Annex E

Calibration Certification for the On-line Stack Monitoring System Annex E1

Calibration Certification for the CEMS

C	ommissionin	g Chec MCS				运行检查项目	表
Cus	stomer data 客户资料 Customer: <u>() SC</u> P Location: <u>SHW</u>	R	_		Pla	ant: <u>OWTF</u>	
	Device data 设备资料 Device type 设备类型: <i>McS(</i> Serial no. 序列号: <u>1607</u> Sample probe type 取样探头类型: <u>SF()</u>						
2. 1	Plant data 电厂资料		_				-
1.1.1	ation 标签编号	Outside 室外 □		er cove 保护罩		Inside 室内 ☑	
方向	ntation of the stack 取样点 ntation of sample gas probe	Horizontal 水平 🗌 Horizontal		Vertica 垂直 Vertica	Ø		
取样	探头方向 Pressure 压力 Plant operating status 电厂运行情况	水平 1 <u>010</u> hpa Norma	C	垂直 Bas tem		re 烟气温度 <u>4/0</u>	°C
3. 1	Prerequisite 系统运行条件		Y	N	Rema	rks 备注	1
3.1.	Documentation + Delivery c 文件+货物是否齐全	omplete	Ø		r torrita		
3.2.	Platform at measurement sp suitable dimension? 测量点平台的尺寸是否合适		Ø				
3.3.	If this measurement location legal regulation, has it been acknowledged by an official 如果安装位置需要符合法律》 位置是否被官方认可?	body?	Ø				
3.4.	Customer specific data for parameterization available? 用户对系统参数的特殊要求;						1
3.5.	Cables, tubes and sample li but not connected? 电缆、管线和取样管线安装						
3.6.	Compressed air station insta compressed air available? 压缩空气站已安装并且压缩? 用?						

4. 1	Preliminary work 预备工作	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			
4.6.	Check main power supply voltage 检查总供电电压			
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	Ø		
	Inlet $\lambda \square$ (5 bar): ${}_{3}$ Bar			
6. S	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	Ø		

£

7. 1	MCS100FT	Y	N Remarks 备注
7.1.	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	\square	
	Flow rate 流量: 23,0 I/h		
7.3.	Check zero conditions 检查零点情况	Ø	
	Flow rate 流量: 160		
7.4.	Perform zero point setting 零点设置	Ø	Test results within specification.
7.5.	Perform span test 量程测试		
7.6.	Parameterize the I/O Module 设置 I/O 模块参数		
7.7.	Measured values are plausible 测量值是否合理		
7.8.	Save device data 储存设备数据	Ø	
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 	N	

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	60.22ppm	60,22pp	
2	HF	ma/Nm3	0	5	4,34 ppm	4.34 PP	
3	CO	mg/Nm3	0	1000	128.21ppm	128,20 PPH	
4	NO	ma/Nm3	Q	500	122.01 PPm	122,00 PP	
5	NO ₂	ma/Nm3	0	200	98.81 PPM	98.80 PP	
6	NO _X	malNm3	0	500	4/21/10/03	412.12m	
7	SO ₂	ma/Nm3	0	300	83,21 PPm	83.21PP	
8	CO ₂	Vol 0/0	0	25	20,010/0	20.01.1	
9	H ₂ O	Valolo	Õ	40	32.020/0	32,010/0	
10	O ₂	10000	0	21	20,950/5	20.950	
11	TOC	mon/Nm3	0	300	122.01 ppm	122,01 pp	
12	NH ₃	ma/Nm3	0	100	53,30 ppm	53,31pp	
13	CH4	mg/Nm3	0	100	112,01 PPM	112.01PP	
14	1 I				1 centre 1	- with	
15							

Remarks 备注 Name 签名 Date 日期: 2-5 25/7/2018 Minhand C Engineer 工程师: Plant personnel En . 用户代表:

Commissioning Check List 试运行检查项目表 MCS100FT

Customer data 客户资料	-
Customer: ()s	ca
Location: CL	In/

Plant: OWTF

	Device data 设备资料	
1	Device type 设备类型: MCS (00FT (2)	
	Serial no. 序列号: 1607 0494	
	Sample probe type 取样探头类型: SF()	

