

ICS 17.120.10
CCS N 12



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

GB/T 21188-2007

**Measurement of gas flow by means of critical flow Venturi
nozzles**

用临界流文丘里喷嘴测量气体流量

(English Translation)

Issued on: September 12, 2007

Implemented on: May 1, 2008

Issued by: Standardization Administration of China

Table of Contents

Introduction

1 Scope

2 Terms and definitions

3 Symbol

4 Basic Equation

4.1 Equation of State

Under ideal conditions of flow rate 4.2

Under actual conditions Flow 4.3

4.4 Critical mass flux

5 Possible applications

6 Standard critical flow Venturi nozzle

6.1 General requirements

6.2 Structure

Installation Requirements 7

7.1 General

7.2 Upstream line

7.3 Upstream large space

7.4 Downstream Requirements

7.5 Pressure measurement

7.6 Vent

7.7 Temperature measurement

7.8 Density measurement

Foreword

This standard is identical with ISO 9300:2005 "with a critical flow Venturi nozzle Measurement of gas flow." this standard is equivalent translation ISO 9300:2005 (in English).

In developing this standard according to GB/T 1.1-2000 "Standardization Guide Part 1. Standard structure and writing rules" and GB/T 20000.2-2001. the relevant provisions of "Standardization Guide Part 2 rules of international standards," made the following editorial modify.

- Remove the ISO 9300:2005 international standard foreword;
- To the "international standards" to "this standard";
- The ISO 9300:2005 international standard as a decimal comma "," to the decimal point; "."
- Chapter 5 "(see 9.5)," corrected to "(see 7.5)";
- Original E. 2 "correction factor" in the third sub-paragraph a "(beta between 0.15 to 0.5)," corrected to "(beta value Between 0.25 to 0.5) ";
- This standard is based on the specific circumstances of the country, increasing the appendix NA "inspection rules" and Appendix NB "critical flow nozzle." the Standard Appendix A, Appendix B, Appendix C, Appendix D, Appendix E is normative annex, appendix NA and NB for the informative Appendix.

The standard proposed by China Machinery Industry Federation.

The standard measurement and control Standardization Technical Committee first points by the National Technical Committee of industrial processes.

1 Scope

This standard specifies the gas mass flow measurement of critical flow Venturi nozzle (CFVN) geometry and method of use (system Installation and working conditions), and given the required information to calculate traffic and uncertainty.

This standard applies to gas flow in the throat is accelerated to critical speed (equal to the local speed of sound), and only the presence of the text single-phase gas unsteady flow in the throat Venturi nozzle. In the critical velocity, mass flow rate of gas flowing through the venturi nozzle is actually swim under conditions likely to reach the maximum flow.

Critical flow Venturi nozzle can only be prescribed for use within the nozzle throat diameter ratio limits the inlet and throat Reynolds number. This standard Involving critical flow Venturi nozzle direct calibration has been done a lot of tests, to ensure the critical flow venturi nozzle flow coefficient given in a A predictable uncertainty within the limits.

Information given in this standard are suitable for the following situations. critical flow Venturi nozzle upstream pipeline to pipeline circular cross-section; or critical Flow Venturi upstream of the nozzle, or into an upstream group to install a critical flow venturi nozzle can be seen as a large space. This group Configured for critical flow Venturi nozzle installed in parallel to provide the possibility, so you can get more traffic.

For high accuracy measurement, it discusses this standard venturi nozzle for precise machining low Reynolds number of critical flow.

2 Terms and definitions

The following terms and definitions apply to this standard.

2.1 Pressure measurement

2.1.1

Drilled holes on the wall, its edges flush with the inner surface of the pipe.

Note: The pressure should be taken to the mouth of the duct static pressure at this point.

2.1.2

The actual pressure with a pressure gauge attached to the wall of taps of the measured flow of the gas.

Note: The absolute value of static pressure are used in this standard.

2.1.3

When the flow of gas to the gas isentropic process to achieve a stationary state the existence of pressure.

NOTE: The standard used in both absolute stagnation pressure only.

2.2 Temperature Measurement

2.2.1

The actual temperature of the flowing gas.

Note: The absolute static temperature values are used in this standard.

2.2.2

Gas flow and other process comes to a standstill when the entropy state existed gas temperature.

Note: The values are absolute stagnation temperature used in this standard.

GB/T 21188-2007/ISO 9300:2005