



## QAL1 Report

### Description of evaluated measurement procedure

Automated Measuring System (AMS) based on  
Analyzer module serial number (optional)  
Quotation or order number  
Intended for monitoring of  
Applicable EU directive  
Name of plant  
Gas to be measured  
Smallest range of AMS  
Largest range of AMS (optional)  
Smallest certified range for AMS

AO2000-Magnos106 O2	
3-251409-4	
TG501	
Large combustion plant	
2001/80/EC	
Enipower Ravenna	
O2	
25	Vol. %
25	Vol. %
25	Vol. %

### Test value and required quality at that value

Test concentration (Emission Limit Value, ELV)

15	Vol. %
----	--------

Required measurement quality as 95% confidence interval

10	% of ELV
----	----------

Shortest averaging time of measured values

30	minutes
----	---------

Required response time

25	% of shortest averaging time
----	------------------------------

### Field conditions of operation used in the uncertainty assessment

Ambient temperature range

Min. value	Max. value	
5	30	°C
980	1010	hPa
50	90	l/h
190	250	V

Ambient pressure range

Flow range

Voltage range

Internal diameter of sample gas line

4	mm
---	----

Length of sample gas line

50	m
----	---

Average flow of sample gas

70	l/h
----	-----

Time between (automatic) span calibration

7	days
---	------

Ranges of chemical interferents for

Combustion process

Component

O2

H2O

CO

CO2

CH4

N2O

NO

NO2

NH3

HCl

SO2

Min. value	Max. value	
3	21	Vol. %
1	30	Vol. %
0	300	mg/m <sup>3</sup>
0	15	Vol. %
0	50	mg/m <sup>3</sup>
0	20	mg/m <sup>3</sup>
0	300	mg/m <sup>3</sup>
0	30	mg/m <sup>3</sup>
0	20	mg/m <sup>3</sup>
0	50	mg/m <sup>3</sup>
0	200	mg/m <sup>3</sup>





## QAL1 Report

(continued)

### Contributing partial standard uncertainties and reference to their origins

Selectivity H <sub>2</sub> O	0,01	Vol. %
Selectivity others (largest sum)	0,04	Vol. %
Lack of fit	0,00	Vol. %
Drift	0,01	Vol. %
Pressure dependence	0,00	Vol. %
Temperature dependence	0,02	Vol. %
Flow dependence	0,00	Vol. %
Voltage dependence	0,00	Vol. %
Repeatability	0,01	Vol. %
Uncertainty of response factors	0,00	Vol. %
Uncertainty of converter efficiency (SCC-K NO <sub>x</sub> converter)	0,00	Vol. %
Response time	37	seconds
Origin of data	<i>Report of TÜV suitability test, 03/1997 (Gerät 2)</i>	
Long-term drift of calibration cell	0,00	Vol. %
Origin of data	<i>Not applicable</i>	
Uncertainty of SRM	0,02	Vol. %
Standard Reference Method (SRM), Reference	<i>Paramagnetism, ISO 12039</i>	
Uncertainty of cylinder gas	0,15	Vol. %
Origin of data	<i>Datasheet of gas supplier</i>	

### Determination and assessment of expanded uncertainty

Expanded uncertainty	0,31	Vol. %
Required measurement quality as 95% confidence interval	1,50	Vol. %
<b>Confidence interval met</b>	<b>YES</b>	
Total response time	69	seconds
Required response time	450	seconds
<b>Response time met</b>	<b>YES</b>	
<b>Conclusion</b>	<b>The AMS is ACCEPTABLE</b>	

This report confirms that the product  
**AO2000-Magnos106 O<sub>2</sub>**  
operating with system components as described in §3 of the TÜV suitability test report  
complies with the requirements of EN 14181:2004 QAL1  
according to the International Standard ISO 14956:2002  
for the above specified operating conditions.