Location 标签编号	Outside	Under cover	Inside
	室外 □	有保护罩 □	室内 🗹
Orientation of the stack 取样点	Horizontal	Vertical	
方向	水平 🗌	垂直 🗹	
Orientation of sample gas probe	Horizontal	Vertical	
取样探头方向	水平 🗹	垂直 □	
Pressure 压力 Plant operating status 电厂运行情况	<u>1010</u> hpa Normal	Gas temperatu	ure 烟气温度 <u>410</u> °C

Prerequisite 系统运行条件			
	Y	N	Remarks 备注
Documentation + Delivery complete 文件+货物是否齐全	Ø		
Platform at measurement spot has suitable dimension? 测量点平台的尺寸是否合适?			
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,此安装 位置是否被官方认可?	g		
Customer specific data for parameterization available? 用户对系统参数的特殊要求是否可行?	9		
Cables, tubes and sample line installed but not connected? 电缆、管线和取样管线安装但没有连接?	Ø		
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?	Ø		
	Documentation + Delivery complete 文件+货物是否齐全Platform at measurement spot has suitable dimension? 测量点平台的尺寸是否合适?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,此安装 位置是否被官方认可?Customer specific data for parameterization available? 用户对系统参数的特殊要求是否可行?Cables, tubes and sample line installed but not connected? 电缆、管线和取样管线安装但没有连接?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	YDocumentation + Delivery complete 文件+货物是否齐全☑Platform at measurement spot has suitable dimension? 测量点平台的尺寸是否合适?☑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,此安装 位置是否被官方认可?☑Customer specific data for parameterization available? 用户对系统参数的特殊要求是否可行?☑Cables, tubes and sample line installed but not connected? 电缆、管线和取样管线安装但没有连接?☑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☑	YNDocumentation + Delivery complete 文件+货物是否齐全□Platform at measurement spot has suitable dimension? 测量点平台的尺寸是否合适?□If this measurement location is under legal regulation, has it been acknowledged by an official body? 如果安裝位置需要符合法律法规,此安裝 位置是否被官方认可?□Customer specific data for parameterization available? 用户对系统参数的特殊要求是否可行?□Cables, tubes and sample line installed but not connected? 电缆、管线和取样管线安装但没有连接?□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□

4. 1	Preliminary work 预备工作	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	Ø		
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	Ø		
	Inlet $\lambda \square$ (5 bar): 6 Bar			
6. S	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	Y	N	Remarks 备注
7.1.	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	Ø		
	Flow rate 流量: 240 I/h			
7.3.	Check zero conditions 检查零点情况			
	Flow rate 流量: 150 I/h			
7.4.	Perform zero point setting 零点设置			
7.5.	Perform span test 量程测试	Í		Test results within specification.
7.6.	Parameterize the I/O Module 设置 I/O 模块参数			
7.7.	Measured values are plausible 测量值是否合理	I		
7.8.	Save device data 储存设备数据	d		
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 	¢		
Ŀ.	- 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 PP	
2	HF	ma/Nn3	0	5	4.32 ppm	4,32 ppm	
3	CO	ma/Nm3	0	1000	128.20 ppm	128.20 00	
4	NO	ma/Nm3	D	500	122,00 PPM	122,00 PPM	
5	NO ₂	malla	C	200	98.80 ppm	98.8100	
6	NOx	ma/Nm ²	0	500	412,22mg/kit	412,21 mul	
7	SO ₂	malna	[2	300	83,21 PPm	83.2/ PPM	
8	CO ₂	10/0/5	0	25	20.000/0	20.00 0/0	
9	H ₂ O	Vol do	0	40	32.0/0/0	32,01 0/0	
10	O ₂	Vol olo	0	21	20,950/0	20,950/0	
11	TOC	ma/Nm3	0	300	122,01 PPM	122,01 pp	
12	NH ₃	mg/Nm ³	0	100	53,30 PPM	53,30 pp	
13	CH4	mg/Nm ³	0	100	112.02 PPM	112,02pp	
14		31 1 1 1			11	11 10 11	
15							

