Umwelt Bundesamt

TÜVRheinland®
Precisely Right.

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000032297_02

AMS designation:	StackFlowMaster for velocity
Manufacturer:	ABB Ltd. Salterback Trading Workington Cumbria CA14 5DS United Kingdom
Test Laboratory:	TÜV Rheinland Energy GmbH

This is to certify that the AMS has been tested and certified according to the standards

EN 15267-1: 2009, EN 15267-2: 2009, EN 15267-3: 2007 and EN 14181: 2004

Certification is awarded in respect of the conditions stated in this certificate (this certificate contains 7 pages).

TÜVRheinland®
CERTIFIED

Suitability Tested
EN 15267
QAL1 Certified
Regular
Surveillance

www.tuv.com
ID 0000032297

Publication in the German Federal Gazette (BAnz) of 23 July 2013

This certificate will expire on:
04 March 2023

German Federal Environment Agency
Dessau, 05 March 2018

Dr. Marcel Langner
Head of Section II 4.1

TÜV Rheinland Energy GmbH
Cologne, 04 March 2018

ppa. Dr. Peter Wilbring

www.umwelt-tuv.eu tre@umwelt-tuv.eu Phone: + 49 221 806-5200	TÜV Rheinland Energy GmbH Am Grauen Stein 51105 Köln

Test institute accredited to EN ISO/IEC 17025:2005 by DAkkS (German Accreditation Body).
This accreditation is limited to the accreditation scope defined in the enclosure to the certificate D-PL-11120-02-00.

10/221 2.08

Test Report:	936/21215448/B dated 26 March 2013
Initial certification:	05 March 2013
Expiry date:	04 March 2023
Certificate:	Renewal (of previous certificate 0000032297_01 dated 20 August 2013 valid until 04 March 2018)
Publication:	BAnz AT 23.07.2013 B4, chapter II no. 2.1

Approved application

The tested AMS is suitable for use at combustion plants according to EC Directive 2001/80/EC (13th BImSchV), at waste incineration plants according to EC Directive 2000/76/EC (17th BImSchV), the 27th BImSchV, the 30th BImSchV and TA Luft. The measured ranges have been selected so as to cater for as broad a field of application as possible.

The suitability of the AMS for this application was assessed on the basis of a laboratory test and a six-months field test at a waste incineration plant.

The AMS is approved for an ambient temperature range of -20 °C to +50 °C.

The notification of suitability of the AMS, performance testing and the uncertainty calculation have been effected on the basis of the regulations applicable at the time of testing. As changes in legal provisions are possible, any potential user should ensure that this AMS is suitable for monitoring flow velocities relevant to the application.

Any potential user should ensure, in consultation with the manufacturer, that this AMS is suitable for the installation at which it will be installed.

Basis of the certification

This certification is based on:

- Test report 936/21215448/B dated 26 March 2013 issued by TÜV Rheinland Energie und Umwelt GmbH
- Suitability announced by the German Federal Environment Agency (UBA) as the relevant body
- The ongoing surveillance of the product and the manufacturing process

Publication in the German Federal Gazette: BAnz AT 23.07.2013 B4, chapter II no. 2.1, UBA announcement dated 03 July 2013

AMS designation:
StackFlowMaster for velocity

Manufacturer:
ABB Ltd., Workington, United Kingdom

Field of application:
For plants requiring official approval and for plants according to the 27th BImSchV

Measuring range during performance testing:
Type A:

Component	Certification range	Unit
Flow velocity	2–25	m/s

Type C:

Component	Supplementary range	Unit
Flow velocity	2–35	m/s

Software version:
Version 27

Restriction:
The lower limit of measuring the flow velocity is at 2 m/s.

Notes:

1. After any malfunction of the filter resulting in high dust loads, the probe must be checked for contamination and cleaned if necessary.
2. The maintenance interval is three months.
3. Two different types (A or C) of pressure transmitters can be used.
4. Two different types of probes (type A 25 mm in diameter or type B 60 mm in diameter) can be used.
5. The AMS designation has been changed from Torbar to StackFlowMaster.
6. Supplementary testing (extension of the maintenance interval and additional probe) as regards Federal Environment Agency (UBA) notice of 12 February 2013 (BAnz AT 05.03.2013 B10, chapter I number 2.4).

Test Report:
TÜV Rheinland Energie und Umwelt GmbH, Cologne
Report no.: 936/21215448/B dated 26 March 2013

Publication in the German Federal Gazette: BAnz AT 01.04.2014 B12, chapter VI notification 7,
UBA announcement dated 27 February 2014:

7	**Notification as regards Federal Environment Agency (UBA) notice of 3 July 2013 (BAnz AT 23.07.2013 B4, chapter II number 2.1)** The StackFlowMaster measuring system manufactured by ABB Ltd. can also be used with the FPD electronics unit. Opinion stated by TÜV Rheinland Energie und Umwelt GmbH dated 2 October 2013

Publication in the German Federal Gazette: BAnz AT 14.03.2016 B7, chapter V notification 21,
UBA announcement dated 18 February 2016:

21	**Notification as regards Federal Environment Agency notices of 3 July 2013 (BAnz AT 23.07.2013 B4, chapter II number 2.1) and of 27 February 2014 (BAnz AT 01.04.2014 B12 chapter IV 7th notification)** The StackFlowMaster measuring system for flow velocity manufactured by ABB Ltd. may also be operated with the 266CSH pressure transmitter. The two electronics units with which ABB's StackFlowMaster measuring system may be used are the FPD583 and FPD585 (version D). Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 11 August 2015

Certified product
This certification applies to automated measurement systems conforming to the following description:

Flow velocity is determined on the basis of differential pressure in the waste gas flow using a dynamic pressure probe and a pressure box (model 267CS). The measuring system uses an in-situ method. Measured values detected by the pressure box are transmitted to the evaluation unit inside the instrument as 4–20 mA measured signals.

