

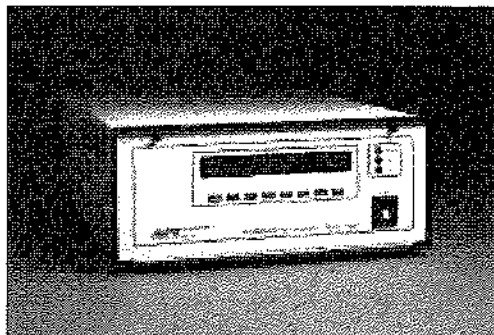
ภาคผนวก 54ข

การตรวจสอบความถูกต้องของการทำงานระบบ CEMs (Audit CEMs)

ภาคผนวก ก

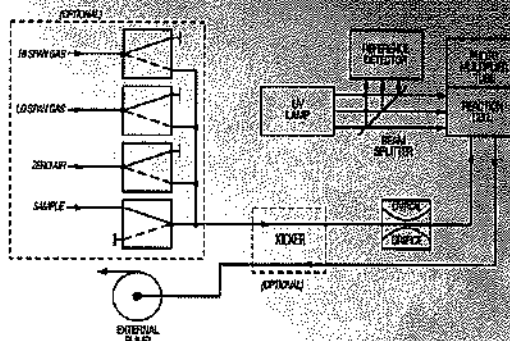
รายละเอียดเครื่องมือตรวจวัดก๊าซ และระบบตรวจวัดก๊าซ

MODEL 100AH



Fluorescent High Range SO₂ Analyzer

Model 100AH
schematic



SPECIFICATIONS

Range:	0-10 to 0-5,000 ppm, operator selectable. Dual ranges and auto ranging supported
Units:	ppm, mg/m ³
Zero Noise:	<0.05 ppm (RMS)
Span Noise:	<0.5% of reading (RMS) above 10 ppm
Zero Drift:	<0.1 ppm/24 hours
Span Drift:	<1%/24 hours
Lower Detectable Limit (LDL):	<0.1 ppm
Response Time:	<30 seconds to 95%
Flow:	700 cc/min \pm 10%
Linearity:	1% full scale
Dimensions (HxWxD):	7" (178 mm) x 17" (432 mm) x 23.5" (597 mm)
Operating Temperature Range:	5 - 40°C
Weight:	Analyzer: 43 lbs (19.5 kg) Pump Pack: 16 lbs (7 kg)

Power:	Analyzer: 100V 50/60 Hz, 115V 60Hz, 220V 50/60Hz, 230V 50Hz, 240V 50Hz, 250 Watts Pump pack: 100V 50/60 Hz, 115V 60Hz, 220V 50/60Hz, 230V 50Hz, 240V 50Hz, 250 Watts
Analog Outputs:	10V, 5V, 1V, 100 mV, selectable
Current Output:	0-20mA or 0-40mA isolated output, optional
RS-232:	Standard, DB-9 connector
Status (Digital):	12 outputs from optoisolator, included with standard configuration
Approvals:	CE

NOTE: The values expressed above are in accordance with EPA definitions. All error specifications are based on constant conditions.

HOW TO ORDER

Model 100AH Source Level SO₂ Analyzer includes:

- Selectable voltage (specify below)
- External, heavy-duty pump
- Auto ranging (dual ranges)
- 47mm particulate filter
- 12 isolated digital status outputs
- Bi-directional RS-232

Specify voltage/frequency:

- ☐ 100V/50hz ☐ 100V/60hz
- ☐ 220V/50hz ☐ 115V/60hz
- ☐ 230V/50hz (CE) ☐ 220V/60hz
- ☐ 240V/50hz

Specify output voltage:

- ☐ 10V ☐ 5V ☐ 1V ☐ 100mV
- ☐ 0-20 mA or 4-20 mA non-isolated

Particulate Filter:

- ☐ 47mm (standard) ☐ 37mm (optional)

Additional Options:

- ☐ Rack Mount (19") with chassis slides
- ☐ Rack Mount only
- ☐ Isolated 0-20mA or 4-20mA output
- ☐ Multi-drop RS-232 connection
- ☐ Zero and Span valves (1 zero, 1 span)

- ☐ Zero and Span valves (1 zero, 2 span)
- ☐ Kicker (for hydrocarbon removal)

Accessories:

- ☐ RS-232 Cable
- ☐ Expendables Kit
- ☐ Spare Parts Kit

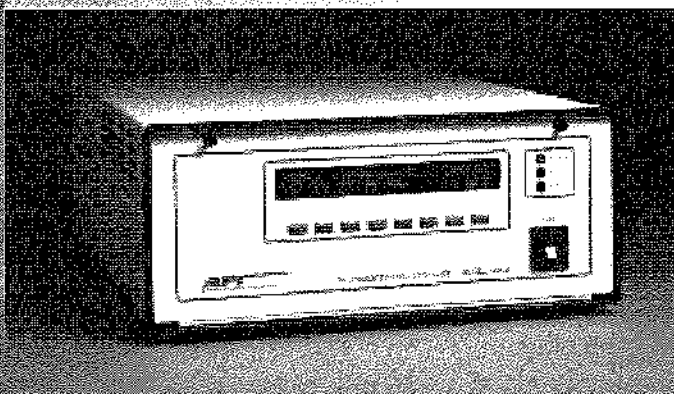
For more information on API's family of monitoring instrumentation products, call us or visit our website at www.teledyne-api.com

API ADVANCED POLLUTION INSTRUMENTATION, INC.

Advanced Pollution Instrumentation, Inc.
9480 Carroll Park Drive
San Diego, CA 92121-2251
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MODEL 100AH

Fluorescent High Range SO₂ Analyzer



Proven UV Fluorescence principle

Versatile 0-10 to 0-5,000 ppm ranges

Ranges front panel selectable

Excellent zero/span stability

Dual ranges and auto ranging

Minimum quenching effect from CO₂
or O₂

Excellent interferent rejection (NO and
water)

Displays test variables during operation

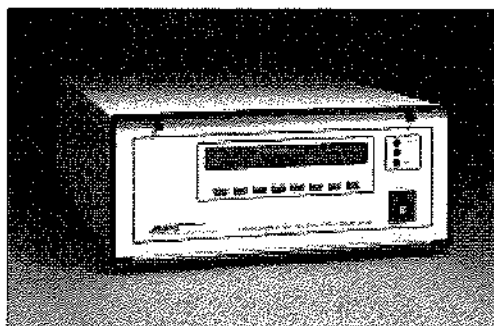
Temperature and pressure
compensation

Fast response (<30 seconds to 95%)

Continuous self check with warning
alarms

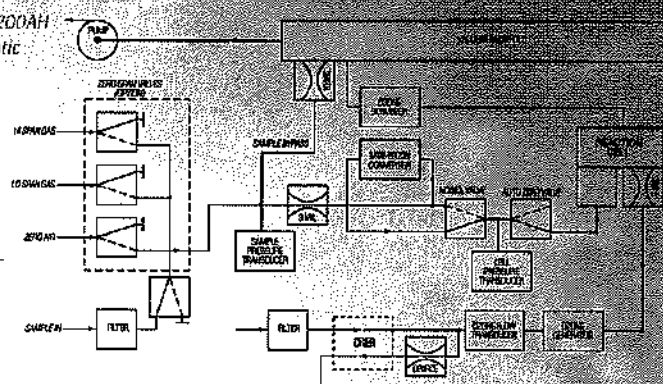
The Model 100AH SO₂ Analyzer is a rugged yet sensitive analyzer with the high measurement ranges and interferent rejection needed for extractive source measurements. The instrument is based on the proven Model 100A ambient SO₂ analyzer but operates with the sample reaction cell held at a controlled vacuum. This gives the analyzer its ability to measure very high concentrations and greatly reduces the effects of interferents in the sample stream. There is minimal quenching by O₂ or CO₂ and less than a 0.1% response to water. Special optical filtering reduces the effects of NO interference. Multi-tasking software allows field range changes as well as auto ranging and dual range operation. The intuitive menu-driven program makes operator interface easy and provides complete accessibility. The Model 100AH can be controlled through the front panel or remotely via RS-232. Built-in diagnostics, electrical and optical tests and warning alarms speed troubleshooting and pinpoint problems.

MODEL 200AH



Chemiluminescent High Range NO/NO₂/NO_x Analyzer

Model 200AH schematic



SPECIFICATIONS

Ranges:	0-5 ppm to 0-5000 ppm full scale, user selectable; independent NO, NO ₂ , NO _x ranges and auto-ranging supported
Units:	ppm, mg/m ³
Zero Noise:	<20 ppb (RMS)
Span Noise:	<0.2% of reading above 20 ppm (RMS)
Lower Detectable Limit (LDL):	<40 ppb (RMS)
Zero Drift:	<20 ppb/24 hours
Span Drift:	<1% reading/24 hours, <1% reading/7 days
Lag Time:	20 seconds switching mode; <6 seconds NO or NO _x only mode
Rise and Fall Time:	<60 seconds to 95% (switching); 5 seconds NO only; 10 seconds NO _x only
Linearity:	1% full scale
Precision:	0.5% of reading
Sample Flow Rate:	290 cc/min (standard); 540 cc/min (optional)
Operating Temperature Range:	5 - 40°C
Dimensions (HxWxD):	7" (178 mm) x 17" (432 mm) x 23.5" (597 mm)

Weight:	Analyzer 44 lbs (20 kg), External Pump 15 lbs (7 kg)
Power:	100V 50/60 Hz, 115V 60Hz, 220V 50/60Hz, 230V 50Hz, 240V 50Hz 250 Watts (analyzer), 250 Watts (pump)
Analog Outputs:	10V, 5V, 1V, 100 mV, selectable
Recorder Offset:	±10%
RS-232:	Standard, DB-9 connector
Status (Digital):	12 outputs from optoisolator, included with standard configuration
Current Output:	0-20 mA or 4-20 mA Isolated outputs (optional)
Approvals:	NOTE: The values expressed above are in accordance with EPA definitions. All specifications are based on constant conditions. CE

HOW TO ORDER

Model 200AH Chemiluminescent NO/NO₂/NO_x Analyzer includes:

- External pump
- Permeation ozone air dryer
- Independent NO, NO₂, NO_x ranges
- Auto ranging
- 47mm particulate filter
- 12 isolated digital status outputs
- Bi-directional RS-232

Specify voltage/frequency:

- ☐ 100V/50hz
- ☐ 100V/60hz
- ☐ 220V/50hz
- ☐ 115V/60hz
- ☐ 230V/50hz (CE)
- ☐ 220V/60hz
- ☐ 240V/50hz

Specify output voltage:

- ☐ 10V
- ☐ 5V
- ☐ 1V
- ☐ 100mV

Particulate Filter:

- ☐ 47mm (standard)
- ☐ 37mm (optional)

Additional Options:

- ☐ Rack Mount (19") with chassis slides
- ☐ Rack Mount only
- ☐ Isolated 0-20mA or 4-20 mA Output (specify channels)
- ☐ Non-Isolated 0-20mA or 4-20 mA Output (all channels)
- ☐ Multi-drop serial interface

Calibration Valves:

- ☐ Stainless steel valves for selection of customer-supplied zero and span gas (one span point)
- ☐ Stainless steel valves for selection of customer-supplied zero and span gases (two span points)

NO₂-NO Converter:

- ☐ Mini-HICON Internal Converter (standard)
- ☐ MOLYCON Converter (consult factory)
- ☐ MODEL 501 External Converter

Accessories:

- ☐ RS-232 Cable
- ☐ Expendables Kit
- ☐ Spare Parts Kit

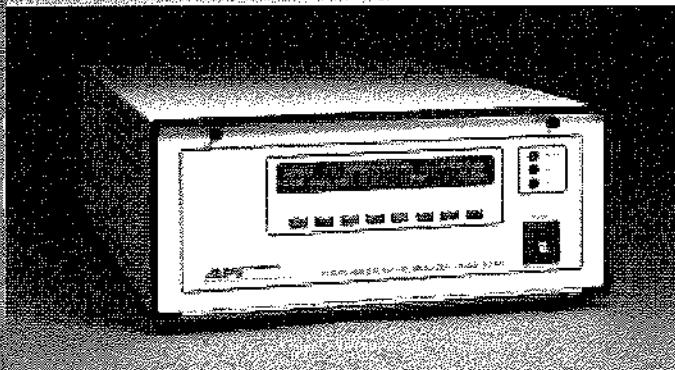
For more information on API's family of monitoring instrumentation products, call us or visit our website at www.teledyne-api.com

API ADVANCED POLLUTION INSTRUMENTATION, INC.

