

# CONFIRMATION

## of Product Conformity (QAL1)

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**AMS designation:** ZFDM-4 for dust

**Manufacturer:** Fuji Electric France S.A.S.  
46, Rue Georges Besse, ZI du Brézet  
63039 Clermont-Ferrand Cedex 2,  
France

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**Test Laboratory:** TÜV Rheinland Energy GmbH

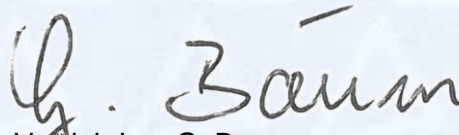
**This is to certify that the AMS has been tested  
according to the standards:**

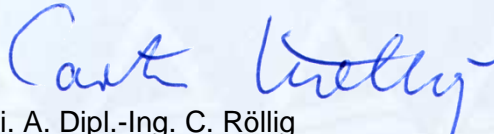
**EN 15267-1 (2009), EN 15267-2 (2009), EN 15267-3 (2007)  
and EN 14181 (2004)**

The AMS underwent independent expert testing and was accepted.  
This confirmation is valid up to the publication of the certificate,  
but no longer than 6 months from the date of issue  
(this document contains 5 pages)

**This confirmation is valid until: 05 September 2020**

TÜV Rheinland Energy GmbH  
Cologne, 06 March 2020

  
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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 certificate D-PL-11120-02-00.

**Confirmation:**  
06 March 2020

**Test Report:** 936/21246878/A dated 2 October 2019  
**Expiry date:** 05 September 2020

### **Approved application**

The tested AMS is suitable for use at combustion plants according to Directive 2010/75/EU, chapter III (13th BImSchV), plants in compliance with TA Luft and plants according to the 27th BImSchV. The measured ranges have been selected so as to ensure 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 four-months field test at a municipal waste incinerator.

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 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 confirmation**

This confirmation is based on:

- Test report 936/21246878/A dated 2 October 2019 issued by TÜV Rheinland Energy GmbH
- The ongoing surveillance of the product and the manufacturing process
- Expert testing and approval by an independent body

**Confirmation:**  
06 March 2020

**AMS designation:**

ZFDM-4 for dust

**Manufacturer:**

Fuji Electric France S.A.S, Clermont-Ferrand, France

**Field of application:**

For plants according to the 13<sup>th</sup> and 17<sup>th</sup> BImSchV as well as TA Luft

**Measuring ranges during performance testing:**

Component	Certification range	Unit
Dust	0–20	mg/m <sup>3</sup>

Component	supplementary ranges		Unit
Dust	0–15 <sup>1)</sup>	0–100 <sup>2)</sup>	SE

<sup>1)</sup> corresponds to ~ 0 to 9 mg/m<sup>3</sup> of dust

<sup>2)</sup> corresponds to ~ 0 to 60 mg/m<sup>3</sup> of dust

**Software versions:**

V 1.3

**Restrictions:**

None

**Notes:**

1. The maintenance interval is two weeks.
2. During performance testing in accordance with EN 15267-3, the requirement for the determination coefficient  $R^2$  of the calibration function was not fulfilled.

**Test Report:**

TÜV Rheinland Energy GmbH, Cologne  
Report no.: 936/21246878/A dated 2 October 2019



**Confirmation:**  
06 March 2020

## Tested product

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

The ZFDM-4 is a dust measuring system which uses a scattered light measuring principle (backwards scattering). The measuring system comprises the following main components:

- Electronic switch box with LED light source, receiver unit, processing electronics and control unit
- Two fibre optic cables for the transmission of emitted and received light
- A sensor for attachment of the fibre optic cables at the waste gas channel including heat resistance, temperature sensor and mounting flange
- Instrument software and control blocks

The two fibre optic cables (available at 1.20 m and 2.20 m length) are fastened in the sensor. This sensor in turn is mounted to the flue gas duct on a rectangular flange.

Particles in the duct reflect the light entering the measuring volume at a 45° angle in different directions. Part of the reflected light hits the tip of the receiver cable. The intensity of the reflected light compared to the intensity of the emitted light depends on the angle between sender and receiver as well as the shape, colour and size of the particles. For any given type of dust, the light intensity received is proportional to the dust concentration present.

The light transmitted via the emitter cable is modulated by a generator at a frequency of 1000 Hz to prevent light interference.

Two separately adjustable fixed measuring ranges serve the purpose of data output.

Thanks to the optical fibre cables, it is possible to install the electronic switch box separately from the sensor. The electronic switch box contains the main board with the logical functions for control and supply. It comprises a micro-processor which carries out the following functions:

- Evaluation of measurement data
- Monitoring of emitted light and sensor temperature
- Management of instrument display and 4–20 mA analogue outputs
- Manage warnings and errors

The measuring system is equipped with a purge air supply at the sensor. To prevent condensation, purge air is heated. It is also used to distribute heat inside the sensor. Temperatures at the sensor can be set to 130 °C to 400 °C. The optical fibres have been designed for a permanent maximum temperature of 250 °C.

Three control or adjustment blocks as well as a zero point block are required for the purpose of lack-of-fit tests and drift checks, which are delivered by the manufacturer. The centre of the adjustment block contains tempered, pigmented glass. The thickness of the glass is proportional to the optical density.

In the context of performance testing, the measuring system was operated with a moving average over 10 s.

The measuring system can perform zero checks automatically every 24 h or manually. Span checks can only be performed manually with the help adjustment blocks. Instead of automatic zero checks, zero checks can also be performed with the help of a calibration block.

In the event of demanding measurement conditions (small duct diameter, reflection inside the waste gas duct etc.), the zero point in the absence of dust concentrations may be moved. The measuring system provides an offset correction for such situations.

**Confirmation:**  
06 March 2020



The measuring system provides a compensation for contamination. For deviations of at least 10%, it is possible to calculate correction factors. This correction factor is used to correct output data for the following measuring values. The correction factor can be switched on and off.