



GeoEnginSeer

FREELANCE DILETTANTE GEOLOGIST

Report for:

3 Residential Properties at The Old Tannery
Building, 189 Spen Lane,
Gomersal, Cleckheaton
BD19 4PJ.

Continuous Gas Monitoring Data Interim Report

Date	4 th December 2024
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FREELANCE DILETTANTE GEOLOGIST

Report By		Checked/Approved By	
<i>Signature</i>		<i>Signature</i>	
<i>Name:</i> Paul Carter – Jones		<i>Name:</i> Ben Crowther	

Quarters Developments Ltd



This methodology is applied to both continuous monitoring and to borehole sampling so data is captured when the highest likelihood of worst-case barometric pressure scenario can be achieved. This is most useful in Window samplers or boreholes, but also applies to continuous monitoring.

GeoEnginSeer Ltd does not believe this is necessarily more accurate than recording of data on the ground, experience has demonstrated that the Meteorologisk Institutt App has proved to be the most accurate of apps used to predict barometric pressure drop, which is then checked with onsite measurements using the calibrated GFM436 or against data captured by the GasClams.

Background Scene Setting:

GeoEnginSeerLtd was contacted in October to check gas protection measures installed at the now occupier Old Tannery building. Previous standard air lance verification of the new builds adjacent had proved Quarters Developments Ltd to have been responsible and careful builders of gas protection in buildings. It emerged that the required gas protection measures in the Old Tannery building were not quite up to standard so a trace gas test was completed, and passed for the building. No injected carbon dioxide got into the building.

GeoEnginSeerLtd reviewed the available data made available and it transpired that the site had not been built with a verified gas resistant membrane as required for the development. The only membrane evidence noted is a Visqueen mixed polymer DPC. Which is not rated for blocking any gas at all. However, experience of and early review of the site investigation information encouraged GeoEnginSeerLtd to propose a set of continuous monitoring exercises in the built properties to check if indeed any gas was accessing them from the land, now very heavily worked over since 2020.

A rolling weekly program was proposed for 3.no GasClams to be deployed on the ground floor of the development. One in the kitchen area, One in a bathroom and one in a garage by the waste water pipes for the two upper Apartments. An extended family lives in all three parts of the development, so sweep surveys were easy to achieve.

Planning Reference:

Application Number: Kirklees Council 2024/92333
at location The Old Tannery, 224, Spen Lane, Gomersal, Cleckheaton, BD19 4PJ

The site was a former Leather working factory with a light and medium industrial history reaching back some 180 years, with former unknown uses as well. The site demonstrated significant unknowns and had been investigated in 2019. The site lies along Spen Lane in Cleckheaton flanked by the Cricket Ground and other residential developments uphill and down hill, locally coal mining activities have occurred as part of the South Pennine Coal fields

JNP Group:

Date: January 2021 Ref: B21783-JNP-XX-XX-RP-G-1001 P02

The Client kindly supplied details of previous reporting, which upon review appeared to demonstrate limited Carbon Dioxide (CO2) and other ground gasses, JNP Conclude that:

“A 2.0m thick void was encountered from 28.5m to 30.5mbgl in RB02, consistent with the anticipated depth of the Blocking Coal Seam.

There is at least 26.0m of competent solid rock between the ground surface and the workings which should prevent void migration (also creation of pathways)

There is also a sufficient thickness of rock between the Blocking Coal Seam and the deeper underlying Top Lousey Coal Seam to prevent voids migrating between the seams.

(Gas would then travel along a preferential pathway NOT under the property where there are no boreholes to create a preferential pathway)

It is not considered necessary to stabilise the ground using drilling and grouting techniques; the proposed development should not be affected by the underlying shallow workings.”

JNP also conclude that CS2 Gas protection should be in place. This did not happen in the Old Tannery Building, however this re-risk assessment of the site classifies just the Old Tannery Building as CS1



Ben Crowther B.Sc, M.Sc, PGCE, FGS, CIEH, PCA QT, SGPV
For and on behalf of **geoengineer.**
www.Geoengineer.co.uk 07817108921

Detailed References:

- Building Act and associated Regulations e.g. Approved Document C 2013;
- Planning Act and associated guidance;
- CDM regulations 2015;
- Health and Safety at Work Act 1974;
- Management of Health & Safety at Work Regulations 1999;
- The Confined Spaces Regulations 1997;
- DSEAR (Dangerous Substances and Explosive Atmospheres Regulations) 2002.
- CL:AIRE Technical Bulletin TB16 December 2017;
- CL:AIRE Technical Bulletin TB17 Ground Gas Monitoring and 'Worst-Case' Conditions, August 2018
- CL:AIRE Technical Bulletin TB18 Continuous Ground-Gas Monitoring and the Lines of evidence Approach to Risk Assessment, August 2018
- BR211 (2023 edition) Guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment projects).
- GGS (2024 White Paper) Atmospheric Pressure Whitepaper A Simplified Approach to Determine Worst Case Conditions

During the decommissioning event, which includes checking results to date, it was noted that some spikes of VOC's were detected by the ensuite bathroom located GasClam. When querying this and testing the liquids used during nail works, it is clear this is highly likely to be the source of the detection. The events were during the day and not completely in conjunction with additional heating and or barometric pressure drops.

Sweep Surveys:

Sweep surveys in general are conducted at low level (for dense gasses such as Carbon Dioxide) and high level (for lighter than air gas such as Methane) to attempt to ensure a complete coverage of the property, and also concentrating on small spaces such as sink cupboards, toilets, (where gasses could ingress through service pipe conduits or penetrations) and any electrical points which would access the cavity behind walls. In addition: trickle vents on the external facing of a property, and internally where the cavity wall could be accessed for the water stop tap.

Sweep survey recording is usually not documented heavily unless a peak is detected which continuous monitoring is being undertaken.

Conclusive Statement:

GeoEnginSeer Ltd would, at this time, recommend the submission of this report for consideration of the planning department and contaminated land lead at Kirklees Council. Discharge of any conditions relating to gas contamination is their final decision, but this is recommended by GeoEnginSeerLtd.

GeoEnginSeer Ltd believes that the extensive changes to the ground over the last 2 years since the original site investigation was conducted have led to a much lower capacity of any remaining made ground from generating gas and or from the surrounding geology in the ground which does contain elements of thin coal measures at depth.

Should you have any questions regarding the above, please do not hesitate to contact me.

Yours sincerely

|

Ben Crowther B.Sc, M.Sc, PGCE, FGS, CIEH, PCA-QT, SGPV
For and on behalf of GeoEnginSeer Ltd.

Commorragh, 1 Harrison Street, Cornholme, Todmorden, OL14 8LF : 07817108921
geoenginseer@gmail.com



CO2 CONTINUOUS GAS MONITORING DATA

Apartment no1 Kitchen Device:



Discussion:

This instrument, like the other two operated faultlessly during deployment. The data back up demonstrated no faults or shut down requirements during the study. The Very Rapid drop is clearly noted here on the 22nd of November, alongside, but at the upper end of which one sweep test was conducted. No adverse gasses were detected during this time. The Rapid drop, a second good gas exposure time is noted on December 1st, which also does not coincide with any adverse gas inundation to the property.

Oxygen levels remain stable during the study and the only high spikes are the calibration checks noted on the 21st of November 2024.

Apartment no1 Ensuite Bathroom:

Discussion:

Clearly this room is less insulated or a the daily shower regime is picked up by temperature fluctuations. The deep barometric pressure drop is noted again and the minor one on 27th of november plus the Rapid drop on December 1st. No adverse gasses detected, other than at the start of the study.

Calibration spikes are shown on November 21st 2024.

From visiting during the day on the 22nd it was noted that a mobile Nail operative was present in the property and the smell of acetone and other VOC's could be clearly detected by the surveyor. The PID picked up high levels of this and direct checking with the source.

Upon checking data a question was put about the second spike in VOC readings and the occupants confrimed the Nail Operative was active again on the 28th of November. This likely explains the VOC spikes, but more imoportantly the higher readings of VOC coincide with the baromoetric low meaning the VOC elements were likely to be more freely flowing around the building (conducted in a room adjacent the bathroom but along a short hall - (6 metres away) and are detected at floor level, which was the location of the GasClam.

Garage Deployment by soil pipe penetration



Discussion:

This 'Control' and final of the three devices demonstrates the same barometric drops, is by the North east corner of the development by the tanked wall and by a penetration. Temperature profiles show a much cooler external but wind shielded range of diurnal temperatures which essentially remain steady during the sampling period.

GFM436 and PS500 PORTABLE GAS ANALYSER EXAMPLE SWEEP DATA



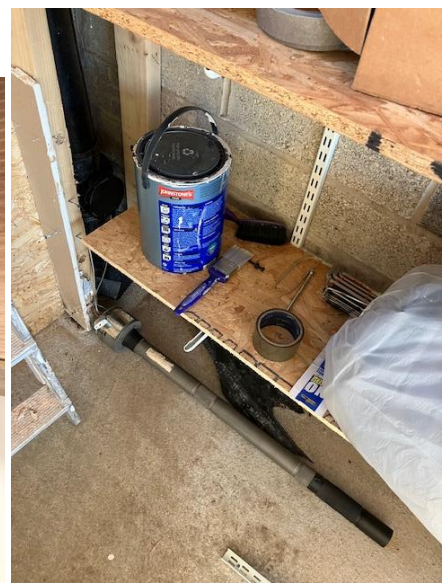
Location of Gas Clams: Property overview:



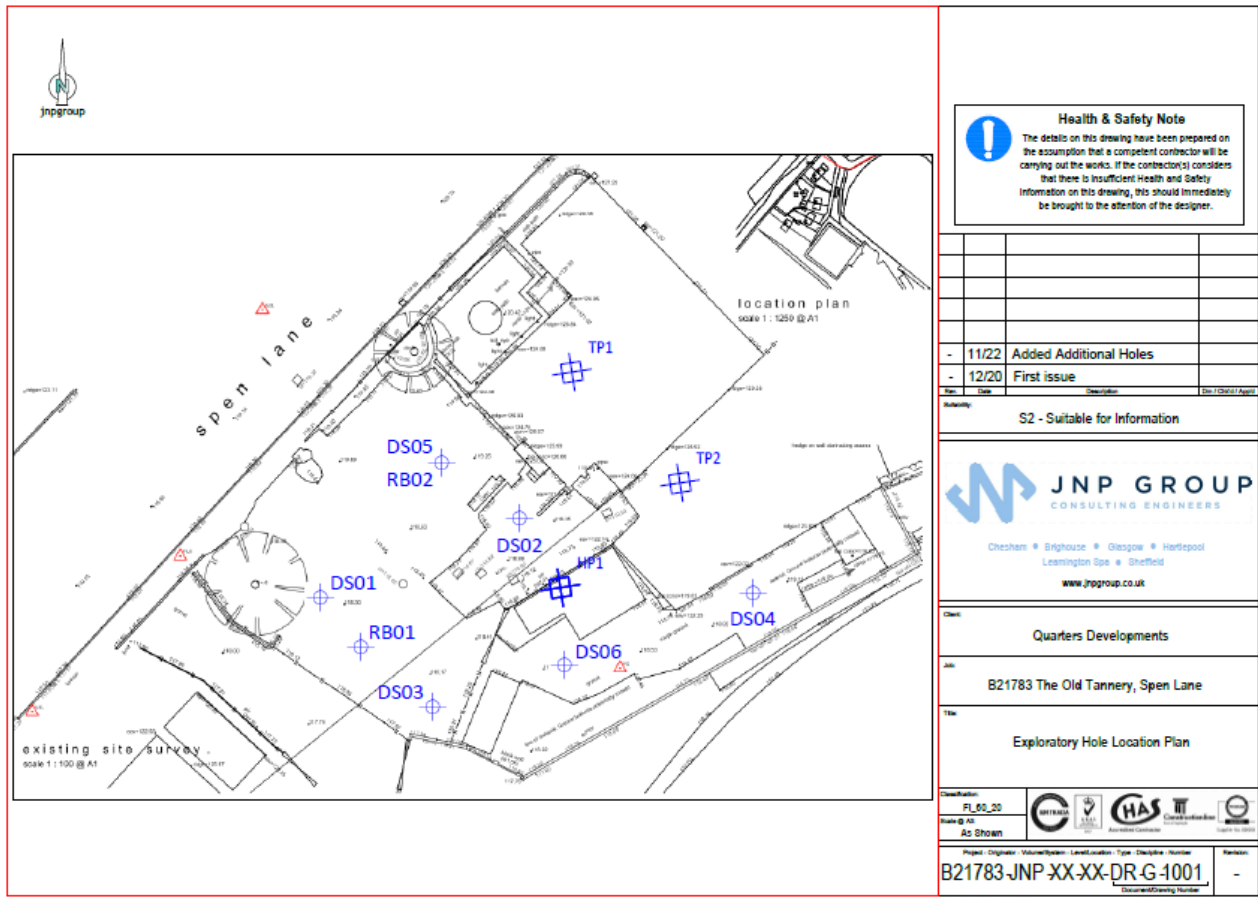
Kitchen Clam:

Bathroom Clam:

Garage Clam:



Site Plan:



PID testing upon deployment:



CONCLUSION OF CONTINUOUS MONITORING EXERCISE

GeoEnginSeer Ltd initially concluded this was a very low risk site and no gas protection would be required following a review of the JNP previous reporting. GeoEnginSeer Ltd now believes and concludes that this is highly likely to be the case given the two major barometric pressure drops experienced during the total of 10 days, 4 device deployment. The overall picture of this semi quantitative risk assessment is regarded by GeoEnginSeerLtd as successful.

GeoEnginSeer Ltd believes that this site at The Old Tannery Building itself has a Very Low Risk of any and all bulk gas contamination affecting this site. The previous conservative assessment of marginally into the Low Risk Site category of the British Standard for assessment should be overruled and this semi-quantitative Risk Assessment conclusion of a CS1 Very Low Risk site applied.

Should you have any questions regarding the above, please do not hesitate to contact me.

Yours sincerely

Ben Crowther B.Sc, M.Sc, PGCE, FGS, CIEH, PCA-QT, SGPV 004
For and on behalf of GeoEnginSeer Ltd.

Commorragh, 1 Harrison Street, (738 Burnley Road) Cornholme, Todmorden, OL14 8LF
www.geoenginseerltd.com **07817 108 921** GeoEnginSeer@gmail.com



This report is based on the information that has been made available to us from the client, contractor and architect regarding the site. The conclusions drawn in the report are considered correct although any subsequent additional information or actions may allow refinement of the conclusions. It should be noted that: The report has been prepared under the express instructions and solely for the use of the Client.

The findings of this report represent the professional opinion of experienced Ground Gas System Surveyors. GeoEnginSeer Ltd does not provide legal advice and the advice of lawyers may also be required.

All work carried out in preparing this report has utilised and is based upon understanding of current relevant UK standards and codes, technology, and legislation. (BS8485:2015+A1:2019 & CIRIA 735 & BR211).

Changes in this legislation and guidance may occur at any time in the future and cause any conclusions to become inappropriate or incorrect.

The report is limited to the boundaries identified by the Client on this site and confirmed within this document.

Intellectual rights to this document may be rescinded.

GFM Calibration Certificate:

TEST DATE AND CONDITIONS			
Date	17/05/2024		
Atmospheric Pressure	990	mB	
Ambient Temperature	22.0	°C	
Enviroconics Serial No.	5089		
GFM436 Final Inspection & Calibration Check Certificate			

Customer	
Customer	GeoEnginSeer Ltd
Certificate Number	125201
Order Number	330262

Serial Number	
Serial Number	13915
Software Version	G436-00.0029/0010

Instrument Checks	
Keyboard	✓
Pump Flow In	500 Accept > 200 cc/min
Check Set / Running	✓
Display Contrast	✓
Pump Flow @ -200mB	350 Accept > 200 cc/min
Labels Fitted	✓

Gas Checks						
Sensor	CH ₄		CO ₂		O ₂	
	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %
	60.2	60	39.6	40	20.9	20.9
	Accept ±3.0		Accept ±3.0		Accept ±0.5	
	5.0	5	5.1	5	6.0	6
	Accept ±0.3		Accept ±0.3		Accept ±0.3	
Zero Reading 100% N ₂	0.0	0	0.0	0	0.0	0
	Accept ±0.0		Accept ±0.0		Accept ±0.3	

Optional Gas Checks						
Applied Gas & Range	Concentration Tested (ppm)	Instrument Readings (ppm)				
Gas Type	Range (ppm)	Zero Reading	Instrument Gas Reading			
H ₂ S	5000	1500	0	Accept ±0.0	1500	Accept ±5.0%
CO	2000	1000	0	Accept ±0.0	1000	Accept ±5.0%
Hexane	2.0%	2.0%	0	Accept ±0.0	1.99	Accept ±3.0%

Cross Gas Effects						
Applied Gas (ppm)	Instrument Readings (ppm)					
Gas Type	Concentration	Toxic 1: H ₂ S	Toxic 2: CO	Toxic 3: HEX		
H ₂ S	1500	1500	0	0		
CO	1000	80	1000	0		
Hexane	2.0%	0	0	1.99		

Pressure Checks	
Atmospheric Pressure (AP) (mB)	
Current Atmospheric Pressure (mB)	Instrument Atmospheric Pressure Reading (mB)
AP Open Ports	989 Accept ±2.0
AP Port (Internal)	799 Accept ±5.0
	1200 Accept ±5.0

Flow Checks			
Barobale Flow		Differential Pressure	
Applied Reading (l/h)	Instrument Reading (l/h)	Applied Pressure (Pa)	Instrument Reading (Pa)
-30	-29.8	-276	-278
-2	-3.1	-13	-13
0	0.0	0	0
3	3.0	16	16
30	30.2	392	391
60	60.1	1244	1245
90	91.1	2490	2598

Temperature Checks	
Calibration Temperature	Instrument Temperature Reading °C
Applied Temperature °C	
-30	-30.0
0	0.0
30	30.0
60	60.0
100	100.0

Technician	
Jack Ryland	

Date Tested	
17/05/2024	

The instrument identified by the serial number stated above has been tested by Gas Data Ltd personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd Internal BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.

Gas Data Ltd is certified to BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018.

TEST DATE AND CONDITIONS		GAS DATA LTD	
Date	17.5.24	Unit D	
Atmospheric Pressure	990 mB	Backplace Business Park	
Ambient Temperature	22.0 °C	Fleethamstead Highway	
Barionics Serial No.	5089	Coventry	
		CV4 9XL	
		UK +44 (0) 24 7630 3311	

GFM436-1 OUTWARD INSPECTION & QUALITY CHECK SHEET			
INSTRUMENT DETAILS			
SO Number	Instrument Type	Instrument Serial Number + SW Version	Job Number(s)
552262	GFM436	17915 G436-29/10	125201

Calibration Technician Date 17.5.24
 Inspection Technician Date 20.5.24

Function Tests	INSTRUMENT CHECKS	Pass (P), Fail (F) or not applicable (NA)	INSTRUMENT PACKING LIST	Tick if included
	Down Case Fitted		Instrument	
	Keyboard Test (All Keys)		Leather Case	
	Backlight		Instrument Strap	
	Check Set / Running		AC Battery Charger (UK)	
	Compass Test		AC Battery Charger (EURO)	
	Pump Flow Test (In & Out)		AC Battery Charger (US)	
	Overall Leak Test (20mB)		AC Battery Charger (AUS)	
	Battery Charge Test		One Sample Pipe - (new size)	
	Service Data set to?		Flow Sample Pipe - (new size)	
	Data Logging Enabled?		Hard Carry Case	
	Verify CH4/LEL/Hexane/PID		Spares Pot	
	Verify CO2		Allen Key	
	Verify O2		Temperature Probe	
	Verify H2S		Vane Anemometer	
	Verify CO		USB Cable	
	Verify LEL		USB Memory stick	
	Verify 1st Option Gas		SM V5 Software	
	Verify Atmospheric pressure		Internal Filter Pack	
	Verify differential pressure		External Filter Pack	
	Verify flow		Field Guide	
	Verify temperature probe input		Extra Items:	
	Verify vane anemometer input		Sample tube	
	Jobcard(s) completed and signed			
	Jobcard(s) booked off database			
	Calibration certificate completed			
	Complete & print OI record			
	No. of Calibration label fitted			
	MCERTS label displayed			
	Warranty label fitted			
	H2S Range from Sales Order			
	H2S Range from Cal Cert			
	Over-range value correct?			
	No. of High Range CH4/CO2			
	No. of Low Range CH4/CO2			
	No. of H2S			
	No. of CO			
	No. of Optional Cylinder			

GFM436-1 QA Check

PID Cert needs up dating and has been requested:



Life-saving solutions
 Instrument House
 91-92 Strivenham Hundred Business Park
 Watchfield
 Oxfordshire
 SN6 8TY
 Fax: 01793 784466
service@shawcity.co.uk

CUSTOMER: Geoenginseer Ltd

ITEMS RECEIVED	Received	RTN?
Instrument	YES	
Rubber Boot	YES	
Battery Charger		
Charging Cradle		
Operation Manual		
Quick Start Guide		
Spares Kit		
Comms Cable		
Probe FLEX		
Pel Case		
Tubing		
Regulator		
Software (Memory Stick)		
PLASTIC CASE		
silver case		

Comments:

Unit came in for service and cal
 Connected to tiger pc and customer settings retained
 Inlet seal, outlet seal, pte filter & stack replaced as per annual service
 Lamp cleaned as per biennial service
 Air flow test failure as pump not too hot (Block remains around 2000/min)
 Sensor cover, sensor basket, pneumatics, probe pipe, cone & pump all replaced to try and fix the issue but problem still persists.
 Needs to be returned to ION for further investigation and repair. Will need calibrating on return.
 Returned from ION, air flow issue resolved & front housing replaced
 Airflow 2250/min Block 50/min
 User and factory cal passed as per annual service

Recalibrated prior to dispatch

TECHNICIAN: Daniel Hunter

DATE: 20/03/2024

SERVICE / INSPECTION SHEET

JOB NUMBER: 79063
 INSTRUMENT: ProCheck Tiger LT W-2C
 SERIAL NUMBER: T-117557
 DATE RECEIVED: 21/02/2024
 FIRMWARE:

TESTS	Pre Service	Post Service
Charger Test		OK
Battery Charge Test		OK
Lamp Test	See notes	OK
Air Flow Test		2250/min
Block Flow Test		50/min
15min/min		8min/min
Moisture Sensitivity		0.0ppm
Switch Test		OK
Sensor Test		OK
Alarm Test		OK
PIC Comms Test		OK
Datalog Test		OK
Display Test		OK
Physical Inspection		OK
PAT Test		OK
Firmware Upgrade	N/A	
Software Upgrade (app)	N/A	
Function Test		26 hours 13 mins



Life-saving solutions

CERTIFICATE OF CALIBRATION

CALIBRATION CERTIFICATE NO: 79063

ISSUED BY: SHAWCITY LIMITED

DATE: 25/09/2024

APPROVED SIGNATORY:

NAME: Daniel Hunter

CUSTOMER: Geoenginseer Ltd

INSTRUMENT: Procheck Tiger LT W-2C

SERIAL NUMBER: T-117557

CALIBRATION METHOD: CM03

AMBIENT CONDITIONS: 20°C ± 2°C and 50% (± 20%) RH

Prior to calibration the instrument was allowed to stabilise in the laboratory for at least 30 minutes.

The instrument was calibrated by exposing the sensor to known values of gas concentrations.

All gases were sampled through the complete probe and in line filter, where applicable.

The reference value is that generated by the certified source and the indicated value is that measured by the instrument.

CALIBRATION RESULTS

Gas	LOT No	REF. VALUE	INDICATED VALUE
Isobutylene	W0464283-3	100 ppm	100 ppm
Isobutylene	W0372412-1	5000 ppm	5000 ppm

COMMENTS:

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2.

This provides a level of confidence of uncertainty of approximately 95%.

The uncertainty of measurement is ±2 %.

The results indicate that the instrument conforms to the applicable parts of the published specification.

HEALTH & SAFETY, OCCUPATIONAL HYGIENE AND ENVIRONMENTAL MONITORING INSTRUMENTS

Tel: 01793 780922
www.shawcity.co.ukInstrument House, 91-92 Strivenham Hundred Business Park
 Watchfield, Oxfordshire, SN6 8TY

Gas Clam Claibration Certificates:


CERTIFICATE OF CALIBRATION
 GasClam

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CALIBRATION CERTIFICATE NO: 81483

ISSUED BY: SHAWCITY LIMITED
DATE: 21/11/2024

APPROVED SIGNATORY:

NAME: Joe Herbert

CUSTOMER: Shawcity Hire
INSTRUMENT: GasClam
SERIAL NUMBER: 000419/06/13CALIBRATION METHOD: CM14
AMBIENT CONDITIONS: 20°C ± 2°C and 50% (± 20%) RH

Prior to calibration the instrument was allowed to stabilise in the laboratory for at least 30 minutes.
The instrument was calibrated by exposing the sensor to known values of gas concentrations.
All gases were sampled through the complete probe and in line filter, where applicable.
The reference values are those generated by the certified source and the indicated values are those measured by the instrument.

CALIBRATION RESULTS

GAS/SOURCE	LOT No	REF. VALUE	INDICATED VALUE
Barometric Pressure	Digatron 2025P	984mbar/1445mbar	984mbar/1445mbar
Borehole Pressure	Digatron 2025P	984mbar/1457mbar	984mbar/1457mbar
Oxygen	Ambient Air	20.9% O ₂	20.9% O ₂
Oxygen	W-0452803-1	18% O ₂	18% O ₂
Methane	W-0448247-4	50.00%	50.00%
Carbon Dioxide	W-0448247-4	40.00%	40.00%
Hydrogen Sulphide	W-0391378-2	50 ppm	50 ppm
Carbon Monoxide	W-0444136-4	50 ppm	50 ppm
Isobutylene	W-0463340-2	100 ppm	100 ppm

COMMENTS:

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$.
This provides a level of confidence of uncertainty of approximately 95%.
The uncertainty of measurement is ±2%.
The results indicate that the instrument conforms to the applicable parts of the published specification.

HEALTH & SAFETY, OCCUPATIONAL HYGIENE AND ENVIRONMENTAL MONITORING INSTRUMENTS

Tel: 01793 780622
www.shawcity.co.ukInstrument House, 91-92 Shilvenham Hundred
Business ParkFax: 01793 784466
service@shawcity.co.uk

Life-saving solutions

HIRE INSTRUMENT CHECKLIST
GASCLAM LEAK DETECTOR
Serial No: 0004099/13
Customer Name: Geoenginseer Ltd
Hire Duration: 4 weeksSales Order No: 107054
Dispatch Date: 21.11.24
Admin: Katie

Instrument Initial testing

Test	Checked
Charging and battery	ok
Gas response (bump test)	ok
Air flow test	ok
Date and colour	ok
Pressure	ok
Temperature	ok
Physical and display	ok
PAT Test	ok

Service Check Date: 21/11/2024

Engineer Name: Joe Herbert

Engineer Signature:

Calibration Certificate No: 80964

Calibration Expiry Date: 02/10/2025

Software Version:

Instrument configuration

Model	Required
Methane	
CO ₂	
Oxygen	
Temperature	
Borehole Pressure	
Atmospheric**	
PID	
COHDS	
Rechargeable	

Special requirements for this hire.

Dispatch Checklist

Item	Test	Returned	Item	Test	Returned
GasClam	ok		Alert tags	ok	
Battery charger and dock	ok		Box opener	ok	
Spares Battery	ok		Snorkel	ok	
Remote start box	ok		Moisture stripping filter	ok	
Interface cable (to RS232)	ok		*Water trap filter	ok	
RS232 to USB cable (PCI)	ok		Snorkel instructions	ok	
USB (Software manual/Driver)	ok		Filter changing wheel	ok	
Calibration certificate	ok		GasClam borehole instructions	ok	
Pail case	ok		Vent barb blank plate & screw	ok	

Dispatch signature: Date: 21/11/2024

Return after hire: (To be completed by Shawcity personnel on receipt of hire unit)

Have all items been returned after hire?

Checked by:

Date:

Health and Safety, Occupational Hygiene and Environmental Monitoring Solutions		
Telephone: 01793 780622	Instrument House, 91-92 Shilvenham Hundred Business Park	
www.shawcity.co.uk	Westfield, Colchester, Essex CO1 1TY	hire@shawcity.co.uk


CERTIFICATE OF CALIBRATION
 GasClam

CALIBRATION CERTIFICATE NO: 81484

 ISSUED BY: SHAWCITY LIMITED
 DATE: 21/11/2024

APPROVED SIGNATORY:

NAME: Joe Herbert

 CUSTOMER: Shawcity Hire
 INSTRUMENT: GasClam
 SERIAL NUMBER: 000377/06/13

CALIBRATION METHOD: CM14

AMBIENT CONDITIONS: 20°C ± 2°C and 50% (± 20%) RH

Prior to calibration the instrument was allowed to stabilise in the laboratory for at least 30 minutes.
 The instrument was calibrated by exposing the sensor to known values of gas concentrations.
 All gases were sampled through the complete probe and in line filter, where applicable.
 The reference values are those generated by the certified source and the indicated values are those measured by the instrument.