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MODEL 200AH

Chemiluminescent High Range NO/NO₂/NO_x Analyzer



0-5 ppm to 0-5000 ppm ranges, user selectable in 1 ppm increments

Independent ranges for NO, NO₂, NO_x

Auto ranging and remote range selection

Microprocessor controlled for versatility

NO, NO_x only or single channel switching

Multi-tasking software allows viewing test variables while operating

Continuous self checking with alarms

Bi-directional RS-232 for remote operation

Digital status outputs provide instrument condition

Adaptive signal filtering optimizes response time

Temperature and pressure compensation

Permeation ozone air drier

Minimum CO₂ and H₂O interference

Charcoal and desiccant expendables not required

The Model 200AH High Range NO/NO₂/NO_x Analyzer uses the field-proven chemiluminescent technique for monitoring high levels of oxides of nitrogen. User-selectable ranges of 5 ppm to 5000 ppm make it ideal for a wide variety of applications including CEM, stack testing, and process control.

A choice of NO₂-to-NO converters handles tough CEM and stack testing applications. Selectable measurement modes (NO only, NO_x only, NO/NO_x switching), auto ranging and remote range control let you set up the Model 200AH to your exact needs. The modular design offers top-mounted access to all subassemblies and has hinged front and rear panels to simplify module replacement.

The modular, sealed ozone generator provides improved voltage coefficient, safety, and reliability. A standard permeation dryer on the ozone generator means there is no desiccant to replace. In addition, the excess ozone is removed by catalytic reaction, eliminating the need for charcoal (expendable) replacement.

All instruments in the API "A Series" include built in data acquisition capability using the analyzer's own internal memory. This allows the logging of multiple parameters including averaged or instantaneous concentration values, calibration data, and operating parameters such as pressures and flow rates. Stored data is easily retrieved through the RS-232 port or from the front panel, allowing the operator to perform predictive diagnostics by tracking parameter trends.

The Model 200AH combines rugged construction, ease of use, powerful diagnostics and outstanding performance for high range monitoring.

FEATURES

- Percent oxygen measurement from 0.00% to 25% in non-flammable gases.
- 50% or 95% versions available.
- Long-life high-stability zirconium oxide sensor.
- Expected sensor life of over ten years.
- Virtually no sensitivity to barometric pressure or ambient temperature.
- Virtually no sensitivity to humidity changes.
- No support gases required.
- Built-in orifice for flow control over a wide input pressure range.
- Virtually unaffected by sample flow rate changes between 0.1 – 5 SCFH.
- Panel mount.
- Compact size.
- 4 user selectable output ranges.
- 3 ½ digit LCD.
- 2 fully adjustable oxygen concentration alarms• RFI protected.
- Isolated 4-20mA. analog output signal (may be set to 0-1V or 1-5V if required).
- USB connection for AMI User interface software.
- RS485 connection for ModBus communication.
- Power requirements: 10-28VDC <3 watts, supplied with a 115VAC to 12VDC adapter.
- Low original cost and virtually maintenance free over its entire life.
- Area Classification: Designed to meet General Purpose requirements.
- 2 year warranty for analyzer and sensor, parts and labor.

SPECIFICATIONS

- 4 user selectable outputs: 0-1%, 0-5%, 0-10% and 0-25%
Optional ranges: 0-50% or 0-95%. The selection of an output range simultaneously controls the two alarms, the analog output and the datalogger so that all 4 functions operate on the same range.
- Digital display: 3 ½ digit LCD. Reads full scale from 0.00% to 25.0% independently of output range selection.
- Alarms: 2 fully adjustable oxygen concentration alarms. Dry contacts 3A. @24VDC/230VAC.
- Analog output signals: isolated 4-20mA. Represents the output range selected: 0-1%, 0-5%, 0-10% and 25%.
- Power requirements: 10-28VDC <3 watts Supplied with a 115VAC to 12VDC adapter.
- Minimum detection: 0.05% of oxygen.
- Repeatability: +/- 0.1% of range or +/- 0.1% of oxygen, whichever is greater.
- Operating temperature range: 0 to 130° F.
- Diurnal temperature specification: < +/- 2 % of scale over temperature range.
- Response times: 90% full scale response times for specified range: 0-25% <12 seconds; 0-95% < 12 seconds.
- Long life zirconium oxide sensor: 10 year life expectancy.
- Area Classification: Designed to meet General Purpose requirements.
- Inlet gas pressure: 1.0 to 30psig.
- Gas connections: ¼" 316 S.S. compression fittings.
- Wetted parts: 316 S.S. fittings and critical orifice, anodized aluminum cellblock.
- Unaffected by changes in flow rate from 0.1 to 5.0 SCFH.
- Mounting: panel mount.
- Dimensions: 6.5"W x 4.2"H x 3.0"D.
- Weight: 3 lbs.

MODEL 70



The AMI model 70R1 is the ideal solution for measuring oxygen in non-flammable gases in a general purpose environment. In a very small size, and at low cost, it provides a complete electronic package with a full set of features together with a zirconium oxide sensor that has an expected ten year life, with virtually no calibration required.

- Percent oxygen in non-flammable samples
- General purpose panel mount analyzer
- Extremely stable, long-life sensor
- Orifice controlled flow
- Virtually unaffected by temperature changes
- Virtually unaffected by barometric pressure changes
- Virtually unaffected by humidity changes
- Virtually unaffected by flow rate changes
- Calibration interval 6 months
- Very small size
- Complete electronics and software package
- Datalog
- ModBus connectivity
- Two relay contacts for alarms
- Isolated 4-20mA output
- Low cost

Traditional electrochemical oxygen analyzers suffer from poor stability, requiring monthly calibration and frequent sensor replacement, and they suffer from sensitivity to both temperature changes and barometric pressure changes. Their reading can change by as much as 10% when a weather change occurs. The AMI model 70R1 suffers from none of these issues. It has been tested over a temperature range of 0°F to 120°F.

Its sensor is unaffected by flow rate changes over the range of 0.1 to 5 SCFH, and as a result AMI is able to use an orifice to control the flow.

The analyzer is built around a modified version of the same electronic architecture used in most of AMI's advanced analyzers. Two microprocessors working together provide a vast amount of functionality, with the industry's most intuitive front panel controls married to the most complete PC user interface. For advanced users, ModBus RTU over RS-485 is also provided as standard.

Alarm set points, the range over which the 4-20mA output is spanned, and calibration are controlled by press buttons. These can be disabled via the user interface if desired for greater security.

Complete control over the analyzer's operation, and access to its many diagnostic features, are available via the AMI software running on a PC, connected via a standard USB cable.

Diagnostic features include a datalog – ten days plus of complete records of the oxygen reading; calibration history for the previous five calibrations; brown out and power up history, including memory errors if any; ambient temperature, sensor heater voltage and calibration factors; and for advanced users, the ability to "tweak" the linearity to match reference gases.

Optional ranges of 0-50% and 0-95% available.

ภาคผนวก ข
ใบ Certificate ของก๊าซมาตรฐานที่เกี่ยวข้อง

**TET**

Thai Environmental Technic Limited
บริษัท เทคโนโลยีสิ่งแวดล้อมไทย จำกัด

**The Monitoring Result of Emission Concentration
Berkprai Cogeneration Co.,Ltd.**

Sampling Date : **5-Oct-2022** Location: **HRSG GAS ENGINE 1**

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppmvd)		
	RM Stack Gas	Corrected Gas	RM Stack Gas	Corrected Gas	Corrected Gas
	Conc	Conc	Conc	Conc @ Actual O ₂	Conc @ 7% O ₂
1	11.62	11.60	24.50	24.35	36.40
2	11.70	11.68	26.75	26.59	40.10
3	11.70	11.69	26.22	26.07	39.33
Average	11.67	11.66	25.82	25.67	38.61

Run Number	Oxygen content (%)		Sulfur dioxide (ppmvd)		
	RM Stack Gas	Corrected Gas	RM Stack Gas	Corrected Gas	Corrected Gas
	Conc	Conc	Conc	Conc @ Actual O ₂	Conc @ 7% O ₂
1	11.62	11.60	0.59	0.58	0.87
2	11.70	11.68	0.51	0.51	0.77
3	11.70	11.69	0.36	0.35	0.53
Average	11.67	11.66	0.49	0.48	0.73

Run Number	Oxygen content (%)		Carbon monoxide (ppm)		
	RM Stack Gas	Corrected Gas	RM Stack Gas	Corrected Gas	Corrected Gas
	Conc	Conc	Conc	Conc @ Actual O ₂	Conc @ 7% O ₂
1	11.62	11.60	411.00	417.04	623.51
2	11.70	11.68	439.58	446.08	672.62
3	11.70	11.69	431.73	438.11	660.87
Average	11.67	11.66	427.43	433.74	652.34

Signature

ydw5
Site Operation

Piyachai B

Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคโนโลยีสิ่งแวดล้อมไทย จำกัด

**Berkprai Cogeneration Co.,Ltd.
EMISSION TEST RESULT**

Date : 05-Oct-22 Run # : 1
 Start Time: 11:00 AM Finish Time: 11:20 AM
 O₂ Model: AMI 70 Serial No.: 150526-3
 NO_x Model: API 200 EH Serial No.: 399
 SO₂ Model: API 100 EH Serial No.: 183
 CO Model: API T300 Serial No.: 4828
 Fuel Type: Natural Gas Location: HRSG GAS ENGINE 1

Time	O ₂ (%by vol)	NO _x (ppmvd)	SO ₂ (ppmvd)	CO (ppmvd)
11:00 AM	11.75	20.37	0.36	345.45
11:01 AM	11.64	25.20	0.42	442.72
11:02 AM	11.70	27.18	0.45	432.25
11:03 AM	11.65	25.81	0.51	479.13
11:04 AM	11.62	27.63	0.57	454.74
11:05 AM	11.53	35.72	0.55	396.17
11:06 AM	11.50	20.34	0.51	388.49
11:07 AM	11.51	20.20	0.54	366.63
11:08 AM	11.49	20.77	0.50	370.58
11:09 AM	11.64	20.91	0.55	376.05
11:10 AM	11.53	20.46	0.61	385.55
11:11 AM	11.64	30.52	0.74	434.63
11:12 AM	11.61	25.90	0.75	379.43
11:13 AM	11.48	32.01	0.71	421.06
11:14 AM	11.68	33.79	0.71	389.29
11:15 AM	11.53	19.76	0.67	422.75
11:16 AM	11.62	18.22	0.54	371.28
11:17 AM	11.77	19.14	0.55	425.39
11:18 AM	11.68	22.30	0.58	457.22
11:19 AM	11.67	23.33	0.69	502.19
11:20 AM	11.71	24.88	0.81	389.91
Average	11.62	24.50	0.59	411.00

Signature

ydw5
Site Operation

Piyachai B

Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิกลิ่งแวดล้อมไทย จำกัด

Berkprai Cogeneration Co.,Ltd.

EMISSION TEST RESULT

Date :	05-Oct-22	Run # :	2
Start Time:	11:21 AM	Finish Time:	11:41 AM
O ₂ Model:	AMI 70	Serial No.:	150526-3
NO _x Model:	API 200 EH	Serial No.:	399
SO ₂ Model:	API 100 EH	Serial No.:	183
CO Model:	API T300	Serial No.:	4828
Fuel Type:	Natural Gas	Location:	HRSG GAS ENGINE 1

Time	O ₂ (%by vol)	NO _x (ppmvd)	SO ₂ (ppmvd)	CO (ppmvd)
11:21 AM	11.70	27.72	0.72	379.45
11:22 AM	11.78	28.20	0.77	418.55
11:23 AM	11.66	27.61	0.79	429.79
11:24 AM	11.59	24.49	0.69	508.44
11:25 AM	11.77	27.80	0.70	448.02
11:26 AM	11.61	26.74	0.56	397.64
11:27 AM	11.81	28.50	0.44	417.13
11:28 AM	11.71	26.43	0.43	427.58
11:29 AM	11.71	25.97	0.47	436.81
11:30 AM	11.72	24.89	0.39	437.01
11:31 AM	11.72	25.12	0.45	434.33
11:32 AM	11.69	25.93	0.48	444.13
11:33 AM	11.72	26.29	0.45	461.33
11:34 AM	11.67	26.37	0.44	476.07
11:35 AM	11.69	27.01	0.44	447.46
11:36 AM	11.66	27.19	0.43	466.70
11:37 AM	11.70	27.07	0.37	381.03
11:38 AM	11.69	27.05	0.44	464.13
11:39 AM	11.69	27.21	0.46	421.25
11:40 AM	11.69	27.02	0.42	487.59
11:41 AM	11.65	27.07	0.47	446.63
Average	11.70	26.75	0.51	439.58

Signature

Yden S.
Site Operation

Piyachon B.
Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิกลิ่งแวดล้อมไทย จำกัด

Berkprai Cogeneration Co.,Ltd.

EMISSION TEST RESULT

Date :	05-Oct-22	Run # :	3
Start Time:	11:42 AM	Finish Time:	12:02 PM
O ₂ Model:	AMI 70	Serial No.:	150526-3
NO _x Model:	API 200 EH	Serial No.:	399
SO ₂ Model:	API 100 EH	Serial No.:	183
CO Model:	API T300	Serial No.:	4828
Fuel Type:	Natural Gas	Location:	HRSG GAS ENGINE 1

Time	O ₂ (%by vol)	NO _x (ppmvd)	SO ₂ (ppmvd)	CO (ppmvd)
11:42 AM	11.72	27.01	0.44	422.92
11:43 AM	11.69	26.92	0.39	438.56
11:44 AM	11.68	26.65	0.45	388.68
11:45 AM	11.73	26.96	0.45	439.30
11:46 AM	11.69	25.94	0.38	438.59
11:47 AM	11.67	25.59	0.42	371.90
11:48 AM	11.69	25.22	0.36	463.94
11:49 AM	11.71	25.03	0.39	443.75
11:50 AM	11.81	24.64	0.37	440.39
11:51 AM	11.74	25.09	0.38	347.41
11:52 AM	11.79	25.88	0.46	459.74
11:53 AM	11.67	25.71	0.43	433.00
11:54 AM	11.69	26.08	0.39	441.90
11:55 AM	11.64	26.17	0.38	455.03
11:56 AM	11.70	26.00	0.32	456.32
11:57 AM	11.64	26.45	0.29	420.95
11:58 AM	11.63	26.97	0.19	419.37
11:59 AM	11.68	27.44	0.20	485.24
12:00 PM	11.71	27.34	0.24	449.86
12:01 PM	11.75	26.80	0.31	399.24
12:02 PM	11.66	26.84	0.32	450.22
Average	11.70	26.22	0.36	431.73

Signature

Yden S.
Site Operation

Piyachon B.
Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิคสิ่งแวดล้อมไทย จำกัด

System Calibration Bias and Drift Data

Source identification : HRSR GAS ENGINE 1

Cylinder Conc : 13.90 %

Date : 5 October 2022

Time : 10:30-10:48,12:25-12:28

Test personnel : Yotee S.

Span : 20.90 %

	O ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.03	0.14	0.07	0.33	0.19
Upscale gas	13.90	13.91	0.05	13.90	0.01	-0.04

Source identification : HRSR GAS ENGINE 1

Cylinder Conc : 39.20 ppm

Date : 5 October 2022

Time : 10:30-10:48,12:25-12:28

Test personnel : Yotee S.

Span : 78.30 ppm

	NO _x Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.07	0.09	0.05	0.06	-0.03
Upscale gas	39.30	39.40	0.13	39.40	0.13	0.00

Source identification : HRSR GAS ENGINE 1

Cylinder Conc : 41.40 ppm

Date : 5 October 2022

Time : 10:30-10:48,12:25-12:28

Test personnel : Yotee S.

Span : 82.30 ppm

	SO ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.01	0.00	0.01	0.00	0.00
Upscale gas	41.30	41.20	-0.12	41.20	-0.12	0.00

Source identification : HRSR GAS ENGINE 1

Cylinder Conc : 41.10 ppm

Date : 5 October 2022

Time : 10:30-10:48,12:25-12:28

Test personnel : Yotee S.

Span : 793.00 ppm

	CO Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.52	0.07	0.58	0.07	0.01
Upscale gas	41.20	41.00	-0.03	41.00	-0.03	0.00

Signature

Yotee S.

Site Operator

Piyachon B.

Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิคสิ่งแวดล้อมไทย จำกัด

System Calibration Bias and Drift Data

Source identification : HRSR GAS ENGINE 1

Cylinder Conc : 13.90 %

Date : 5 October 2022

Time : 12:25-12:28,13:55-13:58

Test personnel : Yotee S.

Span : 20.90 %

	O ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.07	0.33	0.12	0.57	0.24
Upscale gas	13.90	13.90	0.01	13.90	0.00	-0.01

Source identification : HRSR GAS ENGINE 1

Cylinder Conc : 39.20 ppm

Date : 5 October 2022

Time : 12:25-12:28,13:55-13:58

Test personnel : Yotee S.

Span : 78.30 ppm

	NO _x Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.05	0.06	0.03	0.04	-0.03
Upscale gas	39.30	39.40	0.13	39.50	0.26	0.13

Source identification : HRSR GAS ENGINE 1

Cylinder Conc : 41.40 ppm

Date : 5 October 2022

Time : 12:25-12:28,13:55-13:58

Test personnel : Yotee S.

Span : 82.30 ppm

	SO ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.01	0.00	0.01	0.01	0.01
Upscale gas	41.30	41.20	-0.12	41.50	0.24	0.36

Source identification : HRSR GAS ENGINE 1

Cylinder Conc : 41.10 ppm

Date : 5 October 2022

Time : 12:25-12:28,13:55-13:58

Test personnel : Yotee S.

Span : 793.00 ppm

	CO Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.58	0.07	0.61	0.08	0.00
Upscale gas	41.20	41.00	-0.03	41.20	0.00	0.03

Signature

Yotee S.

Site Operator

Piyachon B.

Field Department Manager

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System Calibration Bias and Drift Data

Source identification : HRSO GAS ENGINE 1 Cylinder Conc : 13.90 %
Date : 5 October 2022 Time : 13:55-13:58,15:28-15:47
Test personnel : Yotee S. Span : 20.90 %

	O ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.12	0.57	0.14	0.67	0.10
Upscale gas	13.90	13.90	0.00	13.91	0.05	0.05

Source identification : HRSO GAS ENGINE 1 Cylinder Conc : 39.20 ppm
Date : 5 October 2022 Time : 13:55-13:58,15:28-15:47
Test personnel : Yotee S. Span : 78.30 ppm

	NO _x Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.03	0.04	0.12	0.15	0.11
Upscale gas	39.30	39.50	0.26	39.30	0.00	-0.26

Source identification : HRSO GAS ENGINE 1 Cylinder Conc : 41.40 ppm
Date : 5 October 2022 Time : 13:55-13:58,15:28-15:47
Test personnel : Yotee S. Span : 82.30 ppm

	SO ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.01	0.01	0.02	0.02	0.01
Upscale gas	41.30	41.50	0.24	41.30	0.00	-0.24

Source identification : HRSO GAS ENGINE 1 Cylinder Conc : 41.10 ppm
Date : 5 October 2022 Time : 13:55-13:58,15:28-15:47
Test personnel : Yotee S. Span : 793.00 ppm

	CO Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.61	0.08	0.64	0.08	0.00
Upscale gas	41.20	41.20	0.00	41.20	0.00	0.00

Signature

Site Operator

Field Department Manager

**TET**

Thai Environmental Technic Limited
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O₂ Analyzer Calibration Data

Source identification : HRSO GAS ENGINE 1 Span : 20.9 %
Test personnel : Yotee S. Time : 09:12-10:25
Date : October 5, 2022
Analyzer calibration data for sampling O₂ Model : AMI 70 S/N 150526-3

Level gas	Cylinder value (%)	Analyzer calibration response (%)	Absolute difference (%)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	13.90	13.90	0.00	0.00
High-level gas	20.90	20.92	0.02	0.10

NO_x Analyzer Calibration Data

Source identification : HRSO GAS ENGINE 1 Span : 78.3 ppm
Test personnel : Yotee S. Time : 09:12-10:25
Date : October 5, 2022
Analyzer calibration data for sampling NO_x Model : 200EH S/N 399

Level gas	Cylinder value (ppm)	Analyzer calibration response (ppm)	Absolute difference (ppm)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	39.20	39.30	0.10	0.13
High-level gas	78.30	78.40	0.10	0.13

SO₂ Analyzer Calibration Data

Source identification : HRSO GAS ENGINE 1 Span : 82.3 ppm
Test personnel : Yotee S. Time : 09:12-10:25
Date : October 5, 2022
Analyzer calibration data for sampling SO₂ Model : 100EH S/N 183

Level gas	Cylinder value (ppm)	Analyzer calibration response (ppm)	Absolute difference (ppm)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	41.40	41.30	0.10	0.12
High-level gas	82.30	82.20	0.10	0.12

CO Analyzer Calibration Data

Source identification : HRSO GAS ENGINE 1 Span : 793 ppm
Test personnel : Yotee S. Time : 09:12-10:25
Date : October 5, 2022
Analyzer calibration data for sampling CO Model : T300 S/N 4828

Level gas	Cylinder value (ppm)	Analyzer calibration response (ppm)	Absolute difference (ppm)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	41.10	41.20	0.10	0.01
High-level gas	793.00	793.00	0.00	0.00

Signature

Site Operator

Field Department Manager

**TET**

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**The Monitoring Result of Emission Concentration
Berkprai Cogeneration Co.,Ltd.**

Sampling Date : **6-Oct-2022** Location: **HRSG GAS ENGINE 2**

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppmvd)		
	RM Stack Gas	Corrected Gas	RM Stack Gas	Corrected Gas	Corrected Gas
	Conc	Conc	Conc	Conc @ Actual O ₂	Conc @ 7% O ₂
1	11.58	11.56	26.36	26.21	39.03
2	11.72	11.70	22.75	22.62	34.19
3	11.66	11.64	23.57	23.43	35.18
Average	11.65	11.64	24.23	24.09	36.13

Run Number	Oxygen content (%)		Sulfur dioxide (ppmvd)		
	RM Stack Gas	Corrected Gas	RM Stack Gas	Corrected Gas	Corrected Gas
	Conc	Conc	Conc	Conc @ Actual O ₂	Conc @ 7% O ₂
1	11.58	11.56	0.42	0.42	0.63
2	11.72	11.70	0.40	0.40	0.60
3	11.66	11.64	0.45	0.45	0.68
Average	11.65	11.64	0.43	0.42	0.63

Run Number	Oxygen content (%)		Carbon monoxide (ppm)		
	RM Stack Gas	Corrected Gas	RM Stack Gas	Corrected Gas	Corrected Gas
	Conc	Conc	Conc	Conc @ Actual O ₂	Conc @ 7% O ₂
1	11.58	11.56	366.18	370.48	551.59
2	11.72	11.70	366.97	371.29	561.23
3	11.66	11.64	357.31	361.50	542.76
Average	11.65	11.64	363.49	367.76	551.86

Signature Ydu S.
Site Operation

Signature Piyachon B
Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิสิ่งแวดล้อมไทย จำกัด

**Berkprai Cogeneration Co.,Ltd.
EMISSION TEST RESULT**

Date : 06-Oct-22 Run # : 1
Start Time: 11:20 AM Finish Time: 11:40 AM
O₂ Model: AMI 70 Serial No.: 150526-3
NO_x Model: API 200 EH Serial No.: 399
SO₂ Model: API 100 EH Serial No.: 183
CO Model: API T300 Serial No.: 4828
Fuel Type: Natural Gas Location: HRSG GAS ENGINE 2

Time	O ₂ (%by vol)	NO _x (ppmvd)	SO ₂ (ppmvd)	CO (ppmvd)
11:20 AM	11.53	30.19	0.40	396.45
11:21 AM	11.46	28.93	0.37	352.70
11:22 AM	11.53	27.73	0.40	365.42
11:23 AM	11.45	26.81	0.48	367.07
11:24 AM	11.55	27.11	0.47	360.02
11:25 AM	11.52	27.45	0.42	361.60
11:26 AM	11.58	27.71	0.37	394.90
11:27 AM	11.60	26.32	0.36	386.10
11:28 AM	11.56	25.78	0.41	374.93
11:29 AM	11.62	25.59	0.38	350.97
11:30 AM	11.58	25.63	0.37	354.12
11:31 AM	11.64	24.03	0.36	380.00
11:32 AM	11.56	24.54	0.51	356.01
11:33 AM	11.57	28.04	0.48	355.13
11:34 AM	11.56	28.04	0.48	345.39
11:35 AM	11.51	27.38	0.48	366.96
11:36 AM	11.56	28.79	0.57	351.45
11:37 AM	11.67	28.28	0.46	350.82
11:38 AM	11.70	22.95	0.41	348.44
11:39 AM	11.69	21.16	0.36	388.22
11:40 AM	11.76	21.10	0.37	383.02
Average	11.58	26.36	0.42	366.18

Signature Ydu S.
Site Operation

Signature Piyachon B
Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิสิ่งแวดล้อมไทย จำกัด

Berkprai Cogeneration Co.,Ltd.

EMISSION TEST RESULT

Date :	06-Oct-22	Run # :	2
Start Time:	11:41 AM	Finish Time:	12:01 PM
O ₂ Model:	AMI 70	Serial No.:	150526-3
NO _x Model:	API 200 EH	Serial No.:	399
SO ₂ Model:	API 100 EH	Serial No.:	183
CO Model:	API T300	Serial No.:	4828
Fuel Type:	Natural Gas	Location:	HRSG GAS ENGINE 2

Time	O ₂ (%by vol)	NO _x (ppmvd)	SO ₂ (ppmvd)	CO (ppmvd)
11:41 AM	11.70	20.14	0.36	374.21
11:42 AM	11.63	25.83	0.43	381.56
11:43 AM	11.73	26.74	0.45	346.24
11:44 AM	11.71	25.33	0.39	354.25
11:45 AM	11.70	22.72	0.38	392.38
11:46 AM	11.72	21.99	0.40	388.70
11:47 AM	11.73	22.23	0.41	366.68
11:48 AM	11.72	22.04	0.46	399.86
11:49 AM	11.72	21.61	0.47	369.00
11:50 AM	11.73	21.78	0.39	357.62
11:51 AM	11.72	22.22	0.37	352.16
11:52 AM	11.73	22.38	0.36	393.39
11:53 AM	11.74	22.63	0.35	356.90
11:54 AM	11.70	22.60	0.41	394.20
11:55 AM	11.67	22.47	0.39	355.65
11:56 AM	11.68	22.25	0.44	364.45
11:57 AM	11.79	21.63	0.33	361.46
11:58 AM	11.73	21.87	0.38	349.56
11:59 AM	11.66	22.17	0.44	346.15
12:00 PM	11.80	23.22	0.36	357.05
12:01 PM	11.81	23.95	0.40	344.99
Average	11.72	22.75	0.40	366.97

Signature

Ydus
Site Operation

Piyachon B
Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิสิ่งแวดล้อมไทย จำกัด

Berkprai Cogeneration Co.,Ltd.

EMISSION TEST RESULT

Date :	06-Oct-22	Run # :	3
Start Time:	12:02 PM	Finish Time:	12:22 PM
O ₂ Model:	AMI 70	Serial No.:	150526-3
NO _x Model:	API 200 EH	Serial No.:	399
SO ₂ Model:	API 100 EH	Serial No.:	183
CO Model:	API T300	Serial No.:	4828
Fuel Type:	Natural Gas	Location:	HRSG GAS ENGINE 2

Time	O ₂ (%by vol)	NO _x (ppmvd)	SO ₂ (ppmvd)	CO (ppmvd)
12:02 PM	11.66	23.39	0.40	358.30
12:03 PM	11.68	23.36	0.44	331.36
12:04 PM	11.61	22.94	0.45	349.17
12:05 PM	11.68	22.75	0.46	330.84
12:06 PM	11.67	22.68	0.45	339.69
12:07 PM	11.69	23.32	0.52	343.68
12:08 PM	11.69	23.59	0.53	380.48
12:09 PM	11.65	23.49	0.44	370.50
12:10 PM	11.66	23.57	0.49	344.46
12:11 PM	11.66	23.85	0.40	352.88
12:12 PM	11.65	23.91	0.48	345.12
12:13 PM	11.62	23.95	0.53	382.12
12:14 PM	11.67	23.96	0.52	345.33
12:15 PM	11.66	24.05	0.50	352.03
12:16 PM	11.67	23.58	0.50	363.15
12:17 PM	11.62	24.02	0.48	349.51
12:18 PM	11.58	23.60	0.43	382.11
12:19 PM	11.76	23.51	0.46	391.39
12:20 PM	11.65	23.23	0.39	373.84
12:21 PM	11.66	23.84	0.33	360.05
12:22 PM	11.67	24.35	0.36	357.51
Average	11.66	23.57	0.45	357.31

Signature

Ydus
Site Operation

Piyachon B
Field Department Manager



Thai Environmental Technic Limited
บริษัท เทคนิกล้างแวล้อมไทย จำกัด

System Calibration Bias and Drift Data

Source identification : HRSO GAS ENGINE 2

Cylinder Conc : 13.90 %

Date : 6 October 2022

Time : 10:25-10:47,12:45-12:48

Test personnel : Yotee S.

Span : 20.90 %

	O ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.04	0.19	0.07	0.33	0.14
Upscale gas	13.90	13.91	0.04	13.91	0.04	0.00

Source identification : HRSO GAS ENGINE 2

Cylinder Conc : 39.20 ppm

Date : 6 October 2022

Time : 10:25-10:47,12:45-12:48

Test personnel : Yotee S.

Span : 78.30 ppm

	NO _x Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.03	0.04	0.05	0.06	0.03
Upscale gas	39.30	39.40	0.13	39.40	0.13	0.00

Source identification : HRSO GAS ENGINE 2

Cylinder Conc : 41.40 ppm

Date : 6 October 2022

Time : 10:25-10:47,12:45-12:48

Test personnel : Yotee S.

Span : 82.30 ppm

	SO ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.00	0.00	0.00	0.00	0.00
Upscale gas	41.30	41.50	0.24	41.30	0.00	-0.24

Source identification : HRSO GAS ENGINE 2

Cylinder Conc : 41.10 ppm

Date : 6 October 2022

Time : 10:25-10:47,12:45-12:48

Test personnel : Yotee S.

Span : 793.00 ppm

	CO Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.31	0.04	0.54	0.07	0.03
Upscale gas	41.20	41.00	-0.03	41.00	-0.03	0.00

Signature

Yotee S.
Site Operator

Piyada B.
Field Department Manager



Thai Environmental Technic Limited
บริษัท เทคนิกล้างแวล้อมไทย จำกัด

System Calibration Bias and Drift Data

Source identification : HRSO GAS ENGINE 2

Cylinder Conc : 13.90 %

Date : 6 October 2022

Time : 12:45-12:48,14:15-14:19

Test personnel : Yotee S.

Span : 20.90 %

	O ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.07	0.33	0.12	0.57	0.24
Upscale gas	13.90	13.91	0.04	13.91	0.04	0.00

Source identification : HRSO GAS ENGINE 2

Cylinder Conc : 39.20 ppm

Date : 6 October 2022

Time : 12:45-12:48,14:15-14:19

Test personnel : Yotee S.

Span : 78.30 ppm

	NO _x Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.05	0.06	0.03	0.04	-0.03
Upscale gas	39.30	39.40	0.13	39.50	0.26	0.13

Source identification : HRSO GAS ENGINE 2

Cylinder Conc : 41.40 ppm

Date : 6 October 2022

Time : 12:45-12:48,14:15-14:19

Test personnel : Yotee S.

Span : 82.30 ppm

	SO ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.00	0.00	0.00	0.00	0.00
Upscale gas	41.30	41.30	0.00	41.30	0.00	0.00

Source identification : HRSO GAS ENGINE 2

Cylinder Conc : 41.10 ppm

Date : 6 October 2022

Time : 12:45-12:48,14:15-14:19

Test personnel : Yotee S.

Span : 793.00 ppm

	CO Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.54	0.07	0.66	0.08	0.02
Upscale gas	41.20	41.00	-0.03	40.80	-0.05	-0.03

Signature

Yotee S.
Site Operator

Piyada B.
Field Department Manager

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System Calibration Bias and Drift Data

Source identification : HRSR GAS ENGINE 2 Cylinder Conc : 13.90 %
Date : 6 October 2022 Time : 14:15-14:19,15:50-16:03
Test personnel : Yotee S. Span : 20.90 %

	O ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.12	0.57	0.14	0.67	0.10
Upscale gas	13.90	13.91	0.04	13.91	0.04	0.00

Source identification : HRSR GAS ENGINE 2 Cylinder Conc : 39.20 ppm
Date : 6 October 2022 Time : 14:15-14:19,15:50-16:03
Test personnel : Yotee S. Span : 78.30 ppm

	NO _x Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.03	0.04	0.09	0.11	0.08
Upscale gas	39.30	39.50	0.26	39.40	0.13	-0.13

Source identification : HRSR GAS ENGINE 2 Cylinder Conc : 41.40 ppm
Date : 6 October 2022 Time : 14:15-14:19,15:50-16:03
Test personnel : Yotee S. Span : 82.30 ppm

	SO ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.00	0.00	0.01	0.01	0.01
Upscale gas	41.30	41.30	0.00	41.20	-0.12	-0.12

Source identification : HRSR GAS ENGINE 2 Cylinder Conc : 41.10 ppm
Date : 6 October 2022 Time : 14:15-14:19,15:50-16:03
Test personnel : Yotee S. Span : 793.00 ppm

	CO Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.66	0.08	0.72	0.09	0.01
Upscale gas	41.20	40.80	-0.05	40.80	-0.05	0.00

Signature

Site Operator

Field Department Manager

**TET**

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บริษัท เทคนิคสิ่งแวดล้อมไทย จำกัด

O₂ Analyzer Calibration Data

Source identification : HRSR GAS ENGINE 2 Span : 20.9 %
Test personnel : Yotee S. Time : 09:24-10:15
Date : October 6, 2022

Analyzer calibration data for sampling O₂ Model : AMI 70 S/N 150526-3

Level gas	Cylinder value (%)	Analyzer calibration response (%)	Absolute difference (%)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	13.90	13.90	0.00	0.00
High-level gas	20.90	20.92	0.02	0.10

NO_x Analyzer Calibration Data

Source identification : HRSR GAS ENGINE 2 Span : 78.3 ppm
Test personnel : Yotee S. Time : 09:24-10:15
Date : October 6, 2022

Analyzer calibration data for sampling NO_x Model : 200EH S/N 399

Level gas	Cylinder value (ppm)	Analyzer calibration response (ppm)	Absolute difference (ppm)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	39.20	39.30	0.10	0.13
High-level gas	78.30	78.40	0.10	0.13

SO₂ Analyzer Calibration Data

Source identification : HRSR GAS ENGINE 2 Span : 82.3 ppm
Test personnel : Yotee S. Time : 09:24-10:15
Date : October 6, 2022

Analyzer calibration data for sampling SO₂ Model : 100EH S/N 183

Level gas	Cylinder value (ppm)	Analyzer calibration response (ppm)	Absolute difference (ppm)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	41.40	41.30	0.10	0.12
High-level gas	82.30	82.20	0.10	0.12

CO Analyzer Calibration Data

Source identification : HRSR GAS ENGINE 2 Span : 793 ppm
Test personnel : Yotee S. Time : 09:24-10:15
Date : October 6, 2022

Analyzer calibration data for sampling CO Model : T300 S/N 4828

Level gas	Cylinder value (ppm)	Analyzer calibration response (ppm)	Absolute difference (ppm)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	41.10	41.20	0.10	0.01
High-level gas	793.00	793.00	0.00	0.00

Signature

Site Operator

Field Department Manager



Thai Environmental Technic Limited
บริษัท เทคนิควิเสณแวดลอมไทย จํากัด

The Monitoring Result of Emission Concentration
Berkprai Cogeneration Co.,Ltd.

Sampling Date : 7-Oct-2022 Location: HRSR GAS ENGINE 3

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppmvd)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @ Actual O ₂	Corrected Gas Conc @ 7% O ₂
1	12.27	12.25	23.71	23.74	38.17
2	12.29	12.28	23.91	23.94	38.61
3	12.27	12.26	23.23	23.26	37.43
Average	12.28	12.27	23.61	23.65	38.07

Run Number	Oxygen content (%)		Sulfur dioxide (ppmvd)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @ Actual O ₂	Corrected Gas Conc @ 7% O ₂
1	12.27	12.25	0.44	0.44	0.71
2	12.29	12.28	0.50	0.50	0.81
3	12.27	12.26	0.50	0.49	0.79
Average	12.28	12.27	0.48	0.48	0.77

Run Number	Oxygen content (%)		Carbon monoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @ Actual O ₂	Corrected Gas Conc @ 7% O ₂
1	12.27	12.25	338.50	336.63	541.25
2	12.29	12.28	320.26	318.48	513.59
3	12.27	12.26	338.02	336.15	540.79
Average	12.28	12.27	332.26	330.42	531.88

Signature

Ydws

Site Operation

Piyachai B

Field Department Manager



Thai Environmental Technic Limited
บริษัท เทคนิควิเสณแวดลอมไทย จํากัด

Berkprai Cogeneration Co.,Ltd.
EMISSION TEST RESULT

Date : 07-Oct-22 Run # : 1
Start Time: 11:20 AM Finish Time: 11:40 AM
O₂ Model: AMI 70 Serial No.: 150526-3
NO_x Model: API 200 EH Serial No.: 399
SO₂ Model: API 100 EH Serial No.: 183
CO Model: API T300 Serial No.: 4828
Fuel Type: Natural Gas Location: HRSR GAS ENGINE 3

Time	O ₂ (%by vol)	NO _x (ppmvd)	SO ₂ (ppmvd)	CO (ppmvd)
11:20 AM	12.26	27.42	0.42	353.83
11:21 AM	12.18	27.70	0.37	344.17
11:22 AM	12.24	21.80	0.36	353.56
11:23 AM	12.27	19.17	0.21	343.42
11:24 AM	12.24	19.56	0.23	344.04
11:25 AM	12.26	26.63	0.47	345.79
11:26 AM	12.31	27.32	0.37	348.15
11:27 AM	12.26	27.95	0.49	356.22
11:28 AM	12.30	17.99	0.32	376.15
11:29 AM	12.30	18.54	0.39	347.00
11:30 AM	12.16	26.89	0.49	337.38
11:31 AM	12.21	27.98	0.66	333.94
11:32 AM	12.23	29.11	0.60	310.96
11:33 AM	12.26	19.28	0.44	319.19
11:34 AM	12.24	18.56	0.31	319.66
11:35 AM	12.33	17.93	0.36	324.10
11:36 AM	12.36	20.72	0.39	328.99
11:37 AM	12.30	27.07	0.61	318.56
11:38 AM	12.26	27.94	0.66	334.95
11:39 AM	12.32	28.74	0.66	330.53
11:40 AM	12.31	19.51	0.53	337.95
Average	12.27	23.71	0.44	338.50

Signature

Ydws

Site Operation

Piyachai B

Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิคสิ่งแวดล้อมไทย จำกัด

Berkprai Cogeneration Co.,Ltd.

EMISSION TEST RESULT

Date :	07-Oct-22	Run # :	2
Start Time:	11:41 AM	Finish Time:	12:01 PM
O ₂ Model:	AMI 70	Serial No.:	150526-3
NO _x Model:	API 200 EH	Serial No.:	399
SO ₂ Model:	API 100 EH	Serial No.:	183
CO Model:	API T300	Serial No.:	4828
Fuel Type:	Natural Gas	Location:	HRSG GAS ENGINE 3

Time	O ₂ (%by vol)	NO _x (ppmvd)	SO ₂ (ppmvd)	CO (ppmvd)
11:41 AM	12.30	18.58	0.53	341.14
11:42 AM	12.29	24.74	0.52	319.14
11:43 AM	12.31	28.99	0.67	312.15
11:44 AM	12.31	28.79	0.73	328.15
11:45 AM	12.34	20.90	0.56	316.38
11:46 AM	12.32	20.49	0.62	327.45
11:47 AM	12.31	24.85	0.59	318.66
11:48 AM	12.31	26.87	0.59	323.31
11:49 AM	12.33	27.32	0.62	312.91
11:50 AM	12.30	27.66	0.60	318.61
11:51 AM	12.30	22.67	0.29	320.14
11:52 AM	12.18	24.58	0.37	322.89
11:53 AM	12.32	25.02	0.37	316.76
11:54 AM	12.24	21.12	0.51	307.68
11:55 AM	12.27	20.96	0.43	308.25
11:56 AM	12.27	28.04	0.53	304.72
11:57 AM	12.21	28.87	0.53	309.92
11:58 AM	12.39	21.48	0.39	322.89
11:59 AM	12.28	17.44	0.29	336.37
12:00 PM	12.24	17.23	0.30	337.76
12:01 PM	12.33	25.44	0.54	320.16
Average	12.29	23.91	0.50	320.26

Signature

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Site Operation

Piyachai B.

Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิคสิ่งแวดล้อมไทย จำกัด

Berkprai Cogeneration Co.,Ltd.

EMISSION TEST RESULT

Date :	07-Oct-22	Run # :	3
Start Time:	12:02 PM	Finish Time:	12:22 PM
O ₂ Model:	AMI 70	Serial No.:	150526-3
NO _x Model:	API 200 EH	Serial No.:	399
SO ₂ Model:	API 100 EH	Serial No.:	183
CO Model:	API T300	Serial No.:	4828
Fuel Type:	Natural Gas	Location:	HRSG GAS ENGINE 3

Time	O ₂ (%by vol)	NO _x (ppmvd)	SO ₂ (ppmvd)	CO (ppmvd)
12:02 PM	12.25	27.07	0.65	321.81
12:03 PM	12.25	27.09	0.53	342.28
12:04 PM	12.23	27.54	0.62	322.20
12:05 PM	12.25	22.31	0.55	314.51
12:06 PM	12.26	20.65	0.49	304.12
12:07 PM	12.31	20.36	0.44	320.75
12:08 PM	12.34	20.17	0.55	330.10
12:09 PM	12.24	25.60	0.52	317.36
12:10 PM	12.24	28.47	0.72	298.87
12:11 PM	12.25	28.24	0.70	309.63
12:12 PM	12.27	20.08	0.50	328.12
12:13 PM	12.29	18.08	0.57	406.02
12:14 PM	12.27	17.84	0.48	350.59
12:15 PM	12.28	18.31	0.43	357.95
12:16 PM	12.32	25.62	0.52	378.68
12:17 PM	12.32	27.16	0.56	392.81
12:18 PM	12.28	27.82	0.37	334.94
12:19 PM	12.25	28.53	0.49	324.14
12:20 PM	12.29	19.75	0.29	335.84
12:21 PM	12.29	18.51	0.19	353.29
12:22 PM	12.23	18.61	0.25	354.39
Average	12.27	23.23	0.50	338.02

Signature

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Site Operation

Piyachai B.

Field Department Manager



Thai Environmental Technic Limited
บริษัท เทคนิคสิ่งแวดล้อมไทย จำกัด

System Calibration Bias and Drift Data

Source identification : HRSR GAS ENGINE 3

Cylinder Conc : 13.90 %

Date : 7 October 2022

Time : 09:45-10:50,12:45-12:49

Test personnel : Yotee S.

Span : 20.90 %

	O ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.02	0.10	0.03	0.14	0.05
Upscale gas	13.90	13.91	0.04	13.91	0.04	0.00

Source identification : HRSR GAS ENGINE 3

Cylinder Conc : 39.20 ppm

Date : 7 October 2022

Time : 09:45-10:50,12:45-12:49

Test personnel : Yotee S.

Span : 78.30 ppm

	NO _x Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.07	0.09	0.05	0.06	-0.03
Upscale gas	39.30	39.10	-0.26	39.10	-0.26	0.00

Source identification : HRSR GAS ENGINE 3

Cylinder Conc : 41.40 ppm

Date : 7 October 2022

Time : 09:45-10:50,12:45-12:49

Test personnel : Yotee S.

Span : 82.30 ppm

	SO ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.00	0.00	0.01	0.00	0.00
Upscale gas	41.30	41.30	0.00	41.30	0.00	0.00

Source identification : HRSR GAS ENGINE 3

Cylinder Conc : 41.10 ppm

Date : 7 October 2022

Time : 09:45-10:50,12:45-12:49

Test personnel : Yotee S.

Span : 793.00 ppm

	CO Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.27	0.03	0.12	0.01	-0.02
Upscale gas	41.20	41.50	0.04	41.50	0.04	0.00

Signature

Site Operator

Piyachon B

Field Department Manager



Thai Environmental Technic Limited
บริษัท เทคนิคสิ่งแวดล้อมไทย จำกัด

System Calibration Bias and Drift Data

Source identification : HRSR GAS ENGINE 3

Cylinder Conc : 13.90 %

Date : 7 October 2022

Time : 12:45-12:49,14:15-14:19

Test personnel : Yotee S.

Span : 20.90 %

	O ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.03	0.14	0.11	0.53	0.38
Upscale gas	13.90	13.91	0.04	13.91	0.04	0.00

Source identification : HRSR GAS ENGINE 3

Cylinder Conc : 39.20 ppm

Date : 7 October 2022

Time : 12:45-12:49,14:15-14:19

Test personnel : Yotee S.

Span : 78.30 ppm

	NO _x Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.05	0.06	0.05	0.06	0.00
Upscale gas	39.30	39.10	-0.26	39.30	0.00	0.26

Source identification : HRSR GAS ENGINE 3

Cylinder Conc : 41.40 ppm

Date : 7 October 2022

Time : 12:45-12:49,14:15-14:19

Test personnel : Yotee S.

Span : 82.30 ppm

	SO ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.01	0.00	0.01	0.01	0.00
Upscale gas	41.30	41.30	0.00	41.20	-0.12	-0.12

Source identification : HRSR GAS ENGINE 3

Cylinder Conc : 41.10 ppm

Date : 7 October 2022

Time : 12:45-12:49,14:15-14:19

Test personnel : Yotee S.

Span : 793.00 ppm

	CO Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.12	0.01	0.15	0.02	0.00
Upscale gas	41.20	41.50	0.04	41.70	0.06	0.03

Signature

Site Operator

Piyachon B

Field Department Manager



Thai Environmental Technic Limited
บริษัท เทคนิคสิ่งแวดล้อมไทย จำกัด

System Calibration Bias and Drift Data

Source identification : HRSO GAS ENGINE 3
Date : 7 October 2022
Test personnel : Yotee S.

Cylinder Conc : 13.90 %
Time : 14:15-14:19,15:47-15:58
Span : 20.90 %

	O ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.11	0.53	0.12	0.57	0.05
Upscale gas	13.90	13.91	0.04	13.91	0.04	0.00

Source identification : HRSO GAS ENGINE 3
Date : 7 October 2022
Test personnel : Yotee S.

Cylinder Conc : 39.20 ppm
Time : 14:15-14:19,15:47-15:58
Span : 78.30 ppm

	NO _x Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.05	0.06	0.07	0.09	0.03
Upscale gas	39.30	39.30	0.00	39.50	0.26	0.26

Source identification : HRSO GAS ENGINE 3
Date : 7 October 2022
Test personnel : Yotee S.

Cylinder Conc : 41.40 ppm
Time : 14:15-14:19,15:47-15:58
Span : 82.30 ppm

	SO ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.01	0.01	0.00	0.00	0.00
Upscale gas	41.30	41.20	-0.12	41.20	-0.12	0.00

Source identification : HRSO GAS ENGINE 3
Date : 7 October 2022
Test personnel : Yotee S.

Cylinder Conc : 41.10 ppm
Time : 14:15-14:19,15:47-15:58
Span : 793.00 ppm

	CO Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.15	0.02	0.21	0.03	0.01
Upscale gas	41.20	41.70	0.06	41.80	0.08	0.01

Signature

Yotee S.
Site Operator

Piyachon B.
Field Department Manager



Thai Environmental Technic Limited
บริษัท เทคนิคสิ่งแวดล้อมไทย จำกัด

O₂ Analyzer Calibration Data

Source identification : HRSO GAS ENGINE 3
Test personnel : Yotee S.
Date : October 7, 2022

Span : 20.9 %
Time : 09:01-09:40

Analyzer calibration data for sampling O₂ Model : AMI 70 S/N 150526-3

Level gas	Cylinder value (%)	Analyzer calibration response (%)	Absolute difference (%)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	13.90	13.90	0.00	0.00
High-level gas	20.90	20.92	0.02	0.10

NO_x Analyzer Calibration Data

Source identification : HRSO GAS ENGINE 3
Test personnel : Yotee S.
Date : October 7, 2022

Span : 78.3 ppm
Time : 09:01-09:40

Analyzer calibration data for sampling NO_x Model : 200EH S/N 399

Level gas	Cylinder value (ppm)	Analyzer calibration response (ppm)	Absolute difference (ppm)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	39.20	39.30	0.10	0.13
High-level gas	78.30	78.40	0.10	0.13

SO₂ Analyzer Calibration Data

Source identification : HRSO GAS ENGINE 3
Test personnel : Yotee S.
Date : October 7, 2022

Span : 82.3 ppm
Time : 09:01-09:40

Analyzer calibration data for sampling SO₂ Model : 100EH S/N 183

Level gas	Cylinder value (ppm)	Analyzer calibration response (ppm)	Absolute difference (ppm)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	41.40	41.30	0.10	0.12
High-level gas	82.30	82.20	0.10	0.12

CO Analyzer Calibration Data

Source identification : HRSO GAS ENGINE 3
Test personnel : Yotee S.
Date : October 7, 2022

Span : 793 ppm
Time : 09:01-09:40

Analyzer calibration data for sampling CO Model : T300 S/N 4828

Level gas	Cylinder value (ppm)	Analyzer calibration response (ppm)	Absolute difference (ppm)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	41.10	41.20	0.10	0.01
High-level gas	793.00	793.00	0.00	0.00

Signature

Yotee S.
Site Operator

Piyachon B.
Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคโนโลยีสิ่งแวดล้อมไทย จำกัด

The Monitoring Result of Emission Concentration
Berkprai Cogeneration Co.,Ltd.

Sampling Date : 4-Oct-2022 Location: HRSG GAS TURBINE GENERATOR

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppmvd)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @ Actual O ₂	Corrected Gas Conc @ 7% O ₂
1	13.64	13.63	15.69	15.53	29.67
2	13.64	13.63	16.03	15.86	30.32
3	13.63	13.62	16.05	15.88	30.33
Average	13.63	13.62	15.92	15.76	30.11

Run Number	Oxygen content (%)		Sulfur dioxide (ppmvd)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @ Actual O ₂	Corrected Gas Conc @ 7% O ₂
1	13.64	13.63	0.40	0.34	0.65
2	13.64	13.63	0.42	0.35	0.68
3	13.63	13.62	0.39	0.33	0.63
Average	13.63	13.62	0.40	0.34	0.65

Run Number	Oxygen content (%)		Carbon monoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @ Actual O ₂	Corrected Gas Conc @ 7% O ₂
1	13.64	13.63	2.60	2.31	4.41
2	13.64	13.63	1.74	1.45	2.77
3	13.63	13.62	1.91	1.61	3.08
Average	13.63	13.62	2.08	1.79	3.42

Signature

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Site Operation

Piyachon B

Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคโนโลยีสิ่งแวดล้อมไทย จำกัด

Berkprai Cogeneration Co.,Ltd.
EMISSION TEST RESULT

Date : 04-Oct-22 Run # : 1
 Start Time : 11:00 AM Finish Time : 11:20 AM
 O₂ Model : AMI 70 Serial No. : 150526-3
 NO_x Model : API 200 EH Serial No. : 399
 SO₂ Model : API 100 EH Serial No. : 183
 CO Model : API T300 Serial No. : 4828
 Fuel Type : Natural Gas Location : HRSG GAS TURBINE GENERATOR

Time	O ₂ (%by vol)	NO _x (ppmvd)	SO ₂ (ppmvd)	CO (ppmvd)
11:00 AM	13.63	15.59	0.44	2.83
11:01 AM	13.63	15.53	0.45	1.95
11:02 AM	13.63	15.60	0.44	7.39
11:03 AM	13.62	15.65	0.46	2.45
11:04 AM	13.64	15.63	0.46	3.10
11:05 AM	13.63	15.61	0.45	1.99
11:06 AM	13.63	15.62	0.37	2.17
11:07 AM	13.64	15.58	0.30	3.18
11:08 AM	13.65	15.58	0.33	3.03
11:09 AM	13.64	15.60	0.39	1.71
11:10 AM	13.63	15.61	0.39	3.16
11:11 AM	13.63	15.66	0.36	3.46
11:12 AM	13.64	15.76	0.38	2.18
11:13 AM	13.64	15.75	0.39	1.91
11:14 AM	13.65	15.69	0.42	1.75
11:15 AM	13.65	15.68	0.40	1.35
11:16 AM	13.63	15.74	0.42	2.13
11:17 AM	13.63	15.92	0.37	2.12
11:18 AM	13.65	15.96	0.36	3.31
11:19 AM	13.63	15.87	0.43	2.99
11:20 AM	13.64	15.86	0.42	0.38
Average	13.64	15.69	0.40	2.60

Signature

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Site Operation

Piyachon B

Field Department Manager

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Thai Environmental Technic Limited
บริษัท เทคนิสิ่งแวดล้อมไทย จำกัด

Berkprai Cogeneration Co.,Ltd.

EMISSION TEST RESULT

Date :	04-Oct-22	Run # :	2
Start Time:	11:21 AM	Finish Time:	11:41 AM
O ₂ Model:	AMI 70	Serial No.:	150526-3
NO _x Model:	API 200 EH	Serial No.:	399
SO ₂ Model:	API 100 EH	Serial No.:	183
CO Model:	API T300	Serial No.:	4828
Fuel Type:	Natural Gas	Location:	HRSR GAS TURBINE GENERATOR

Time	O ₂ (%by vol)	NO _x (ppmvd)	SO ₂ (ppmvd)	CO (ppmvd)
11:21 AM	13.63	15.93	0.40	0.78
11:22 AM	13.64	16.03	0.40	0.70
11:23 AM	13.63	16.07	0.39	2.08
11:24 AM	13.64	16.08	0.39	1.66
11:25 AM	13.63	16.04	0.43	3.19
11:26 AM	13.64	16.04	0.41	1.20
11:27 AM	13.64	16.07	0.42	1.11
11:28 AM	13.64	16.07	0.43	1.50
11:29 AM	13.62	16.05	0.47	1.53
11:30 AM	13.63	16.06	0.43	2.99
11:31 AM	13.64	16.04	0.47	1.47
11:32 AM	13.63	15.97	0.51	2.02
11:33 AM	13.64	15.99	0.48	0.32
11:34 AM	13.63	16.07	0.49	1.43
11:35 AM	13.65	16.02	0.49	2.36
11:36 AM	13.63	15.96	0.35	2.12
11:37 AM	13.63	16.02	0.33	1.73
11:38 AM	13.66	16.01	0.34	2.73
11:39 AM	13.64	16.00	0.37	0.95
11:40 AM	13.62	16.01	0.37	3.02
11:41 AM	13.64	16.12	0.37	1.73
Average	13.64	16.03	0.42	1.74

Signature

yduis
Site Operation

Piyachai B

Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิสิ่งแวดล้อมไทย จำกัด

Berkprai Cogeneration Co.,Ltd.

EMISSION TEST RESULT

Date :	04-Oct-22	Run # :	3
Start Time:	11:42 AM	Finish Time:	12:02 PM
O ₂ Model:	AMI 70	Serial No.:	150526-3
NO _x Model:	API 200 EH	Serial No.:	399
SO ₂ Model:	API 100 EH	Serial No.:	183
CO Model:	API T300	Serial No.:	4828
Fuel Type:	Natural Gas	Location:	HRSR GAS TURBINE GENERATOR

Time	O ₂ (%by vol)	NO _x (ppmvd)	SO ₂ (ppmvd)	CO (ppmvd)
11:42 AM	13.64	16.02	0.34	0.40
11:43 AM	13.63	15.95	0.35	2.36
11:44 AM	13.63	16.04	0.37	2.75
11:45 AM	13.65	16.10	0.38	2.42
11:46 AM	13.64	15.99	0.41	2.34
11:47 AM	13.63	15.91	0.40	1.63
11:48 AM	13.64	15.95	0.40	2.76
11:49 AM	13.63	16.00	0.42	2.36
11:50 AM	13.62	16.06	0.43	2.11
11:51 AM	13.63	16.12	0.41	1.97
11:52 AM	13.62	16.06	0.43	0.51
11:53 AM	13.62	16.03	0.42	2.67
11:54 AM	13.63	16.07	0.39	2.56
11:55 AM	13.64	16.11	0.41	0.87
11:56 AM	13.62	16.09	0.38	1.79
11:57 AM	13.64	16.02	0.35	1.93
11:58 AM	13.62	16.02	0.39	2.30
11:59 AM	13.63	16.10	0.41	1.93
12:00 PM	13.62	16.21	0.37	1.61
12:01 PM	13.64	16.14	0.36	1.89
12:02 PM	13.63	16.06	0.39	0.90
Average	13.63	16.05	0.39	1.91

Signature

yduis
Site Operation

Piyachai B

Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิคสิ่งแวดล้อมไทย จำกัด

System Calibration Bias and Drift Data

Source identification : HRSG GAS TURBINE GENERATOR Cylinder Conc : 13.90 %
Date : 4 October 2022 Time : 10:15-10:46,12:21-12:35
Test personnel : Yotee S. Span : 20.90 %

	O ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System	System cal bias	System	System cal bias	
		Calibration	(percent of span)	Calibration	(percent of span)	
Zero gas	0.00	0.00	0.01	0.00	0.01	0.00
Upscale gas	13.90	13.91	0.04	13.91	0.04	0.00

Source identification : HRSG GAS TURBINE GENERATOR Cylinder Conc : 39.20 ppm
Date : 4 October 2022 Time : 10:15-10:46,12:21-12:35
Test personnel : Yotee S. Span : 78.30 ppm

	NO _x Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System	System cal bias	System	System cal bias	
		Calibration	(percent of span)	Calibration	(percent of span)	
Zero gas	0.00	0.03	0.04	0.05	0.06	0.03
Upscale gas	39.30	39.50	0.26	39.60	0.38	0.13

Source identification : HRSG GAS TURBINE GENERATOR Cylinder Conc : 41.40 ppm
Date : 4 October 2022 Time : 10:15-10:46,12:21-12:35
Test personnel : Yotee S. Span : 82.30 ppm

	SO ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System	System cal bias	System	System cal bias	
		Calibration	(percent of span)	Calibration	(percent of span)	
Zero gas	0.00	0.04	0.05	0.09	0.11	0.06
Upscale gas	41.30	41.20	-0.12	41.20	-0.12	0.00

Source identification : HRSG GAS TURBINE GENERATOR Cylinder Conc : 41.10 ppm
Date : 4 October 2022 Time : 10:15-10:46,12:21-12:35
Test personnel : Yotee S. Span : 793.00 ppm

	CO Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System	System cal bias	System	System cal bias	
		Calibration	(percent of span)	Calibration	(percent of span)	
Zero gas	0.00	0.20	0.03	0.40	0.05	0.03
Upscale gas	41.20	41.20	0.00	41.20	0.00	0.00

Signature

Yotee S.
Site Operator

Piyachai B.
Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิคสิ่งแวดล้อมไทย จำกัด

System Calibration Bias and Drift Data

Source identification : HRSG GAS TURBINE GENERATOR Cylinder Conc : 13.90 %
Date : 4 October 2022 Time : 12:21-12:35,14:02-14:09
Test personnel : Yotee S. Span : 20.90 %

	O ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System	System cal bias	System	System cal bias	
		Calibration	(percent of span)	Calibration	(percent of span)	
Zero gas	0.00	0.00	0.01	0.01	0.05	0.03
Upscale gas	13.90	13.91	0.04	13.92	0.09	0.05

Source identification : HRSG GAS TURBINE GENERATOR Cylinder Conc : 39.20 ppm
Date : 4 October 2022 Time : 12:21-12:35,14:02-14:09
Test personnel : Yotee S. Span : 78.30 ppm

	NO _x Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System	System cal bias	System	System cal bias	
		Calibration	(percent of span)	Calibration	(percent of span)	
Zero gas	0.00	0.05	0.06	0.07	0.09	0.03
Upscale gas	39.30	39.60	0.38	39.40	0.13	-0.26

Source identification : HRSG GAS TURBINE GENERATOR Cylinder Conc : 41.40 ppm
Date : 4 October 2022 Time : 12:21-12:35,14:02-14:09
Test personnel : Yotee S. Span : 82.30 ppm

	SO ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System	System cal bias	System	System cal bias	
		Calibration	(percent of span)	Calibration	(percent of span)	
Zero gas	0.00	0.09	0.11	0.11	0.13	0.02
Upscale gas	41.30	41.20	-0.12	41.30	0.00	0.12

Source identification : HRSG GAS TURBINE GENERATOR Cylinder Conc : 41.10 ppm
Date : 4 October 2022 Time : 12:21-12:35,14:02-14:09
Test personnel : Yotee S. Span : 793.00 ppm

	CO Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System	System cal bias	System	System cal bias	
		Calibration	(percent of span)	Calibration	(percent of span)	
Zero gas	0.00	0.40	0.05	0.33	0.04	-0.01
Upscale gas	41.20	41.20	0.00	41.10	-0.01	-0.01

Signature

Yotee S.
Site Operator

Piyachai B.
Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิกล้างแวล้อมไทย จำกัด

System Calibration Bias and Drift Data

Source identification : HRSG GAS TURBINE GENERATOR Cylinder Conc : 13.90 %
Date : 4 October 2022 Time : 14:02-14:09,15:40-16:10
Test personnel : Yotee S. Span : 20.90 %

	O ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.01	0.05	0.03	0.15	0.11
Upscale gas	13.90	13.92	0.09	13.91	0.04	-0.05

Source identification : HRSG GAS TURBINE GENERATOR Cylinder Conc : 39.20 ppm
Date : 4 October 2022 Time : 14:02-14:09,15:40-16:10
Test personnel : Yotee S. Span : 78.30 ppm

	NO _x Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.07	0.09	0.12	0.15	0.06
Upscale gas	39.30	39.40	0.13	39.20	-0.13	-0.26

Source identification : HRSG GAS TURBINE GENERATOR Cylinder Conc : 41.40 ppm
Date : 4 October 2022 Time : 14:02-14:09,15:40-16:10
Test personnel : Yotee S. Span : 82.30 ppm

	SO ₂ Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.11	0.13	0.11	0.13	0.00
Upscale gas	41.30	41.30	0.00	41.50	0.24	0.24

Source identification : HRSG GAS TURBINE GENERATOR Cylinder Conc : 41.10 ppm
Date : 4 October 2022 Time : 14:02-14:09,15:40-16:10
Test personnel : Yotee S. Span : 793.00 ppm

	CO Analyzer Calibration response	Initial values		Final values		Drift (percent of span)
		System Calibration	System cal bias (percent of span)	System Calibration	System cal bias (percent of span)	
Zero gas	0.00	0.33	0.04	0.35	0.04	0.00
Upscale gas	41.20	41.10	-0.01	41.00	-0.03	-0.01

Signature

Site Operator

Field Department Manager

**TET**

Thai Environmental Technic Limited
บริษัท เทคนิกล้างแวล้อมไทย จำกัด

O₂ Analyzer Calibration Data

Source identification : HRSG GAS TURBINE GENERATOR Span : 20.9 %
Test personnel : Yotee S. Time : 09:20-10:10
Date : October 4, 2022
Analyzer calibration data for sampling O₂ Model : AMI 70 S/N 150526-3

Level gas	Cylinder value (%)	Analyzer calibration response (%)	Absolute difference (%)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	13.90	13.90	0.00	0.00
High-level gas	20.90	20.92	0.02	0.10

NO_x Analyzer Calibration Data

Source identification : HRSG GAS TURBINE GENERATOR Span : 78.3 ppm
Test personnel : Yotee S. Time : 09:20-10:10
Date : October 4, 2022
Analyzer calibration data for sampling NO_x Model : 200EH S/N 399

Level gas	Cylinder value (ppm)	Analyzer calibration response (ppm)	Absolute difference (ppm)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	39.20	39.30	0.10	0.13
High-level gas	78.30	78.40	0.10	0.13

SO₂ Analyzer Calibration Data

Source identification : HRSG GAS TURBINE GENERATOR Span : 82.3 ppm
Test personnel : Yotee S. Time : 09:20-10:10
Date : October 4, 2022
Analyzer calibration data for sampling SO₂ Model : 100EH S/N 183

Level gas	Cylinder value (ppm)	Analyzer calibration response (ppm)	Absolute difference (ppm)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	41.40	41.30	0.10	0.12
High-level gas	82.30	82.20	0.10	0.12

CO Analyzer Calibration Data

Source identification : HRSG GAS TURBINE GENERATOR Span : 793 ppm
Test personnel : Yotee S. Time : 09:20-10:10
Date : October 4, 2022
Analyzer calibration data for sampling CO Model : T300 S/N 4828



Level gas	Cylinder value (ppm)	Analyzer calibration response (ppm)	Absolute difference (ppm)	Difference (percent of span)
Zero gas	0.00	0.00	0.00	0.00
Mid-level gas	41.10	41.20	0.10	0.01
High-level gas	793.00	793.00	0.00	0.00

Signature

Site Operator

Field Department Manager



CERTIFICATE OF ANALYSIS

Customer Detail: Thai Environmental Technic Ltd		Production Order Number: 90130402 Material Number: S54100-J-44 Certification Date: 04-Aug-2015 Expiry Date: 04-Aug-2023	
Cylinder Description: STEEL 47 L			
The measurement of this reference material is traceable to SI through the reference standard which is traceable to National Standard. The assay of this Standard has been performed in accordance with the I.P.A. Traceability Protocol I.P.A.0001E-12-533 for the Assay and Certification of Gaseous Calibration Standards using procedure G-1. The results are expressed on a single mode basis, unless otherwise specified. The reported uncertainty is based on a standard uncertainty multiplied by coverage factor k = 2, providing a level of confidence of approximately 95%.			
Certificate Number: 2716/15	Analyst:  THIRARAT LOHVIRI		
Cylinder Number: 27906			
Nominal Cylinder Content: 6.550 M3	Approve:  SUKANYA KAMTHIRAT		
Nominal Pressure: 145 Bar			
Valve Outlet: CGA 590 Brass	To Re-Order Please Quote: S54100-J-44		
Comment:	<ul style="list-style-type: none"> It is recommended that this product be not used below 5% of actual contents or should not be used when its gas pressure is below 150psig Other impurities that detect by analytical condition of this mixture shall be report if it is more than 10% of minimum minor component Keep and use in well-ventilated and secure area 		

CERTIFICATE OF ANALYSIS

Analytical Result					
Component	Request Concentration	Certified Concentration	Uncertainty	Method	Assay Date
Oxygen in Nitrogen	14.0 %	13.9 %	+/- 1% relative	(2) I-PB-354	03-Aug-2015
Reference Standard used in Assay					
Reference Standard	Cylinder No.	Concentration	Expired Date		
Oxygen in Nitrogen	243625SG	25.08 ± 0.13 %	19-Aug-2017		
Analytical Instruments used in Assay					
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration			
Servomex 4100 O2 Analyzer	Paramagnetic	18-Jul-2015			
Method of Analysis: 1. Gas Chromatograph 2. Paramagnetic Oxygen Analyser 3. Electrochemical Oxygen Analyser 4. Electrochemical Moisture Analyser 5. Total Hydrocarbon Analyser 6. Other specified					
Cylinder Number: 27906 Production Order Number: 90130402			Certification Date: 04-Aug-2015 Expiration Date: 04-Aug-2023		

CERTIFICATE OF ANALYSIS

Customer Detail: Thai Environmental Technic Ltd		Production Order Number: 90130853 Material Number: 445100-SK-44 Certification Date: 10-Sep-2015 Expiry Date: 10-Sep-2023	
Cylinder Description: Spectra Seal 40 L			
<small>The measurement of this reference material is traceable to SI through the reference standard which is traceable to SI via National Standard of Mass. The Assay of this Standard has been performed in accordance with the IUPAC Traceability Protocol (PAC001B:12-531) for the Assay and Certification of Gaseous Calibration Standards using procedure G-1. The results are expressed on a mole/mole basis, unless otherwise specified. The reported uncertainty is based on a standard uncertainty multiplied by coverage factor k = 2, providing a level of confidence of approximately 95%.</small>			
Certificate Number: 3113/15		Analyst:  THIRARAT LOHVAY	
Cylinder Number: A00746SK			
Nominal Cylinder Content: 5.520 M³		Approve:  SAKANYA KHAMTHIRAY	
Nominal Pressure: 145.0 Bar			
Valve Outlet: CGA 660 SS		To Re-Order Please Quote: 445100-SK-44	
Comment: <ul style="list-style-type: none"> It is recommended that this product be not used below 5% of actual contents or should not be used when its gas pressure is below 150psig Other impurities that detect by analytical condition of this mixture shall be report if it is more than 10% of minimum minor component Keep and use in well-ventilated and secure area 			

CERTIFICATE OF ANALYSIS

Analytical Result					
Component	Request Concentration	Certified Concentration	Certified Uncertainty	Method	Assay Date
Sulphur Dioxide In Nitrogen	80.0 ppm	82.3 ppm	± 1 % relative	(6) I-PB-352	02-Sep & 09-Sep-2015
Reference Standard used in Assay					
Reference Standard	Cylinder No.	Concentration	Expired Date		
Sulphur Dioxide In Nitrogen	145701SG	51.47 ± 0.41 ppm	19-Nov-2016		
Analytical Instruments used in Assay					
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration			
Digi LAB Excalibur HE Series	FTIR-SO2	22-Aug-2015			
Method of Analysis: 1. Gas Chromatograph 2. Paramagnetic Oxygen Analyser 3. Electrochemical Oxygen Analyser 4. Electrochemical Moisture Analyser 5. Total Hydrocarbon Analyser 6. Other specified					
Cylinder Number A00746SK Production Order Number 90130853				Certification Date: 10-Sep-2015 Expiration Date: 10-Sep-2023	

Certificate Of Analysis
Special Gases Mixture

Customer Details

Name:
Thai Environmental Technic LimitedAddress:
1/6 Soi Ramkhamhaeng 45, Khet
Saphansoong, Bangkok 10240

Customer Tag No.:

Certificate Details

Number:	4010/21	Date of Issue:	30-Sep-2021	Expiry date:	30-Sep-2023
Material Details					
Production Order:	90167769	Material Code:	614500-SK-4	Cylinder No.:	D636041
Gas content:	5.52 M ³	Filling pressure:	145.0 bar	Valve:	CGA 660 SS
Cylinder Owner:	LINDE	Cylinder Material:	Spectra seal	Cylinder Size:	40 L

Laboratory Report

Analytical Result

Component	Normal Concentration	Analysis Result ¹	Uncertainty ²	Method of Analysis ³	Assay Date
Nitric Oxide	80.0 ppm	78.3 ppm	± 1% relative	(6) I-PB-352	23-Sep & 30-Sep-21
Other NOx impurity in Nitrogen		Less than 3.9 ppm			

Reference Standard
Nitric Oxide
in Nitrogen

Reference Standard used in Assay

Cylinder number	Concentration	Expiry date:
2788115G	51.58 ± 0.41 ppm	29-Oct-2022

Analytical Instruments used in Assay

Analytical Principle	Last Multipoint Calibration
FTIR-NO	15-Sep-2021

Instrument/Make/Model
FTIR Spectrometers Nicolet i550

Recommend usage condition

Minimum utilization: 5% of actual content or before expiry date whichever comes first.

Storage condition: Keep in well ventilation and secure area.

Comments

When reordering, please quote the material number

Notes:

1. All results expressed in this report are on mole/mole basis, unless otherwise specified. The Assay of this Standard has been performed in accordance with the EPA Traceability Protocol EPA-600/R-12/531 for the Assay and Certification of Gaseous Calibration Standards using procedure G1
2. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The measurement of this material is traceable to the SI through the reference gas standard which is traceable to Swiss National Standard of Mass or other recognised national metrology institutes.
3. (1) Gas Chromatography, (2) Paramagnetic Oxygen Analyzer, (3) Electrochemical Oxygen Analyzer, (4) Electrochemical Moisture Analyzer, (5) Total Hydrocarbon Analyzer, (6) Other - Specified

Sukanya Parinyasoonlorn

Signatory for and on behalf of Linde (Thailand) Co., Ltd.

Linde (Thailand) Public Company Limited

15th Floor, Bangna Tower A, 2/3 Moo 14, Bangna Trad K.M. 6.5 Road, Bangnaeew

Bangplee, Samutprakarn 10540, Tel (66) 2338-6100 Fax (66) 2338-6333

Wellgrow Plant: 105 Moo 5, T.Bangsamak, A.Bangpakong, Chachoengsao 24180

Thailand, Tel (66) 38.570-479-93 Fax (66) 38.570-323

Page 1 of 1

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ฉบับนี้ (ฉบับรวม) ห้ามทำซ้ำ (ฉบับรวม)

ฉบับนี้ (ฉบับรวม) ห้ามทำซ้ำ (ฉบับรวม)

ฉบับนี้ (ฉบับรวม) ห้ามทำซ้ำ (ฉบับรวม)

ฉบับนี้ (ฉบับรวม) ห้ามทำซ้ำ (ฉบับรวม)

ฉบับนี้ (ฉบับรวม) ห้ามทำซ้ำ (ฉบับรวม)

ฉบับนี้ (ฉบับรวม) ห้ามทำซ้ำ (ฉบับรวม)

Certificate Of Analysis
Special Gases Mixture

Customer Details

Name:
Thai Environmental Technic Ltd.Address:
1/6 Soi Ramkhamhaeng 145,
Saphansoong, Saphansoong, Bangkok
10240

Customer Tag No.:

Certificate Details

Number:	2422/21	Date of Issue:	15-Jun-2021	Expiry date:	15-Jun-2023
Material Details					
Production Order:	90166058	Material Code:	472400-SK-34	Cylinder No.:	A008225K
Gas content:	5.23 M ³	Filling pressure:	137.0 bar	Valve:	CGA 660 SS
Cylinder Owner:	LINDE	Cylinder Material:	Spectra seal	Cylinder Size:	40 L

Laboratory Report

Analytical Result

Component	Normal Concentration	Analysis Result ¹	Uncertainty ²	Method of Analysis ³	Assay Date
Sulphur Dioxide	45.0 ppm	45.1 ppm	± 1% relative	(6) I-PB-352	7-Jun & 14-Jun-21
Nitric Oxide	45.0 ppm	47.5 ppm	± 1% relative	(6) I-PB-352	7-Jun & 14-Jun-21
Other NOx impurity in Nitrogen		Less than 2.3 ppm			
Carbon Monoxide	100 ppm	99.8 ppm	± 1% relative	(6) I-PB-352	7-Jun & 14-Jun-21

Reference Standard

Reference Standard	Cylinder number	Concentration	Expiry date:
Sulphur Dioxide	D619726	69.2 ± 0.2 ppm	2-Dec-2022
Nitric Oxide	D619726	71.4 ± 0.2 ppm	2-Dec-2022
Carbon Monoxide in Nitrogen	D619726	70.5 ± 0.2 ppm	2-Dec-2022

Reference Standard used in Assay

Reference Standard	Cylinder number	Concentration	Expiry date:
Sulphur Dioxide	D619726	69.2 ± 0.2 ppm	2-Dec-2022
Nitric Oxide	D619726	71.4 ± 0.2 ppm	2-Dec-2022
Carbon Monoxide in Nitrogen	D619726	70.5 ± 0.2 ppm	2-Dec-2022

Analytical Instruments used in Assay

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
FTIR Spectrometers Nicolet i550	FTIR-SO2	7-Jun-2021
FTIR Spectrometers Nicolet i550	FTIR-NO	7-May & 11-Jun-21
FTIR Spectrometers Nicolet i550	FTIR-CO	13-May & 14-Jun-21

Recommend usage condition

Minimum utilization: 5% of actual content or before expiry date whichever comes first.

Storage condition: Keep in well ventilation and secure area.

Comments

When reordering, please quote the material number

Notes:

1. All results expressed in this report are on mole/mole basis, unless otherwise specified. The Assay of this Standard has been performed in accordance with the EPA Traceability Protocol EPA-600/R-12/531 for the Assay and Certification of Gaseous Calibration Standards using procedure G1
2. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The measurement of this material is traceable to the SI through the reference gas standard which is traceable to Swiss National Standard of Mass or other recognised national metrology institutes.
3. (1) Gas Chromatography, (2) Paramagnetic Oxygen Analyzer, (3) Electrochemical Oxygen Analyzer, (4) Electrochemical Moisture Analyzer, (5) Total Hydrocarbon Analyzer, (6) Other - Specified

Sukanya Parinyasoonlorn

Signatory for and on behalf of Linde (Thailand) Co., Ltd.

Page 1 of 1

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ฉบับนี้ (ฉบับรวม) ห้ามทำซ้ำ (ฉบับรวม)

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THE LINDE GROUP

Linde

Certificate Of Analysis
Special Gases Mixture

Customer Details

Name: Thai Environmental Technic Ltd. Address: 1/6 Soi Ramkhamhaeng 145, Saphansoong, Saphansoong, Bangkok 10240 Customer Tag No.:

Certificate Details

Number: 3367/19 Date of Issue: 19-Sep-2019 Expiry date: 18-Sep-2023
Material Details
Production Order: 90155812 Material Code: 608400-SK-44 Cylinder No.: 118310
Gas content: 5.520 M³ Filling pressure: 145.0 bar Valve: CGA 660 SS
Cylinder Owner: LINDE Cylinder Material: Spectra seal Cylinder Size: 40.0 L

Laboratory Report

Analytical Result

Component	Normal Concentration	Analysis Result ¹	Uncertainty ²	Method of Analysis ³	Assay Date
Sulphur Dioxide In Nitrogen	40.0 ppm	41.4 ppm	± 1% relative	(6) I-PB-352	10-Sep & 19-Sep-19

Reference Standard used in Assay

Reference Standard	Cylinder number	Concentration	Expiry date
Sulphur Dioxide In Nitrogen	1138235G	25.50±0.25 ppm	7-Mar-2021

Analytical Instruments used in Assay

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
FTIR Spectrometers Nicolet iS50	FTIR-SO2	10-Sep-2019

Recommend usage condition

Minimum utilization: 5% of actual content or before expiry date whichever comes first.
Storage condition: Keep in well ventilation and secure area.

Comments

When reordering, please quote the material number

Note:

1. All results expressed in this report are on mole/mole basis, unless otherwise specified. The Assay of this Standard has been performed in accordance with the EPA Traceability Protocol EPA-600/R-12/531 for the Assay and Certification of Gaseous Calibration Standards using procedure G1.
2. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The measurement of this material is traceable to the SI through the reference gas standard which is traceable to Swiss National Standard of Mass or other recognised national metrology institutes.
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PB-002/T006

Iss. 14/2, 01 March 2018

บริษัท ลินด์ (ประเทศไทย) จำกัด (มหาชน)

Linde (Thailand) Public Company Limited

ชั้น 15 อาคารทาวเวอร์ เอ 2/3 หมู่ 14 ถนนรามคำแหง กม. 6.5 กรุงเทพฯ

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