## Annex E

Calibration Certification for the On-line Stack Monitoring System

## Annex E1

# Calibration Certification for the CEMS

# Commissioning Check List 试运行检查项目表 MCS100FT

Cus	stomer data 客户资料								
	Customer: OSCA		Plant: OWTE						
	Location: SHW								
	Device data 设备资料 Device type 设备类型: McS[0 Serial no. 序列号: 1607 Sample probe type 取样探头类型: SFU	the second							
2.	Plant data 电厂资料								
Location 标签编号  Outside 室外 □ Horizontal 方向  水平□		有仍	r cover R护單 □ /ertical 垂直 ☑	Inside 室内 ☑					
	entation of sample gas probe 探头方向	Horizontal 水平 🗹	1	/ertical 垂直 🗌					
	Plant operating status	010 hpa	Ga	as temperat	ture 烟气温度	410 °C			
3.	Prerequisite 系统运行条件		Y	N Rema	arks 备注				
3.1.	Documentation + Delivery co 文件+货物是否齐全	mplete	Ø						
3.2.	Platform at measurement sponsuitable dimension? 测量点平台的尺寸是否合适?	ot has	ď						
3.3.	If this measurement location legal regulation, has it been acknowledged by an official b如果安装位置需要符合法律法位置是否被官方认可?	oody?	d						
3.4.	Customer specific data for parameterization available? 用户对系统参数的特殊要求是	否可行?							
5.5.	Cables, tubes and sample linbut not connected? 电缆、管线和取样管线安装但	e installed							
.6.	Compressed air station instal compressed air available? 压缩空气站已安装并且压缩空用?	led and	$\square$						

4. 1	Preliminary work 预备工作			9/1 de 10/2	7
		Y	N	Remarks 备注	
4.1.	Mounting of flanges like described in the Operating Instruction? 法兰安装是否按照图纸?	Ø			
4.2.	Check for damage 检查外部损伤	Ø			
4.3.	Check ambient conditions 检查环境条件	Ø			
4.4.	Check mounting conditions 检查安装条件				
4.5.	Check cables / wires for correct installation 检查电缆/电线及其连接状况	D			
4.6.	Check main power supply voltage 检查总供电电压		П		
5. F	Periphery 外部设备				
		Y	N	Remarks 备注	
5.1.	Check compressed air supply 检查压缩空气供应	D/			
	Inlet 入口(5 bar):				
6. 5	Sample probe 取样探头	Υ	N	Domarka Wit	
C 4	Consider the state of the state	1	IN	Remarks 备注	
6.1.	管线和电缆的连接	Ø			
6.2.	Install probe 探头安装	Ø			

7	MCS100FT	-		
	MICC TOUT T	Y	N	Remarks 备注
	Switch on analyzer and wait for warm up 打开分析仪并等待预热	Ø		
7.2.	Check sample conditions 检查样气情况	M		
	Flow rate 流量: 230 l/h			
7.3.	Check zero conditions 检查零点情况	Ø		
	Flow rate 流量: 160 l/h			
7.4.	Perform zero point setting 零点设置	Ø	07	Test results within specification,
7.5.	Perform span test 量程测试	Ø		
7.6.	Parameterize the I/O Module 设置 I/O 模块参数	Ø		
7.7.	Measured values are plausible 测量值是否合理	Ø		
7.8.	Save device data 储存设备数据	Q		
7.9.	Complete Commissioning Sign-Off Sheet 完成试运行签署表	Ø		
7.10	Instruct the operator personnel 操作员培训 Hand over the maintenance manual and check lists 移交维护手册和检查表 - Measurement reading 读取测量值 - Perform customer maintenance 演示维护方法 - Read messages 读取信息	Þ		

## 8. Measured value

Index	Source	Unit	Range	e 范围	Reading	Output	
编号	信号源	单位	Start 开始	End 结束	(actual) 实际读数	value 产值	
1	HCL	mg/Nm3	0	(20	60.22 PPM	60,22 ppm	
2	HF	ma/Nm3	0	5	4,34 pm	4,34 ppm	
3	CO	ma/Nm3	0	1000	128.21PPM	128,20 ppm	
4	NO	ma/Nm3	0	500	122.01PPM	122.00 PPh	
5	NO <sub>2</sub>	ma/Nm3	0	200	98.81 ppm	98.80 PP4	
6	NO <sub>X</sub>	ma/Nm3	0	500	4/21/10/13	4/2.12 ma	
7	SO <sub>2</sub>	max/Nm3	0	300	83,21 Ppm	83.21 PPH	
8	CO <sub>2</sub>	Vol 0/0	0	25	20,010/0	20.01.010	
9	H₂O	Vololo	0	40	32.020/0	32,010/0	
10	O <sub>2</sub>	10000	0	21	20,950/5	20,950/5	
11	TOC	mos/Nm3	0	300	122,01 ppm	122,01 pps	
12	NH <sub>3</sub>	ma/Nm3	0	100	53,30 ppm	53,3/pph	
13	CH4	ma/Nm3	0	100	112.01 ppm	112.01 PPW	
14		1 100		T. Ne	11-10-1-1-1	11201177	
15							

temarks 备注		
Date / 1	Name 签名	
Date 日期: 25/7/20/8 Engineer 工程师: Whith	Plant personnel 用户代表:	

