



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

ACF-NT SO2		
3.250936.4		
Non-specific plant		
Linea Cottura Clinker, Camino E06		
SO2		
75	mg/m ³	
1200	mg/m ³	
75.00	mg/m ³	

Test value and required quality at that value

Test concentration (Emission Limit Value, ELV)

Limiting value according directive or standard
Required measurement quality as 95% confidence interval

Shortest averaging time of measured values
Required response time

50	mg/m ³
2001/80/EC, 2000/76/EC and EN15267-3	
20	% ov ELV
30	minutes
25	% of shortest averaging time

Field conditions of operation used in the uncertainty assessment

	Min. value	Max. value	
Ambient temperature range	15	35	°C
Ambient pressure range	950	1030	hPa
Flow range	100	220	l/h
Voltage range	190	250	V
Accuracy of test gas according TÜV report		3.64	%
Internal diameter of sample gas line	6		mm
Length of sample gas line	6		m
Average flow of sample gas	160		l/h
Time between (automatic) span calibration	180		days
Ranges of chemical interferents for	Combustion process		

Component	Min. value	Max. value	
O2	3	21	Vol. %
H2O	1	30	Vol. %
CO	0	300	mg/m ³
CO2	0	15	Vol. %
CH4	0	50	mg/m ³
N2O	0	20	mg/m ³
NO	0	300	mg/m ³
NO2	0	30	mg/m ³
NH3	0	20	mg/m ³
HCl	0	50	mg/m ³
SO2	0	200	mg/m ³



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(continued)

Contributing partial standard uncertainties and reference to their origins

Selectivity H ₂ O	1.61	mg/m ³
Selectivity others (largest sum)	1.66	mg/m ³
Lack of fit	-0.45	mg/m ³
Drift	-1.41	mg/m ³
Pressure dependence	0.00	mg/m ³
Temperature dependence	0.46	mg/m ³
Flow dependence	0.00	mg/m ³
Voltage dependence	0.08	mg/m ³
Repeatability	1.22	mg/m ³
Uncertainty of response factors	0.00	mg/m ³
Uncertainty of converter efficiency (SCC-K NO _x converter)	0.00	mg/m ³
Response time	144	seconds
Origin of data	TÜV report, no.: 931/2120471/A (2009-2)	
Long-term drift of calibration cell	0.00	mg/m ³
Origin of data	not applicable	
Uncertainty of cylinder gas	1.05	mg/m ³
Origin of data	TÜV report, no.: 931/2120471/A (2009-2)	

Determination and assessment of expanded uncertainty

	2001/80/EC and 2000/76/EC	EN15267-3
Expanded uncertainty	4.13	mg/m ³
Required measurement quality as 95% confidence interval	10.00	7.5 mg/m ³
Confidence interval met	YES	
	EN14181	EN15267-3
Total response time	148	seconds
Required response time	450	200 seconds
Response time met	YES	
Conclusion	The AMS is ACCEPTABLE	

This report confirms that the product
ACF-NT SO₂
operating with system components as described of the TÜV suitability test report
complies with the requirements of EN 14181:2004 QAL1
according to the International Standard ISO 14956:2003
for the above specified operating conditions.