

# Deutsche Akkreditierungsstelle GmbH

## Annex to the Accreditation Certificate D-K-19206-01-00 according to DIN EN ISO/IEC 17025:2005

**Valid from: 2019-01-18**

Date of issue: 2019-01-18

Holder of certificate:

**Vier Gas Services GmbH & Co. KG**  
**Kallenbergstraße 5, 45141 Essen**

with its calibration laboratory

**pigsar**  
**Halterner Straße 125, 46284 Dorsten**

Head: Dr. Detlef Vieth  
Deputy head: M. Sc. Christoph Thiede

Accredited as calibration laboratory since: 23.01.2014

Calibration in the fields:

**Fluid quantities**

- **Gas flow rate**
- **Mass of flowing gases**
- **Volume of flowing gases**

Abbreviations used: see last page

**This document is a translation. The definitive version is the original German annex to the accreditation certificate.**

*The certificate together with its annex reflects the status at the time of the date of issue. The current status of the scope of accreditation can be found in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH.*  
<https://www.dakks.de/en/content/accredited-bodies-dakks>

**Annex to the accreditation certificate D-K-19206-01-00**

**Permanentes Laboratorium**

**Calibration and measurement capabilities (CMC)**

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Best measurement capability <sup>1)</sup>	Remarks
<b>Fluid quantities</b>  Volume flow rate $Q_v$ respectively volume of flowing gases (high-pressure natural gas, 15 bar to 55 bar)	8 m <sup>3</sup> /h to < 9 m <sup>3</sup> /h	turbine gas meter G100 to G1000, rotary piston gas meter G160	0,16 %	
	9 m <sup>3</sup> /h to < 12 m <sup>3</sup> /h		0,15 %	
	12 m <sup>3</sup> /h to < 19 m <sup>3</sup> /h		0,14 %	
	19 m <sup>3</sup> /h to < 1850 m <sup>3</sup> /h		0,13 %	
	1850 m <sup>3</sup> /h to 7200 m <sup>3</sup> /h		0,14 %	
Mass flow rate $Q_M$ respectively mass of flowing gases (high-pressure natural gas, 15 bar to 55 bar)	100 kg/h to 3·10 <sup>5</sup> kg/h	turbine gas meter G100 to G1000, rotary piston gas meter G160 process gas chromatograph, at $Q_v$ :		Mass flow rate depends on volume flow rate and density
		8 m <sup>3</sup> /h bis < 9 m <sup>3</sup> /h	0,26 %	
		9 m <sup>3</sup> /h bis < 12 m <sup>3</sup> /h	0,25 %	
		12 m <sup>3</sup> /h bis 7200 m <sup>3</sup> /h	0,24 %	
Discharge Coefficient $C$  pressure differential device (high-pressure natural gas, 15 bar to 55 bar)	0,5 to 1,3	Turbine gas meter G100 to G1000, rotary piston gas meter G160 process gas chromatograph $Q_v$ : 8 m <sup>3</sup> /h to 7200 m <sup>3</sup> /h $\Delta p$ : 10 mbar to 2500 mbar	0,2 %	Discharge coefficient $C$ determined according to ISO 5167:2003 $\Delta p$ : differential pressure of pressure differential device

**Abbreviations used:**

CMC Calibration and measurement capabilities

<sup>1)</sup> The CMC includes the expanded measurement capabilities according to EA-4/02 M:2013. These are the best measurement capabilities of measurement with a coverage probability of 95 % and have a coverage factor of  $k = 2$  unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.