Annex C

Calibration Certification for the On-line Stack Monitoring System

Annex C1

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 ₂ | ma/Nm3 | 0 | 200 | 98.81 ppm | 98.80 PP4 | |
| 6 | NO _X | ma/Nm3 | 0 | 500 | 4/21/10/13 | 4/2.12 ma | |
| 7 | SO ₂ | max/Nm3 | 0 | 300 | 83,21 Ppm | 83.21 PPH | |
| 8 | CO ₂ | Vol 0/0 | 0 | 25 | 20,010/0 | 20.01.010 | |
| 9 | H₂O | Vololo | 0 | 40 | 32.020/0 | 32,010/0 | |
| 10 | O ₂ | 10000 | 0 | 21 | 20,950/5 | 20,950/5 | |
| 11 | TOC | mos/Nm3 | 0 | 300 | 122,01 ppm | 122,01 pps | |
| 12 | NH ₃ | 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 ₂ | ma/Nm3 | 0 | 200 | 98.80 ppin | 98.81 PD | |
| 6 | NO _X | mal Nm2 | 0 | 500 | 4/2,22 mg/m | 4/2,2/mg/ | |
| 7 | SO ₂ | ma/Nm3 | (2) | 300 | 83,21 PPm | 83.21 PPIN | |
| 8 | CO ₂ | 10/0/0 | 0 | 25 | 20.000/0 | 20.00 0/0 | |
| 9 | H ₂ O | Vol do | 0 | 40 | 32.0/0/0 | 32,010/0 | |
| 10 | O ₂ | 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 ₃ | 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 C2

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:

