Translation

(1) # EC-Type Examination Certificate

(2) **- Directive 94/9/EC -**
Equipment and protective systems intended for use in potentially explosive atmospheres

(3) ## BVS 03 ATEX E 105 X

(4) **Equipment:** **Oxygen sensor type KEX5001 and KEX5002**

(5) **Manufacturer:** **ENOTEC GmbH**

(6) **Address:** **D 51709 Marienheide/Rodt**

(7) The design and construction of this equipment and any acceptable variation thereto are specified in the schedule to this type examination certificate.

(8) The certification body of Deutsche Montan Technologie GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in the test and assessment report BVS PP 03.2072 EG.

(9) The Essential Health and Safety Requirements are assured by compliance with:

EN 50014:1997+A1-A2	General requirements
EN 50018:2000	Flameproof enclosure

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate

(12) The marking of the equipment shall include the following:

II 2G EEx d IIC T3

Deutsche Montan Technologie GmbH
Essen, dated 08. April 2003

Signed: Jockers
DMT-Certification body

Signed: Eickhoff
Head of special services unit

Am Technologiepark 1, 45307 Essen, Telefon (0201)172-1416, Telefax (0201)172-1716

(13) Appendix to

(14) # EC-Type Examination Certificate

BVS 03 ATEX E 105 X

(15) 15.1 Subject and type
Oxygen sensor type KEX5001 und KEX5002

15.2 Description
The oxygen sensors are manufactured in the type of protection flameproof enclosure „d" and serve for the measurement of the oxygen content in the flue gas of combustion processes. Reference air, calibration gas (air or oxygen/nitrogen mixture with oxygen content of not more than 21 % by volume) and flue gas are provided to the Sensor by sintered metal breathing devices.

The sensor is fixed mounted in the wall of a flue gas duct. The electrical connection box remains outside the duct and is not exposed to a hot atmosphere.

The complete sensor is designed with temperature class T3 for an ambient temperature between -20 and + 55 centigrade. The sensor may remain in place if the flue gas temperature at the probe is limited to 500°C. At higher flue gas temperatures the probe must be installed in combination with a protection tube with gas cooling device with a suitable flue gas flow and flue gas cooling that guaranties that the flue gas reaching the probe itself does not exceed 500°C under all process conditions.

For measuring purposes the measuring element of the sensor is heated by the control unit to a constant temperature of 843 °C at an ambient temperature up to 40 °C and to a constant temperature of 800 °C at an ambient temperature up to 55 °C. If the temperature of this sensor heater should reach 890 °C at an ambient temperature up to 40 °C or 845 °C at an ambient temperature up to 55 °C the heater supply is de-energized by a separate protective device of this control unit.

Before opening the sensor enclosure the ambient temperature in an duct as well as the temperature of the internal heater must have been decreased to a maximum of 200 °C (T3). A minimum time delay of one hour must be allowed.

15.3 Parameters

15.3.1 Sensorheater

nominal voltage	up to AC	115	V
nominal current	up to	5	A

15.3.2 Circuits of temperature control and protective device and measuring circuit

voltage	up to DC	1	V

15.3.3 Flue gas temperature at the probe up to 500°C
At higher flue gas temperatures the probe must be installed in combination with a protection tube with gas cooling device with a suitable flue gas flow and flue gas cooling that guaranties that the flue gas reaching the probe itself does not exceed 500°C under all process conditions.

15.3.4 - Oxigen content of the flue gas, referance air and calibration gas mixture

	up to	21	Vol. %

Am Technologiepark 1, 45307 Essen, Telefon (0201)172-1416, Telefax (0201)172-1716

(16) Test and assessment report
BVS PP 03.2072 EG as of

(17) Special conditions for safe use

17.1 The complete sensor is designed with temperature class T3 for an ambient temperature between -20 and + 55 °C.

17.2 The power supply of the internal heater must be de-energized when the heater temperature reaches 890 °C at an ambient temperature up to 40 °C and must be de-energized when the heater temperature reaches 845 °C at an ambient temperature up to 55 °C by a separate protective device, independent from the control device and certified for these purpose.

17.3 The warning label on the cover of the terminal box and the manufacturer's instructions must be carefully followed.

17.4 The sensor together with the protection tube with gas cooling device shall only be used in flue gases which are suitable for the sensor materials in respect of corrosion. If this cannot be achieved, the sensor must be inspected in sufficiently short time intervals on corrosion effects.

17.5 Flue gas temperature at the probe shall not increase 500°C At higher flue gas temperatures the probe must be installed in combination with a protection tube with gas cooling device with a suitable flue gas flow and flue gas cooling that guaranties that the flue gas reaching the probe itself does not exceed 500°C under all process conditions.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

45307 Essen, 08.04.2003
BVS-Ld/Mi A 20020015

Deutsche Montan Technologie GmbH

DMT-Certification body

Head of special services unit

Am Technologiepark 1, 45307 Essen, Telefon (0201)172-1416, Telefax (0201)172-1716