Remarks 备注 Name 签名 Date 日期: 25 2018 Plant personnel 用户代表: Engineer 工程师: Eu i en

		ns and their Span Gas	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	L1	Before				129.81	135.82	81.84	97.86	-			
07/10/07/2013		After				127.93	123.07	83.37	99.1			1	
07/May/2019	L2	Before				126.03	118.64	82.58	97.71				
0771110772015		After				129.02	122.17	83.17	98.57				
09/May/2019	L1	Before									52.15		
		After									53.17		
09/May/2019	L2	Before				1					51.76		
		After					· · · · · · · · · · · · · · · · · · ·			L	54.01		
05/Jun/2019	11	Before		2.5									
03/Juliy 2013		After		2.1									
05/Jun/2019	L2	Before		2.4									
		After	· · · · · · · · · · · · · · · · · · ·	2.1									
-	L1	Before											
		After											
	L2	Before											
	_	After							1				
	L1	Before											
		After				data and the second			1				
	L2	Before											
		After				1							
	L1	Before											
		After											
	L2	Before											
		After				1							
	L1	Before					1						
		After											
	L2	Before											
		After											
	L1	Before											
		After											
	L2	Before								1			
		After											
	L1	Before											
		After			6								
	L2	Before											
		After											

Annex E2

Calibration Certification for the CAPCS

QM Zertifikat / QM certificate Dusthunter SP30



Identifikation / identific	ation				
Artikel Nr. / Part No.: 1089203		DHSP30-T2V2FPNNNNNXXS			12
Ident Nr. / Ident no.:		00116	Serien Nr. / Se	erial no.:	18168223
Firmware Version / Firm Bootloader Version / Boo Hardware Revision / Har Geräteausführung / Dev BUS-Adresse / Bus add	otloader version rdware version: ice version:		eb 27 2018 11:37:54)		
Parameter / Parameter					
Sensorantwortzeit 60.0 s Sensor response time		sec.	Gebläse / Blower: installiert installed		
Messgrößen u. Koeffiz	ienten / Measu	ring variables	and coefficients		
Streulichtfaktoren / Scattered light coefficients:			Referenzgerät Streulicht DHSP100 Serien-Nr.:		
CC0 (abs.):	-0.3800		Reference measuring device DHSP100 Serial no.:		
CC1 (lin.):	0.6850 0.0000		SN: 00014 / 08518553		
CC2 (square): Verstärkungsfaktor, Offs					
Verstärkungsfaktor, Offset / Gain factor, Offset: Gain 0: 10.0000 Offset 0: 0.00045			Spantest 70 Laser / 70.00 % Span 70 Laser		
Faktoren Analogausgang / Analog Output factors:			Relais 3: Wartung / Maintenan		
CC0 (abs.): 2.00			Variang		/ Mainternario
		0.85			
CC2 (square): Koeffizientensätze Mes		0.00	a maga rango ();		
		Demcient Sei	A VER AN OF THE SECOND SECOND SECOND		
Koeff. Satz 1 / Coeff. sei CC 0 (abs.):			Koeff. Satz 2 / Coeff. s CC 0 (abs.):		
CC 1 (lin.):	1.0000		CC 0 (abs.). CC 1 (lin.):	0.0000 1.0000	
CC 2 (square):	0.0000		CC 2 (square):	0.0000	
Messbereich, Grenzwert / Meas. range, limit:			Modbus Schnittstelle / Modbus interface:		
Messbereichsschalter /	O	(Software)	Protokoll / protocol:		RTU
<i>Meas. range switch:</i> Messbereich Wert1 /		0.0	Adresse / address:		1
Meas. range low value:		0.0 mg	0.0 mg Baudrate / baudrate:		19200
Messbereich Wert2 /		75.0 mg	Datenbits Parität Stopbits 8 EVEN / Databits parity stopbits:		
Meas. range high value:			Endian Codierung / endian code: NON		
Grenzwert / Limit value:		50.0 mg			
Gebläse Druck/Blower F	ressure:	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: