

Annex G

## Laboratory Results for NMVOCs



## ***STACK GAS SAMPLING AND LABORATORY TESTING REPORT***

**Location: Organic Resources Recovery Centre Phase 1 (ORRC1)**

Sampling Period: 23<sup>rd</sup> July, 2019

Stack ID: CHP-3

ALS Work Order No: HK1931406B

Report Issue Date: 2<sup>nd</sup> August, 2019

**CLIENT:**

Oscar Bioenergy Joint Venture  
No. 5, Sham Fung Road,  
Siu Ho Wan, Lantau Island, NT,  
Hong Kong

**PREPARED BY:**

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Mr Poon Kwong Lun, Allen  
Manager

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Mr Fung Lim Chee, Richard  
Managing Director - Hong Kong

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd. Sampling information (Project name, Sample ID) is provided by client.



## 1. Summary of Work

The document is the final report for the stack gas sampling and testing event for Oscar Bioenergy Joint Venture at Siu Ho Wan, North Lantau Island.

Sampling Period: 23<sup>rd</sup> July, 2019  
Location of Stack: ORRC1, Siu Ho Wan  
No. of Stack: 1  
Name of Stack: CHP-3

### Methods for Stack Sampling and Analysis:

Parameter	Method Reference	Sampling Time (minutes)
Volatile Organic Compounds (VOCs) <sup>[1]</sup>	US EPA Method 18	60

Note:

[1]: Results expressed as carbon.

## 2. Sampling Summary

### Volatile Organic Compounds (VOCs)

Sample gas was collected by using a stainless steel sampling probe, from the centroid of the stack, into the Tedlar bag by passive sampling technique.

The measurement of total volatile organic compounds (VOCs) content in the sample was conducted in references to BS EN 12619. VOCs content was determined by measuring the methane and non-methane volatile organic compounds of the sample by Gas Chromatograph-Flame Ionisation Detector (GC-FID).

VOCs was reported as the sum of methane and non-methane organics content in the sample.

## 3. Sampling Period

Test Parameters	Sampling Period
Volatile Organic Compounds (VOCs)	23 Jul 2019 14:35 - 15.35



#### 4. Stack Parameter

Test Parameter	Sampling Volume (m <sup>3</sup> ) [1]	Carbon Dioxide Content (%) [1]	Oxygen Content (%) [1]	Moisture Content (%)
VOCs	-	11.3	7.8	14.9

Note:

[1] Expressed as at dry, 0 deg. C, 101.325 kilopascal pressure conditions.

#### 5. Result

Parameter	Unit	Reporting Limit	Result
Gaseous & vaporous organic substances (VOCs) [2]	mg/m <sup>3</sup> [1]	0.7	835
	kg/hr	0.002	2.387
Methane (CH <sub>4</sub> ) [2]	mg/m <sup>3</sup> [1]	0.5	828
	kg/hr	0.002	2.367
Non-Methane Organic Carbon (NMOC) [2]	mg/m <sup>3</sup> [1]	0.2	6.8
	kg/hr	0.001	0.020

Note:

[1] Results expressed as dry, at 0 degree Celsius temperature, 101.325 kilopascal pressure and 6% O<sub>2</sub> content conditions.

[2] Results expressed as carbon.



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### CERTIFICATE OF ANALYSIS

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CLIENT:	Oscar Bioenergy Joint Venture	WORK ORDER:	HK1933588
CONTACT:	Mr Edwin wong	LABORATORY:	Hong Kong
ADDRESS:	No. 5, Sham Fung Road, Siu Ho Wan, Lantau Island, NT, Hong Kong	SUB-BATCH:	0
PROJECT:	Stack Gas Sampling	DATE RECEIVED:	6 August, 2019
SITE:	ORRCT, Siu Ho Wan, Lantau Island	DATE OF ISSUE:	13 August, 2019
PO: ---		SAMPLE TYPE:	Air
		NO OF SAMPLES:	1

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### COMMENTS

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One (1) stack gas sample for CHP-3 was collected by ALS Technichem (HK) staff on 6<sup>th</sup> Aug, 2019 at the Organic Resources Recovery Centre (Phase 1) in Lantau Island.

Sampling information (Project name, Sample ID) is provided by client.

The sample(s) was analysed and reported on an as received basis.

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### NOTES

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This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

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Richard Fung  
Managing Director - Hong Kong

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## 1. Summary of Work

The document is the final report for the stack gas sampling and testing event for Oscar Bioenergy Joint Venture at Siu Ho Wan, North Lantau Island.

Sampling Period: 6<sup>th</sup> August, 2019  
Location of Stack: ORRC1, Siu Ho Wan  
No. of Stack: 1  
Name of Stack: CHP-3

### Methods for Stack Sampling and Analysis:

Parameter	Method Reference	Sampling Time (minutes)
Volatile Organic Compounds (VOCs) <sup>[1]</sup>	US EPA Method 18	60
Non-Methane Volatile Organic Compounds (NMCOCs) <sup>[1]</sup>	US EPA Method 18	60

Note:

[1]: Results expressed as carbon

## 2. Sampling Summary

### Volatile Organic Compounds (VOCs)

Sample gas was collected by using a stainless steel sampling probe, from the centroid of the stack, into the Tedlar bag by passive sampling technique.

The measurement of total volatile organic compounds (VOCs) content in the sample was conducted in references to BS EN 12619. VOCs content was determined by measuring the methane and non-methane volatile organic compounds of the sample by Gas Chromatograph-Flame Ionisation Detector (GC-FID).

VOCs was reported as the sum of methane and non-methane organics content in the sample.

## 3. Sampling Period

Test Parameters	Sampling Period
Volatile Organic Compounds (VOCs)	6 August 2019 11:35 – 12:35



#### 4. Result

Parameter	Unit	Reporting Limit	Result <sup>[1]</sup>
Gaseous & vaporous organic substances (VOCs) <sup>[2]</sup>	mg/m <sup>3</sup>	0.7	993
Methane (CH <sub>4</sub> ) <sup>[2]</sup>	mg/m <sup>3</sup>	0.5	986
Non-Methane Organic Carbon (NMOC) <sup>[2]</sup>	mg/m <sup>3</sup>	0.2	6.9

Note:

[1] Results expressed as dry, at 0 degree Celsius temperature, 101.325 kilopascal pressure and 6% O<sub>2</sub> content conditions.

[2] Results expressed as carbon.

[3] The average Oxygen content in the flue gas was **8.5%** during the sampling period.