The evaluation unit takes into account the differential pressure signal and waste gas boundary conditions as well as the cross-section of the duct. This is also were parameterisation takes place. The volume flow or flow velocity signal is provided via freely assignable 4 – 20 mA outputs, whose measuring range can be changed. Ports of the outputs are located in a different external electronics unit.

In accordance with the relevant measuring range, different pressure transmitters are used which differ only in there pressure measuring range.

Two different probe types may be used which differ in terms of their diameter (25 mm or 60 mm in diameter).

The current software version version is: version 27
The current manual version is: OI/FPD580-EN Rev. A

General remarks

This certificate is based upon the equipment tested. The manufacturer is responsible for ensuring that on-going production complies with the requirements of the EN 15267. The manufacturer is required to maintain an approved quality management system controlling the manufacturing process for the certified product. Both the product and the quality management systems shall be subject to regular surveillance.

If a product of the current production does not conform to the certified product, TÜV Rheinland Energy GmbH must be notified at the address given on page 1.

A certification mark with an ID-Number that is specific to the certified product is presented on page 1 of this certificate.

This document as well as the certification mark remains property of TÜV Rheinland Energy GmbH. Upon revocation of the publication the certificate loses its validity. After the expiration of the certificate and on request of TÜV Rheinland Energy GmbH this document shall be returned and the certificate mark must no longer be used.

The relevant version of this certificate and its expiration date are also accessible on the internet at **qal1.de**.

Certification of the StackFlowMaster measuring system is based on the documents listed below and the regular, continuous surveillance of the manufacturer's quality management system:

Initial certification according to EN 15267

Certificate no. 0000032297: 22 March 2013
Expiry date of the certificate: 04 March 2018

Test report: 936/21215448/A dated 11 October 2012
TÜV Rheinland Energie und Umwelt GmbH, Cologne
Publication: BAnz AT 05.03.2013 B10, chapter II no. 2.4
UBA announcement dated 12 February 2013

Supplementary testing according to EN 15267

Certificate no. 0000032297_01: 20 August 2013
Expiry date of the certificate: 04 March 2018

Test report: 936/21215448/B dated 26 March 2013
TÜV Rheinland Energie und Umwelt GmbH, Cologne
Publication: BAnz AT 23.07.2013 B4, chapter II no. 2.1
UBA announcement dated 03 July 2013

Notifications in accordance with EN 15267

Opinion stated by TÜV Rheinland Energie und Umwelt GmbH dated 2 October 2013
Publication: BAnz AT 01.04.2014 B12, chapter VI notification 7
UBA announcement dated 27 February 2013
(alternative electronics unit)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 11 August 2015
Publication: BAnz AT 14.03.2016 B7, chapter V notification 21
UBA announcement dated 18 February 2016
(alternative pressure transmitter)

Renewal of the certificate

Certificate no. 0000032297_02:	05 March 2018
Expiry date of the certificate:	04 March 2023

Calculation of overall uncertainty according to EN 14181 and EN 15267-3

Measuring system	
Manufacturer	ABB Ltd.
AMS designation	StackFlowMaster
Serial number of units under test	267CS6502019089 / 267CS6502019088
Measuring principle	differential pressure measurement
Test report	936/21215448/B
Test laboratory	TÜV Rheinland
Date of report	2013-03-26
Measured component	Velocity
Certification range	2 - 25 m/s

Calculation of the combined standard uncertainty

Tested parameter				u²	
Standard deviation from paired measurements under field conditions *	u_D	0.183	m/s	0.033	(m/s)²
Lack of fit	u_{lof}	0.023	m/s	0.001	(m/s)²
Zero drift from field test	$u_{d,z}$	-0.087	m/s	0.008	(m/s)²
Span drift from field test	$u_{d,s}$	-0.144	m/s	0.021	(m/s)²
Influence of ambient temperature at span	u_t	0.058	m/s	0.003	(m/s)²
Influence of supply voltage	u_v	0.021	m/s	0.000	(m/s)²

* The larger value is used :
"Repeatability standard deviation at span" or
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u_C)	$u_c = \sqrt{\sum (u_{max,j})^2}$	0.26	m/s
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.50	m/s

Relative total expanded uncertainty	**U in % of the range 25 m/s**	**2.0**
Requirement of 2000/76/EC and 2001/80/EC	**U in % of the range 25 m/s**	**10.0 ****
Requirement of EN 15267-3	U in % of the range 25 m/s	7.5

** For this component no requirements in the EC-directives 2001/80/EG und 2000/76/EG are given.
A value of 10.0 % was used for this.