(2)

# Commissioning Check List 试运行检查项目表 MCS100FT

Cus	stomer data 客户资料								
	Customer: Oscar		Plant: OWTE						
	Location: SHW								
	Device data 设备资料 Device type 设备类型: MCS looFT (3 Serial no. 序列号: 1607 0494 Sample probe type 取样探头类型: SF()								
2.	Plant data 电厂资料								
Loca	Outside 室外		ider cover Inside 有保护單  室内						
Orientation of the stack 取样点		al	Vertical 垂直 ☑						
Orie	水平 Intation of sample gas probe 探头方向 水平	al	Vertical 垂直 □						
	Maria de la companya della companya		Gas temperature 烟气温度 <u>410</u> °C						
3. 1	Prerequisite 系统运行条件	Υ	N Remarks 备注						
3.1.	Documentation + Delivery complete 文件+货物是否齐全	Ø							
3.2.	Platform at measurement spot has suitable dimension? 测量点平台的尺寸是否合适?	d							
3.3.	If this measurement location is under legal regulation, has it been acknowledged by an official body? 如果安装位置需要符合法律法规,此安位置是否被官方认可?	:装							
3.4.	Customer specific data for parameterization available? 用户对系统参数的特殊要求是否可行?	Ø							
3.5.	Cables, tubes and sample line installe but not connected? 电缆、管线和取样管线安装但没有连接	M							
3.6.	Compressed air station installed and compressed air available? 压缩空气站已安装并且压缩空气可以使用?								

4 1	Preliminary work 预备工作				_
7	Telliminary Work Don't Live	Y	N	Remarks 备注	
4.1.	Mounting of flanges like described in the Operating Instruction? 法兰安装是否按照图纸?	Ø			
4.2.	Check for damage 检查外部损伤	Ø			
4.3.	Check ambient conditions 检查环境条件	Ø			
4.4.	Check mounting conditions 检查安装条件	Ø.			
4.5.	Check cables / wires for correct installation 检查电缆/电线及其连接状况	Ø			
4.6.	Check main power supply voltage 检查总供电电压	M			
5. F	Periphery 外部设备				
		Y	N	Remarks 备注	
5.1.	Check compressed air supply 检查压缩空气供应	d			
	Inlet 入口(5 bar): 6 Bar				
6. 5	Sample probe 取样探头				
		Y	N	Remarks 备注	
6.1.	Connect bundle of tubes and cables 管线和电缆的连接	Ø			
6.2.	Install probe 探头安装	d			

7.	MCS100FT	Υ	N	Remarks 备注
7.1.	Switch on analyzer and wait for warm up 打开分析仪并等待预热	<u></u>		Nemans 嵌在
7.2.	Check sample conditions 检查样气情况	d		
	Flow rate 流量: 240 l/h			
7.3.	Check zero conditions 检查零点情况	M		
	Flow rate 流量: /50 I/h			
7.4.	Perform zero point setting 零点设置	V		
7.5.	Perform span test 量程测试	Ø		Test results within specification
7.6.	Parameterize the I/O Module 设置 I/O 模块参数	M		1
7.7.	Measured values are plausible 测量值是否合理	D		
7.8.	Save device data 储存设备数据	M		
7.9.	Complete Commissioning Sign-Off Sheet 完成试运行签署表			
7.10	Instruct the operator personnel 操作员培训 Hand over the maintenance manual and check lists 移交维护手册和检查表 - Measurement reading 读取测量值 - Perform customer maintenance 演示维护方法 - Read messages 读取信息			

## 8. Measured value

Index	Source	Unit	Range	e 范围	Reading	Output	
编号	信号源	单位	Start 开始	End 结束	(actual) 实际读数	value 产值	
1	HCL	mg/N/m3	0	120	60.21 ppm	60.21 PF	
2	HF	ma/Nn3	0	5	4,32 ppm	4,32 ppm	
3	СО	ma/Nm3	0	1000	128.20 ppm	128.20 00	
4	NO	ma/Nm3	0	500	122,00 PPh	122,00 PPM	
5	NO <sub>2</sub>	ma/Nm3	0	200	98.80 ppin	98.81 PD	
6	NO <sub>X</sub>	mal Nm2	0	500	4/2,22 mg/m	4/2,2/mg/	
7	SO <sub>2</sub>	ma/Nm3	(2)	300	83,21 PPm	83.21 PPIN	
8	CO <sub>2</sub>	10/0/0	0	25	20.000/0	20.00 0/0	
9	H <sub>2</sub> O	Vol do	0	40	32.0/0/0	32,010/0	
10	O <sub>2</sub>	Vol 0/0	0	21	20,950/0	20,950/0	
11	TOC	ma/Nm3	0	300	122,01 PPM	122,01 pm	
12	NH <sub>3</sub>	ma/Nin3	0	100	53,30 PPM	53,30 PP	
13	CH4	mg/Nm3	0	100	112.02 PPM	112,02 pp	
14		11.97.7.11			11-13-11-3	1	
15							