CALIBRATION RESULTS

GAS/SOURCE	LOT No	REF. VALUE	INDICATED VALUE
Barometric Pressure	Digibron 2025P	984mbar/1446mbar	984mbar/1446mbar
Borehole Pressure	Digibron 2025P	984mbar/1451mbar	984mbar/1451mbar
Oxygen	Ambient Air	20.9% O ₂	20.9% O ₂
Oxygen	WO452803-1	18% O ₂	18% O ₂
Methane	WO449247-4	60.00%	60.00%
Carbon Dioxide	WO449247-4	40.00%	40.00%
Hydrogen Sulphide	WO391375-2	50 ppm	50 ppm
Carbon Monoxide	WO444136-4	50 ppm	50 ppm
Isobutylene	WO463340-2	100 ppm	100 ppm

COMMENTS:
 The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$.
 This provides a level of confidence of uncertainty of approximately 95%.
 The uncertainty of measurement is $\pm 2\%$.
 The results indicate that the instrument conforms to the applicable parts of the published specification.

HEALTH & SAFETY, OCCUPATIONAL HYGIENE AND ENVIRONMENTAL MONITORING INSTRUMENTS

 Tel: 01793 780622
www.shawcity.co.uk

 Instrument House, 91-92 Shilvenham Hundred
 Business Park

 Fax: 01793 784466
service@shawcity.co.uk

HIRE INSTRUMENT CHECKLIST
GASCLAM LEAK DETECTOR

 Serial No: 0004180613
 Customer Name: GeoEnginSeer Ltd
 Hire Duration: 4 weeks

 Sales Order No: 107054
 Dispatch Date: 21.11.24
 Admin: Katie

Instrument Initial testing

Test	Checked
Charging and battery	ok
Gas response (Bump test)	ok
Air flow test	ok
Date and console	ok
Pressure	ok
Temperature	ok
Physical and display	ok
PAI Test	ok

Service Check Date: 21/11/2024

Engineer Name: Joe Herbert

Engineer Signature:

Calibration Certificate No: 81483

Calibration Expiry Date: 21/11/2025

Software Version:

Instrument configuration

Model	Required
Methane	
CO ₂	
Oxygen	
Temperature	
Borehole Pressure	
Atmospheric $\pm$	
PID	
CONOS	
Rechargeable	

Special requirements for this hire
Dispatch Checklist

Item	Best	Returned	Item	Best	Returned
GasClam	ok		Allen keys	ok	
Battery charger and dock	ok		Box spanner	ok	
Spare battery	ok		Screwdriver	ok	
Remote start box	ok		Moisture stripping filter	ok	
Interface cable (to RS232)	ok		*Water trap filter	ok	
RS232 to USB cable (PC)	ok		Screwdriver instructions	ok	
USB	ok		Filter changing wheel	ok	
(Software manual/ethernet)	ok		GasClam borehole instructions	ok	
Calibration certificate	ok		Vent barb blank plate & screw	ok	
Full case	ok				

Dispatch signature: Date: 21/11/2024

Return after hire (To be completed by client personnel on receipt of hire unit)

Have all items been returned after hire?

Checked by:

Date:

Health and Safety, Occupational Hygiene and Environmental Monitoring Solutions		
Telephone: 01793 780622	Instrument House, 91-92 Shilvenham Hundred Business Park	
www.shawcity.co.uk	Weston, Gloucestershire, GL6 3TF	hire@shawcity.co.uk

Semi-Quantitative Report for Reassessment of Ground Gas Risk Assessment

The Old Tannery, Spen Lane


CERTIFICATE OF CALIBRATION
 GasClam

CALIBRATION CERTIFICATE NO:

 ISSUED BY: SHAWCITY LIMITED
 DATE: 02/10/2024

APPROVED SIGNATORY:

NAME: Joe Herbert

 CUSTOMER: Shawcity Hire
 INSTRUMENT: GasClam
 SERIAL NUMBER: 00042006/13

CALIBRATION METHOD: CM14

AMBIENT CONDITIONS: 20°C ± 2°C and 50% (± 20%) RH

Prior to calibration the instrument was allowed to stabilise in the laboratory for at least 30 minutes.

The instrument was calibrated by exposing the sensor to known values of gas concentrations.

All gases were sampled through the complete probe and in line filter, where applicable.

The reference values are those generated by the certified source and the indicated values are those measured by the instrument.

CALIBRATION RESULTS

GAS/SOURCE	LOT No.	REF. VALUE	INDICATED VALUE
Barometric Pressure	Digatron 2025P	993/1442mbar	993/1442mbar
Borehole Pressure	Digatron 2025P	993/1435mbar	993/1435mbar
Oxygen	Ambient Air	20.9% O ₂	20.9% O ₂
Methane	WO376160-1	60.00%	60.00%
Carbon Dioxide	WO376160-1	40.00%	40.00%
Hydrogen Sulphide	WO391375-2	50 ppm	50 ppm
Carbon Monoxide	WO422346-1	50 ppm	50 ppm
Isobutylene	WO464283-3	100 ppm	100 ppm

COMMENTS:

 The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$.

