CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000035007_02

Certified DAHS:	D-EMS 2000
Manufacturer:	DURAG data systems GmbH Kollaustr. 105 22453 Hamburg Germany
Test Laboratory:	TÜV Rheinland Energy GmbH

**This is to certify that the data acquisition and handling system (DAHS)
has been tested and found to comply with the standards
Uniform practice in monitoring emissions 2010*
and EFÜ interface definition 2017 (remote emission control)
as well as EN 14181 (2014), EN 15267-1 (2009) and EN 15267-2 (2009).**

Certification is awarded in respect of the conditions stated in this certificate
(this certificate contains 12 pages).
The present certificate replaces certificate 0000035007_01 of 28 February 2017.

TÜVRheinland®
ZERTIFIZIERT

Eignungsgeprüft
DIN EN 15267
QAL1 zertifiziert
Regelmäßige
Überwachung

www.tuv.com
ID 0000035007

Publication in the German Federal Gazette
(BAnz) of 02 March 2012

German Federal Environment Agency
Dessau, 16 February 2022

Dr. Marcel Langner
Head of Section II 4.1

This certificate will expire on:
01 March 2027

TÜV Rheinland Energy GmbH
Cologne, 15 February 2022

ppa. Dr. Peter Wilbring

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

* Uniform federal practice in monitoring emissions 2010
- Circular from the Federal Environment Ministry of 2005-06-13 - IG I 2 - 45053/5 - and 2010-08-04 - IG I 2- 51134/0

Test report:	936/21217135/A of 14 October 2011
Initial certification:	16 March 2012
Expiry date:	01 March 2027
Certificate	Renewal (of previous certificate 0000035007_01 of 28 February 2017 valid until 01 March 2022)
Publication:	Banz. 02 March 2012 no. 36, p. 920, chapter III number 1.2

Approved application

The certified data acquisition and handling system (DAHS) is suitable for continuous emission data acquisition, evaluation and remote transmission at plants with continuous monitoring.

The suitability of the DAHS for this application was tested in the laboratory and during a 3-month field test at a municipal waste incineration plant in accordance with the 17th BImSchV. In parallel, a simulated plant was also operated in accordance with the 13th BImSchV.

The data evaluation system is approved for an ambient temperature range of +5 °C to +40 °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 the limit values relevant to the application.

Any potential user should ensure, in consultation with the manufacturer, that this AMS is suitable for the intended purpose.

Basis of the certification

This certification is based on:

- Test report 936/21217135/A of 14 October 2011 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. 02 March 2012, no. 36, p. 920, chapter III number 1.2, UBA announcement dated 23 February 2012:

AMS designation:

D-EMS 2000

Manufacturer:

DURAG data systems GmbH, Hamburg

Field of application:

Emission data acquisition, evaluation and remote transmission at plants with continuous monitoring

Measuring ranges during performance testing:

- Analogue data transmission
- Digital data transmission via Profibus
- Remote transmission of emission data

Software version:

Version 4.50

Restriction:

To protect the system from access to stored data in continuous operation, the access rights granted via the administrator of the PC operating system must be restricted for file management programmes (such as Explorer).

Notes:

1. The physical limits of data transmission via RS 232C/RS 485 or a network connection must be observed during installation.
2. Supplementary testing (software modifications, digital interface for Profibus and Modbus) for notification of the Federal Environment Agency of 21 February 2006 (BAnz. p. 2653, chapter III no. 1.6) and of 15 July 2011 (BAnz. p. 2725, chapter III 5th notification).

Test Report:

TÜV Rheinland Energy GmbH, Cologne

Report no.: 936/21217135/A of 14 October 2011

Publication in the German Federal Gazette: BAnz AT 05.03.2013 B10, chapter V
15th notification, UBA announcement dated 12 February 2013:

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15 **Notification as regards Federal Environment Agency (UBA) notice
of 23 February 2012 (BAnz. p. 920, chapter III number 1.2)**

The D-EMS 2000 evaluation system manufactured by DURAG data systems GmbH
includes the digital interface - Modbus (EIA-485, serial) in accordance with VDI 4201
parts 1 and 3.

The current software version is:
V 4.50.11917

Statement issued by TÜV Rheinland Energie und Umwelt GmbH
dated 12 October 2012

Publication in the German Federal Gazette: BAnz AT 01.04.2014 B12, chapter VI 10th
notification, UBA announcement dated 27 February 2014:

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10 **Notification as regards Federal Environment Agency (UBA) notices
of 23 February 2012 (BAnz. p. 920, chapter III number 1.2) and
of 12 February 2013 (BAnz AT 05.03.2013 B10, chapter V 15th notification)**

The D-EMS 2000 evaluation unit from Durag data systems GmbH also includes the
digital interface - Modbus TCP/IP via Ethernet.

The current software version is:
V 4.50.12232

Statement issued by TÜV Rheinland Energie und Umwelt GmbH
dated 19 October 2013

Publication in the German Federal Gazette: BAnz AT 02.04.2015 B5, chapter IV
30th notification, UBA announcement dated 25 February 2015:

**30   Notification as regards Federal Environment Agency (UBA) notices
of 23 February 2012 (BAnz. p. 920, chapter III number 1.2) and
of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter VI 10th notification)**

The D-EMS 2000 evaluation system from Durag data systems GmbH is also offered as D-EMS 2000CS on the basis of a mini PC.

The D-MS 500 KE (hardware unit for analogue and digital inputs and A/D converter) is supplied with new CPU card 507.

In addition, the data acquisition system is also available as D-MS 500FC based on 16bit Wago modules.

The current software version corrects the measured value evaluation of multi-fuel firing systems during normalisation with regard to the substitute values used for reference variables. For multi-fuel firing systems with different substitute values, a software update is be carried out.

The current software version is: V 4.50.12655

Statement issued by TÜV Rheinland Energie und Umwelt GmbH
dated 29 September 2014

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

**18   Notification as regards Federal Environment Agency (UBA) notices
of 23 February 2012 (BAnz. p. 920, chapter III number 1.2) and
of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter IV 30th notification)**

The latest software version of the D-EMS 2000 evaluation system manufactured by DURAG data systems GmbH is: V 4.50.12994

Statement issued by TÜV Rheinland Energie und Umwelt GmbH
dated 13 October 2015

Publication in the German Federal Gazette: BAnz AT 15.03.2017 B6, chapter V
13th notification, UBA announcement dated 22 February 2017:

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13 **Notification as regards Federal Environment Agency (UBA) notices**
of 23 February 2012 (BAnz. p. 920, chapter III number 1.2) and
of 18 February 2016 (BAnz AT 14.03.2016 B7, chapter V 18th notification)

The software of the emission calculator D-EMS 2000 from Durag data systems GmbH has been supplemented by the evaluation of the calibration range monitoring according to EN 14181 (2015 edition).

The current software version is: V 4.51

Statement issued by TÜV Rheinland Energy GmbH dated 12 October 2016

Publication in the German Federal Gazette: BAnz AT 26.03.2018 B8, chapter V
1st notification, UBA announcement dated 21 February 2018:

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1 **Notification as regards Federal Environment Agency (UBA) notices**
of 23 February 2012 (BAnz. p. 920, chapter III number 1.2) and
of 22 February 2017 (Banz AT 15.03.2017 B6, chapter V 13th notification)

The current software version for the D-EMS 2000 evaluation system from DURAG data systems GmbH is: V 4.51 JT 13671

The following versions V 4.51 with the JT numbers are also valid: 13498, 13519, 13524, 13551, 13573, 13576, 13601, 13642, 13646, 13650, 13671.

Statement issued by TÜV Rheinland Energy GmbH dated 22 September 2017

Publication in the German Federal Gazette: BAnz AT 26.03.2019 B7, chapter IV
8th notification, UBA announcement dated 27 February 2019:

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8 **Notification as regards Federal Environment Agency (UBA) notices**
of 23 February 2012 (BAnz. p. 920, chapter III number 1.2) and
of 21 February 2018 (BAnz AT 26.03.2018 B8, chapter V 1st notification)

The current software version of the D-EMS 2000 emission data evaluation system from DURAG data systems GmbH is:
V 4.51 JT 13947

The following versions V 4.51 with the JT numbers are also valid:
13707, 13715, 13749, 13798, 13845, 13901.

Statement issued by TÜV Rheinland Energy GmbH dated 10 October 2018

Publication in the German Federal Gazette: BAnz AT 05.08.2021 B5, chapter IV
16th notification, UBA announcement dated 29 June 2021:

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16   **Notification as regards Federal Environment Agency (UBA) notices
of 23 February 2012 (BAnz. p. 920, chapter III number 1.2) and
of 27 February 2019 (BAnz AT 26.03.2019 B7, chapter IV 8th notification)**

The current software version of the D-EMS 2000 emission data evaluation system from DURAG data systems GmbH is: 4.51 / 14842.

In systems with remote data transmission, the versions from 4.51/14693 onwards are to be used, as in the older versions messages were erroneously transmitted with the identifier BT instead of NT in the message file.

Statement issued by TÜV Rheinland Energy GmbH dated 25 February 2021

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Certified product

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

The emission data evaluation system (DAHS) consists of the communication and/or DIN rail units and a PC. The communication *(KE)* and/or DIN rail units *(HS)* are used to receive the analogue and status signals. The analogue signals are converted into digital signals via 12-bit analogue/digital converters. The temporal resolution of the signals and storage of the raw data is 1/sec.

Data acquisition with D-MS 500KE for analogue signals and status signals

Potential-independent inputs for current signals in the range of 0 - 20 mA are used for data acquisition. To convert the input current into a measured voltage, there is a 100 Ω resistor in the input circuit. The measured circuits are converted into a 12-bit data word, independent of potential, by means of an analogue/digital converter.
A relay identifies status signals and passes them on as digital signals.

Data storage: 16 days (standard), optionally for 96 days on compact flash card. A maximum of 11 input/output modules are possible per D-MS 500KE.

Overview of technical specifications:

- 3 serial interfaces: 1xRS485, 2xRS232 by default
- 1 RS232 service interface
- 1 Ethernet TCP/IP port
- 1 CAN port (not in use so far)
- Power supply 115/230 VAC / 50/60Hz 100VA
- Input cards (per card)
- 8 analogue inputs with 12-bit resolution, 0 - 20 mA, internal resistance of 100 Ω
- 16 digital inputs with 24 V internal supply voltage

Data acquisition with D-MS 500HS for analogue signals and status signals

Potential-independent inputs for current signals in the range of 0 - 20 mA are used for data acquisition. To convert the input current into a measured voltage, there is a 50 Ω resistor in the input circuit. The measured circuits are converted into a 12-bit data word, independent of potential, by means of an analogue/digital converter.

Status signals are identified via an optocoupler and passed on as digital signals.
No intermediate data storage is possible here.

Overview of technical specifications:

- Modules for snapping onto DIN mounting rails
- A serial bus connection RS485
- Power supply 24VDC D-MS 500 HS-PS
- D-MS 500 HS-AI with 8 analogue inputs each with 12-bit resolution, 0/4-20 mA / 50 Ohm
- D-MS 500 HS-DIO with 7 digital inputs and 8 digital outputs each
- 24 V external mains supply voltage
- D-MS 500 HS-AO with 4 analogue outputs each 0/4-20 mA / 500 Ohm
- Up to 16 modules can be connected to the D-EMS 2000.

Profibus interface

The Profibus Master FNL DP manufactured by COMSOFT GmbH in Karlsruhe is used as the Profibus interface. Revision: 02;SW/FW:2.19.34; HW:02.1, GSD: COMSOA4A.GSD, File Version: September 29, 2011. The data transmission is carried out according to the interface definition of VDI 4201 part 1 and 2.

Data evaluation

Measured values are evaluated on an industrial computer with the following minimum configuration:

- Pentium > 3.2 GHz, 512 MB RAM, 2 hard disks ≥ 160 GB, Raid 0, Ethernet interface

- Serial (RS 232) optional / USB interfaces, DCF77 receiver, standard printer

- Modem (external standard analogue modem V92) for remote monitoring or remote maintenance

- CD / DVD-ROM (optional burner) or external hard drive

- Operating system Windows XP, Windows 7, WinServer 2003 or WinServer 2008 R2

- For data backup, the PC is equipped with a second hard disk for data storage, a backup drive (e.g. CD burner) and/or an Ethernet interface for data backup on another PC.

The assessment of the evaluation system was based on the following requirements:

- Uniform federal practice in the monitoring of emissions; Circular from the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection *(BMU)* from 13.6.2005 - IG I 2 - 45053/5 and from 04.8.2010 - IG I 2 - 51134/0
- Remote emission control (EFÜ)/interface definition
  Revised version by resolution of the Federal Working Group on Air Pollution Control *(LAI)* of 28.09.2005
- EN 14181 2004 (Stationary source emissions – Quality assurance of automated measuring systems) with regard to the data evaluation of emission measuring systems
- VDI guideline 4201
  Performance criteria on automated measuring and electronic data evaluation systems for monitoring emissions –
  Part 1 – General requirements
  Part 2 – Specific requirements for Profibus
  Part 3 – Specific requirements for Modbus (serial and TCP/IP)

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**.

Document history

Certification of the D-EMS 2000 measuring system is based on the documents listed below and the regular, continuous surveillance of the manufacturer's quality management system:

Initial testing

Test report: 541935 of 20 May 2005
TÜV Süd Industrie Service GmbH
Publication: BAnz. 29 October 2005, no. 206, p. 15700, chapter III number 1.3
UBA announcement dated 25 July 2005

Supplementary testing

Test report: 20086187 of 23 December 2005
TÜV Süd Industrie Service GmbH
Publication: BAnz. 08 April 2006, no. 70, p. 2653, chapter III number 1.6
UBA announcement dated 21 February 2006

Notifications

Statement issued by TÜV Süd Industrie Service GmbH dated 12 April 2007
Publication: BAnz. 20 April 2007, no. 75, p. 4139, chapter V correction 1
UBA announcement dated 12 April 2007
(Correction reporting date 23.12.2005 by UBA)

Statement issued by TÜV Süd Industrie Service GmbH dated 22 November 2006
Publication: BAnz. 20 April 2007, no. 75, p. 4139, chapter IV notification 5
UBA announcement dated 12 April 2007
(Software updates)

Statement issued by TÜV Süd Industrie Service GmbH dated 31 March 2009
Publication: BAnz. 25 August 2009 no. 125, p. 2929, chapter III notification 22
UBA announcement dated 3 August 2009
(Software updates)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 31 March 2011
Publication: Banz. 29 July 2011, no. 113, p. 2725, chapter III notification 5
UBA announcement dated 15 July 2011
(New company name)

Initial certification according to EN 15267

Certificate no. 0000035007_00:   16 March 2012
Expiry date of the certificate: 01 March 2017
Test report: 936/21217135/A of 14 October 2011
TÜV Rheinland Energie und Umwelt GmbH
Publication: BAnz. 02 March 2012, no. 36, p. 920, chapter III number 1.2
UBA announcement dated 23 February 2012

Notifications in accordance with EN 15267
Statement issued by TÜV Rheinland Energy GmbH dated 12 October 2012
Publication: BAnz AT 05.03.2013 B10, chapter V notification 15
UBA announcement dated 12 February 2013
(Software updates)

Statement issued by TÜV Rheinland Energy GmbH dated 19 October 2013
Publication: BAnz AT 01.04.2014 B12, chapter VI notification 10
UBA announcement dated 27 February 2014
(Software modification and extension with digital interface - Modbus TCP/IP)

Statement issued by TÜV Rheinland Energy GmbH dated 29 September 2014
Publication: BAnz AT 02.04.2015 B5, chapter IV notification 30
UBA announcement dated 25 February 2015
(Software and system modifications and system extensions (Mini-PC as D-EMS 2000CS))

Statement issued by TÜV Rheinland Energy GmbH dated 13 October 2015
Publication: BAnz AT 14.03.2016 B7, chapter V notification 18
UBA announcement dated 18 February 2016
(Software updates)

Renewal of the certificate

Certificate no. 0000035007_01:   28 February 2017
Expiry date of the certificate: 01 March 2022

Notifications in accordance with EN 15267
Statement issued by TÜV Rheinland Energy GmbH dated 12 October 2016
Publication: BAnz AT 15.03.2017 B6, chapter V notification 13
UBA announcement dated 22 February 2017
(Software updates)

Statement issued by TÜV Rheinland Energy GmbH dated 22 September 2017
Publication: BAnz AT 26.03.2018 B8, chapter V notification 1
UBA announcement dated 21 February 2018
(Software updates)

Statement issued by TÜV Rheinland Energy GmbH dated 10 October 2018
Publication: BAnz AT 26.03.2019 B7, chapter IV notification 8
UBA announcement dated 27 February 2019
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 25 February 2021
Publication: BAnz AT 05.08.2021 B5, chapter IV notification 16
UBA announcement dated 29 June 2021
(Software change (versions up to 4.51.14693 are invalid))

Renewal of the certificate

Certificate no. 0000035007_02:   16 February 2022
Expiry date of the certificate: 01 March 2027