Remarks 备注		
Date		Name 签名
Date 日期: 25/7/2018 Engineer 工程师: Lullie Luw	Plant personnel 用户代表:	

			Carbon Dioxide (CO2)	Oxygen (O2)	Methane (CH4)	Carbon Monoxide (CO)	Nitric Oxide (NO)	Sulphur Dioxide (SO2)	Nitrogen Dioxide (NO2)	Hydrogen Chloride (HCl)	Ammonia (NH3)	Hydrogen Floride (HF)	Propane (C3H8
Cal. Date and Line#			20	2.1	839	128.2	122	83.2	98.8	60.2	53.3	4.31	1117
07/May/2019	11	Before				129.81	135.82	81.84	97.86	X			
07/Way/2013		After				127.93	123.07	83.37	99.1				
07/May/2019	ppm in Span Gas (CO2) Oxygen (O2)  ond Line# 20 2.1  ond Line# 20 2.1		126.03	118.64	82.58	97.71							
07/ Way/2019	LZ	After				129.02	122.17	83.17	98.57				
09/May/2019	11	Before									52.15		
09/Way/2019	LT	After									53.17		
09/May/2019	12	Before									51.76		
09/Way/2019	LZ	After									54.01		
05/Jun/2019	11	Before	T-V	2.5								(HF)	
05/1011/2019	LT	After		2.1									
05/Jun/2019	12	Before		2.4									
05/1011/2019	LZ	After		2.1								(nr)	
	L1	Before				,							
		After											
	12	Before											
	LZ	After		•									
	L1	Before											
		After											
	12	Before											
	LZ	After											
	L1	Before											
		After											
	L2	Before											
		After											
	L1	Before											
		After											
	L2	Before											
		After											
	L1	Before											
		After											
	L2	Before											
	-2	After											
	L1	Before											
	r.T	After											
	L2	Before											
		After											

## Annex E2

# Calibration Certification for the CAPCS

# QM Zertifikat / QM certificate

# **Dusthunter SP30**



#### Identifikation / identification

Artikel Nr. / Part No.:

1089203

DHSP30-T2V2FPNNNNNXXS

败

Ident Nr. / Ident no :

00116

Serien Nr. / Serial no.:

18168223

Firmware Version / Firmware version:

01.02.06 (Feb 27 2018 11:37:54)

Bootloader Version / Bootloader version: 01.00.02 Hardware Revision / Hardware version:

1.2

Geräteausführung / Device version:

BUS-Adresse / Bus address:

1

### Parameter / Parameter

Sensorantwortzeit Sensor response time 60.0 sec.

Gebläse / Blower:

installiert

installed

Referenzgerät Streulicht DHSP100 Serien-Nr.: Reference measuring device DHSP100 Serial no.:

### Messgrößen u. Koeffizienten / Measuring variables and coefficients

Streulichtfaktoren / Scattered light coefficients:

CC0 (abs.):

-0.3800

CC1 (lin.):

0.6850

CC2 (square):

0.0000

Verstärkungsfaktor, Offset / Gain factor, Offset:

Gain 0:

Spantest 70 Laser / Span 70 Laser

SN: 00014 / 08518553

70.00 %

Faktoren Analogausgang / Analog Output factors:

10.0000

Offset 0: 0.00045

Relais 3:

Wartung / Maintenance

CC0 (abs.):

2.00

CC1 (lin.): CC2 (square): 170.85 0.00

### Koeffizientensätze Messbereich 0 / Coefficient Sets meas. range 0:

Koeff. Satz 1 / Coeff. set 1:

Koeff, Satz 2 / Coeff, set 2:

CC 0 (abs.):

0.0000

CC 0 (abs.):

0.0000

CC 1 (lin.):

CC 1 (lin.):

1.0000

1.0000

CC 2 (square):

0.0000

CC 2 (square):

0.0000

## Messbereich, Grenzwert / Meas. range, limit:

### Modbus Schnittstelle / Modbus interface:

Messbereichsschalter /

0 (Software)

Protokoll / protocol:

RTU

Meas. range switch:

Adresse / address:

1

Messbereich Wert1 / Meas. range low value: 0.0 mg

Baudrate / baudrate:

Datenbits Parität Stopbits

/ Databits parity stopbits:

19200

Messbereich Wert2 /

75.0 mg

8 EVEN 1

Endian Codierung / endian code:

NONE

Meas. range high value:

Grenzwert / Limit value:

50.0 mg

Gebläse Druck/Blower Pressure:

10.0 mbar

Das Gerät mit der o.g. Serien-Nr. wurde überprüft und kalibriert nach den Qualitätsstandards der SICK-Gruppe basierend auf einem nach ISO9001 zertifizierten Qualitätssicherungssystem.

This device with the serial no. noted above has been tested and calibrated according to the quality standards of the SICK-Group, which are based on a ISO9001 certified Quality Assurance System.

Ottendorf-Okrilla, 16.04.2018

Unterschrift:

Signature:

