study or report on the compressor seal vented emissions in the petroleum and natural gas industry.

It is intended to be used by persons competent to make technical judgments in the areas to which this Standard is being applied, including engineering, safety, and environmental protection. This Standard does not address or attempt to specify any safety requirements. Compressor seal vent gas flow rate testing inherently involves connection of piping, fittings, electrical components, and operation of equipment where highly flammable gas and potentially high pressure gas is mixing with air.

Although this Standard has been written for the petroleum and natural gas industry, this does not preclude use of this Standard in other industries.

0.3 Innovation

It is not the intent of this Standard to prevent the development of new equipment or practices, nor to prescribe how such innovations are to be handled.

1 Scope

1.1 Compressor types

This Standard applies to compressor seal vent gas from reciprocating compressor rod packings and centrifugal compressor seals, including any auxiliary and support systems that are required for proper operation of the packing or sealing system.

The procedures considered in this Standard include compressor seal vent gas system tracing and alternate flow path identification, backpressure minimization, compressor seal vent gas loss management, measurement procedures, calculations, and data recording.

1.2 Exclusions

This Standard does not apply to (non-exhaustive list)

- a) non-routine venting (e.g., compressor blowdown vents, engine starter vents);
- b) other devices or components related to the compressor (e.g., pneumatics, pumps, variable volume clearance pockets);
- c) fugitive emission management programs (e.g., leaking valves or connectors not associated with the compressor seal vent gas system);
- d) measurement devices that do not internally admit the entire compressor seal vent gas flow in order to take a measurement (remote sensing or quantitative optical gas imaging); and
- e) quantification of unburnt hydrocarbon or methane emissions in combustion devices (e.g., engines, turbines).

1.3 Gauge pressure

All references to “kPa” throughout this Standard are to be considered gauge pressures unless otherwise specified.

1.4 Terminology

In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the Standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.