This provides a level of confidence of uncertainty of approximately 95%.

The uncertainty of measurement is ±2 %.

The results indicate that the instrument conforms to the applicable parts of the published specification.

HEALTH & SAFETY, OCCUPATIONAL HYGIENE AND ENVIRONMENTAL MONITORING INSTRUMENTS

 Tel: 01793 780522
www.shawcity.co.uk

 Instrument House, 91-92 Shurvenham Hundred
 Business Park

 Fax: 01793 784466
service@shawcity.co.uk

 Serial No: 00037706/13
 Customer Name: GeoEnginSeer Ltd
 Hire Duration: 4 weeks

HIRE INSTRUMENT CHECKLIST
GASCLAM LEAK DETECTOR

 Sales Order No: 107054
 Dispatch Date: 21.11.24
 Admin: Katie

Instrument initial testing

Test	Checked
Charging and battery	ok
Gas response (Bump test)	ok
Air flow test	ok
Date and time	ok
Pressure	ok
Temperature	ok
Physical and display	ok
FAT Test	ok

Service Check Date: 21/11/2024

Engineer Name: Joe Herbert

Engineer Signature:

Calibration Certificate No: 01404

Calibration Expiry Date: 21/11/2025

Software Version:

Instrument configuration

Model	Required
Methane	
CO ₂	
Oxygen	
Temperature	
Borehole Pressure	
Atmospheric P_{atm}	
PID	
COMMS	
Rechargeable	

Special requirements for this hire
Dispatch Checklist

Item	Sent	Returned
GasClam	ok	
Battery charger and dock	ok	
Spares Battery	ok	
Remote start box	ok	
Interface cable (to RS232)	ok	
RS232 to USB cable (PC)	ok	
USB	ok	
Software manual (drivers)	ok	
Calibration certificate	ok	
Pinl case	ok	

Item	Sent	Returned
Allen keys	ok	
Box spanner	ok	
Snorkel	ok	
Molature stripping filter	ok	
*Water trap filter	ok	
Snorkel instructions	ok	
Filter changing wheel	ok	
GasClam borehole instructions	ok	
Vent barb blank plate & screw	ok	

Dispatch signatory: Date: 21/11/2024

Return after hire

(To be completed by Shewcity personnel on receipt of hire and)

Have all items been returned after hire?

Checked by:

Date:

Health and Safety, Occupational Hygiene and Environmental Monitoring Solutions		
Telephone: 01793 780522	Instrument House, 91-92 Shurvenham Hundred Business Park	
www.shawcity.co.uk	Worcestershire, UK	hire@shawcity.co.uk

HydroGeological (Ground Gas) Specialist Ben Crowther:



GeoEnginSeer Ltd
Geological Services
Gas Protection Verification
Site Supervision
Ground Gas Sampling

Geological Services: Verification Specialist: Freelance Geologist

Ben Crowther trading as GeoEnginSeer Ltd; Independent Geological Services.

CSCS MAP: 06010225 exp 09/2022

Telephone: 07817 108921

Email: geoenginseer@gmail.com Website: www.GeoEnginSeerLtd.com

Qualifications: B.Sc, M.Sc, PGCE, FGS, CIEH, PCA QT (CSSW) SGVP (CL:AIRE)

NVQL3 Assessor of: Verification of Gas Protection Measures (NVQL4)

Confined Spaces L1, IPAF Harness Training, Cradle Safety.

PCA Qualified Technician in structural waterproofing. October 2020

Experience Summary:

15 years local authority regulation

14 years site investigation, site supervision, construction quality assurance and verification

Previous Secretary of, and founder member of the British Verification Council

Attendee of CIRIA Research Group 'Remedial Measures for Proprietary Gas Protection Measures'

Assessor for: NVQL4 Verification of Gas Protection Systems

CL:AIRE GPVS Assessor, SGVP certificate holder No.004

Climber, Fell Runner, Wild Swimmer, Ex Royal Marine Diver.

Recent CPD Summary:

GGs 2 Day A-Z of Ground Gas August 2017

CIRIA Verification Training Event October 2017

PCA Structural Waterproofing Conference 2018, 2019

CIRIA Technical Meeting for Retrospective Fitting of Gas Resistant Membranes 2019

Brownfield Summit Attendance 2018, 2019, 2020, 2021, 2022

DoWCoP CL:AIRE Training March 2021

PCA CSSW Qualified Technician Training 2021, working towards CSSW qualification.

Appeared on: Gassing On! with Neil Salvidge.

HS2 Align Training for Tunnel Shaft H&S Green Tunnels and Shaft Work: C1 and C2,

2022 Cradle safety and IPAF harness use trained: Operator Licence: OP/2157339

Signature:

