Public Register Part Bs / Linx / Linx Emissions_2006



# EMISSIONS MONITORING SURVEY

Prepared for:

Linx Printing Technologies
Burrell Road
St Ives
Cambridgeshire
PE17 4LE

| | |
|---|---|
| Guidance Note | : PG6/44(04) |
| Job Number | : B 236 |
| Report Number | : R 001 |
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| ***Date:*** | 19/12/06 | ***Date:*** | 19/12/06 |

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# TABLE OF CONTENTS

# 1.0 EXECUTIVE SUMMARY

The monitoring at this installation was carried out in accordance with our quotation for compliance check monitoring of emissions to air, in accordance with the site permit, and the applicable Process Guidance Note, PG6/44(04).

The substances requested for monitoring and emissions points sampled are listed below:

| Substances Monitored | Emission Point Identification |
|---|---|
| | Main Vent - Ink Manufacture |
| Total Particulate Matter | ▪ * |
| Total VOC | ▪ * |

• Denotes the substances to be monitored.

* Denotes UKAS accreditation is held for monitoring that substance.

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## 1.1 Monitoring Results

| Emission Point Reference | Substance to be Monitored | Emission Limit Value | Periodic Monitoring Result | Uncertainty % | Units | Reference Conditions 273 K, 101.3 kPa | Date of Sampling | Start and End Times | Monitoring Method Reference | Accreditation for use of Method | Operating Status |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ink Manufacture - Main Extract | VOCs as Carbon | 150 | 78.3 | 10 | $mgC.m^{-3}$ | - | 21/11/06 | 07:50 - 16:06 | BS EN 13526 | UKAS / MCERTS | Normal |
| | Total Particulate | 20 | 0.22 | 20 | $mg.m^{-3}$ | - | 21/11/06 | 09:18 - 13:08 | BS EN 13284 | UKAS / MCERTS | |

### Notes

| | |
|---|---|
| Emission Limit Value | The emission limit value is that stated in the permit and will be expressed as a concentration or a mass emission. |
| Periodic Monitoring Result | The result given is expressed in the same terms and units as the emission limit value. |
| Uncertainty | The uncertainty associated with the quoted result is at the 95% confidence interval. |
| Reference Conditions | All results are expressed at 273 K and 101.3kPa. The oxygen and moisture corrections are stated. |
| Monitoring Method Reference | The method stated is in accordance with the Environment Agency Technical Guidance Note M2, or other method approved by the Environment Agency. |
| Accreditation for use of Method | The details indicate the accreditation for the use of the complete monitoring method, e.g. MCERTs, UKAS. If the method is not accredited "**NA**" is stated. |
| Operating Status | The details indicate the feedstock and the loading rate of the plant during monitoring. |
| NU | UKAS Accreditation held but UKAS cannot be claimed for the test as sampling did not comply with the Standard Reference Method (SRM). |

# 2.0 INTRODUCTION

Environmental Compliance Ltd (ECL) was commissioned by Linx Printing Technologies to undertake an emission monitoring survey at their Plant in St Ives, Cambridgeshire. This report presents the findings of the study.

Paul Calland (MCERTS Level 2, TE1 & TE4) and
Andy Barnes (MCERTS Level 2, TE1, TE3 & TE4),

undertook the emissions monitoring survey on 21st November 2006 at the request of Mr Martin Swindells

## 2.1 Objectives

The objective of the survey was to measure the concentrations of pollutants from the locations as detailed in the Executive Summary.

This survey meets the requirements of the site's Permit and Process Guidance Note PG6/44(04).

## 2.2 Scope of Work

There were no deviations from the scope of work as set out in the quotation, reference B001/Q001.

# 3.0 SAMPLING PROTOCOLS / METHODOLOGIES

## 3.1 Total Particulates Matter

Testing was carried out using an unheated particulate sampling train with in-stack filtration, in accordance with **BS EN 13284-1 & MID 1**, and In-house technical procedure **ECL/TPD/027.**

Isokinetic particulate sampling is achieved when the velocity of gas entering the sampling nozzle is exactly equal to the velocity of the approaching gas stream within the stack. A measured volume of sample gas is withdrawn from the stack isokinetically through a sampling nozzle and preweighed filter positioned in a housing, where the particles are collected on the filter. Following testing the inside surfaces of the front half of the filter housing and sample nozzle are rinsed to remove any particulate matter which, may have impacted on the surfaces during testing.

The filters and rinses are subsequently analysed to determine the amount of particulate matter captured. Analysis of filters & probe washes are performed by RPS who are UKAS accredited.

## 3.2 VOCs as Carbon

Testing was carried out using a Signal 3030PM FID and heated gas transport system with reference to the manufacturer's operation handbook, **BS EN 13526** and in-house technical procedure **ECL/TPD/032**. The analyser was calibrated pre and post the sample period using span gas and zero scrubbed air. Data was corrected by molecular weight to VOCs as total carbon. Data was recorded at 20 - second averages over the test period. The averaged data is presented graphically in the Figures Section.

# 4.0 RESULTS

The summary results of the survey are presented in section 1 of this report and are also in more detail in the Figures & Tables Section.

## 4.1 Emissions Limit Comparisons

The applicable emission limits for the site are 150 $mgC.m^{-3}$ for VOC and 20 $mg.m^{-3}$ for particulate matter.

All pollutants measured yielded average values below the authorised emission limit values.

## 4.2 Deviations From Sampling Methods

There were no sampling deviations from the standard sampling methods.

The sampling platform was not as stated in the Annexes of BS EN 13284.

All sampling equipment was left at ground level, and therefore the platform provided did not need to be $5m^2$ or support a 400kg point load. The platform and access provided was safe and fit for purpose.

# FIGURES & TABLES

## Detailed Particulate Sampling Spreadsheet & VOC Profiling Data

| | | | | |
|---|---|---|---|---|
| Plant Type | | Main Vent | Stack Area (m²) | 0.196 |
| Job Number | | B 236 | Meter Temp (C) | 10 |
| Client Name | | Linx Printing | Stack Diameter (cm) | 50 |
| Date | | 21-Nov-06 | Pitot Factor | 1.00 |
| | | | Pitot Factor (sqrt) | 1.00 |
| | | | Stack Pressure (Pa) | 15 |
| | | | Ambient Pressure (kPa) | 101.3 |
| MeterYd | 0.9376 | | Nozzle Size (mm) | 6 |

**PITOT SURVEY**

| Traverse Point | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | A9 | A10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Distance From Near Wall (D) | 0.065 | 0.150 | 0.250 | 0.350 | 0.450 | 0.550 | 0.650 | 0.750 | 0.850 | 0.935 |
| Pitot Reading (Pa) | *120* | *125* | *128* | *130* | *135* | *136* | *133* | *130* | *110* | *95* |
| Temperature (°C) | *13* | *13* | *13* | *13* | *13* | *13* | *13* | *13* | *13* | *13* |
| Duct Velocity (m/s) | 13.9 | 14.2 | 14.4 | 14.5 | 14.8 | 14.9 | 14.7 | 14.5 | 13.4 | 12.4 |
| Traverse Point | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 |
| Distance From Near Wall (D) | 0.065 | 0.150 | 0.250 | 0.350 | 0.450 | 0.550 | 0.650 | 0.750 | 0.850 | 0.935 |
| Pitot Reading (Pa) | *122* | *125* | *130* | *133* | *138* | *140* | *133* | *132* | *110* | *100* |
| Temperature (°C) | *13* | *13* | *13* | *13* | *13* | *13* | *13* | *13* | *13* | *13* |
| Duct Velocity (m/s) | 14.1 | 14.2 | 14.5 | 14.7 | 15.0 | 15.1 | 14.7 | 14.6 | 13.4 | 12.7 |

| | |
|---|---|
| **Absolute Mean Duct Velocity (m/s)** | **14.2** |
| **Absolute Flow Rate (m³/hr)** | **10056** |
| **Normalised Flow Rate (Nm³/hr)** | **9601** |

**Sampling Run 1** **Time: 09:18 - 10:30**

| Sampling Point | A2 | A9 | B2 | B9 |
|---|---|---|---|---|
| Sampling Rate (l/min) | *24.1* | *22.2* | *24.1* | *22.2* |
| Sampling Duration (mins) | *18* | *18* | *18* | *18* |
| Filter No | *20584* | | | |
| Volume Sampled (m³) | Meter | 1.620 | Expected | 1.667 |

Corrected Volume = 1.52 Nm³ (at NTP)

| | |
|---|---|
| Initial Meter Reading (l) | 49970 |
| Final Meter Reading (l) | 51590 |
| Volume Sampled (l) | 1620 |
| Isokineticity Error (%) | -2.8 |
| *(Maximum Allowed Error = -5 to +15%)* | |

**Sampling Run 2** **Time: 11:40 - 13:08**

| Sampling Point | A2 | A9 | B2 | B9 |
|---|---|---|---|---|
| Sampling Rate (l/min) | *24.1* | *22.2* | *24.1* | *22.2* |
| Sampling Duration (mins) | *22* | *22* | *22* | *22* |
| Filter No | *20585* | | | |
| Volume Sampled (m³) | Meter | 2.125 | Expected | 2.037 |

Corrected Volume = 1.99 Nm³ (at NTP)

| | |
|---|---|
| Initial Meter Reading (l) | 51595 |
| Final Meter Reading (l) | 53720 |
| Volume Sampled (l) | 2125 |
| Isokineticity Error (%) | 4.3 |
| *(Maximum Allowed Error = -5 to +15%)* | |

| | | **FILTER WEIGHTS** | | **WASHINGS WEIGHTS** | | |
|---|---|---|---|---|---|---|
| Test Number | Filter No | Pre-Weight (mg) | Post-Weight (mg) | Pre-Weight (mg) | Post-Weight (mg) | Gain (mg) |
| 1 | 20584 | 1.00 | 1.59 | 0.00 | 0.00 | 0.59 |
| 2 | 20585 | 1.00 | 1.10 | 0.00 | 0.00 | 0.10 |

**TEST RESULTS**

| | **Test 1** | **Test 2** | **Mean** |
|---|---|---|---|
| **Particulate Concentration(mg/Nm³)** | **0.39** | **0.05** | **0.22** |
| **Mass Emission (g/hr)** | **3.73** | **0.48** | **2.11** |

# TOC Monitoring:- Flame Ionisation Detector
# BS EN 12619: 1999 & BS EN 13526:2002

| | | | |
|---|---|---|---|
| Job Number | B 236 | Date of Testing | 21 November 2006 |
| Client | Linx Printing | Consultant | AB |
| Plant Identification | Main Extraction | | |
| Ambient temperature (°C) | 5 | FID Identification | Signal 3030 |
| Atmospheric Pressure (pa) | 101.3 | Detector Type | FID |
| Stack Pressure (pa) | 15 | Calibration Gas | Propane |
| Stack Temperature (°C) | 13 | Instrument Range | 1,000.0 |
| Logging Rate | 00:00:24 | Percent Carbon | 82% |
| Emission Limit | 150 | Measurement Range (ppm) | 10000 |

## Instrument Calibration

| | | Calibration Cylinder Identification | Actual (ppm) | Instrument (v) |
|---|---|---|---|---|
| Initial Calibration | Zero | Air | 0 | 0.00 |
| | Span | 500 ppm | 500 | 0.50 |
| Final Calibration | Zero | Air | 0 | 0.00 |
| | Span | 500 ppm | 500 | 0.50 |

| Sampling Time | 07:50 - 16:06 | VOC Reading (ppm) | VOC as Propane (mgC.m$^{-3}$) at NTP |
|---|---|---|---|
| Mean | | 48.7 | 78.3 |