Gaasi vooluhulga mõõtmine kriitilist voolamist tekitavate Venturi düüside abil

Measurement of gas flow by means of critical flow Venturi nozzles

EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN ISO 9300:2005 sisaldab Euroopa standardi EN ISO 9300:2005 ingliskeelset teksti. Käesolev dokument on jõustatud 25.10.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 9300:2005 consists of the English text of the European standard EN ISO 9300:2005. This document is endorsed on 25.10.2005 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: Standard määrab kindlaks geomeetrilise kuju ja kasutusmeetodi (paigaldamis- ja kasutamistingimused) kriitilist voolamist tekitavatele Venturi düüsidele, mida kasutatakse süsteemist läbivoolava gaasi massi erikulu määramiseks. Standard esitab ka vajaliku teabe voolamiskiiruse arvutamise ja sellega seonduvate ebatäpsuste kohta.	**Scope:** This International Standard specifies the geometry and method of use (installation in a system and operating conditions) of critical flow Venturi nozzles (CFVN) used to determine the mass flow-rate of a gas flowing through a system. It also gives the information necessary for calculating the flow-rate and its associated uncertainty.

ICS 17.120.10

Võtmesõnad: gaasi vooluhulk, torustikku läbiv vooluhulk, venturi torud, vooluhulga mõõtmine

EUROPEAN STANDARD

NORME EUROPÉENNE

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English Version

Measurement of gas flow by means of critical flow Venturi nozzles (ISO 9300:2005)

Mesure de débit de gaz au moyen de Venturi-tuyères en régime critique (ISO 9300:2005)

Durchflussmessung von Gasen mit Venturidüsen bei kritischer Strömung (ISO 9300:2005)

This European Standard was approved by CEN on 15 July 2005.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN ISO 9300:2005: E

Foreword

This document (EN ISO 9300:2005) has been prepared by Technical Committee ISO/TC 30 "Measurement of fluid flow in closed conduits" in collaboration with CMC.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2006, and conflicting national standards shall be withdrawn at the latest by February 2006.

This document supersedes EN ISO 9300:1995.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 9300:2005 has been approved by CEN as EN ISO 9300:2005 without any modifications.

INTERNATIONAL STANDARD

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Contents

Page

Foreword

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Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 9300 was prepared by Technical Committee ISO/TC 30, *Measurement of fluid flow in closed conduits*, Subcommittee SC 2, *Pressure differential devices*.

This second edition cancels and replaces the first edition (ISO 9300:1990), which has been technically revised.

Measurement of gas flow by means of critical flow Venturi nozzles

1 Scope

This International Standard specifies the geometry and method of use (installation in a system and operating conditions) of critical flow Venturi nozzles (CFVN) used to determine the mass flow-rate of a gas flowing through a system. It also gives the information necessary for calculating the flow-rate and its associated uncertainty.

It is applicable to Venturi nozzles in which the gas flow accelerates to the critical velocity at the throat (this being equal to the local sonic velocity), and only where there is steady flow of single-phase gases. At the critical velocity, the mass flow-rate of the gas flowing through the Venturi nozzle is the maximum possible for the existing upstream conditions while CFVN can only be used within specified limits, e.g. limits for the nozzle throat to inlet diameter ratio and throat Reynolds number. This International Standard deals with CFVN for which direct calibration experiments have been made in sufficient number to enable the resulting coefficients to be used with certain predictable limits of uncertainty.

Information is given for cases where the pipeline upstream of the CFVN is of circular cross-section, or it can be assumed that there is a large space upstream of the CFVN or upstream of a set of CFVN mounted in a cluster. The cluster configuration offers the possibility of installing CFVN in parallel, thereby achieving high flow-rates.

For high-accuracy measurement, accurately machined Venturi nozzles are described for low Reynolds number applications.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1 Pressure measurement

2.1.1
wall pressure tapping
hole drilled in the wall of a conduit in such a way that the edge of the hole is flush with the internal surface of the conduit

NOTE The tapping is achieved such that the pressure within the hole is the static pressure at that point in the conduit.

2.1.2
static pressure of a gas
actual pressure of the flowing gas which can be measured by connecting a pressure gauge to a wall pressure tapping

NOTE Only the value of the absolute static pressure is used in this International Standard.

2.1.3
stagnation pressure
pressure which would exist in a gas in a flowing gas stream if the stream were brought to rest by an isentropic process

NOTE Only the value of the absolute stagnation pressure is used in this International Standard.