



# Enviraf

life with landfills and landfill gas

Dr Rafal Lewicki

# *life with landfill gas*

- Mechanical engineer:  
oil & gas equipment

- Drilling company
- Waste management company
- Manufacturing & service company
- Consulting



**1981**



- ***Enviraf Ltd:***

- *Established in 2013 in the UK*
- *90 projects*
- *UK, Ireland, Poland, Mexico, Greece, Russia*



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# *At your service...*

**LANDFILL GAS**

**BIOGAS**

**MINES GAS**

## **LANDFILL CLOSURE AND RESTORATION**

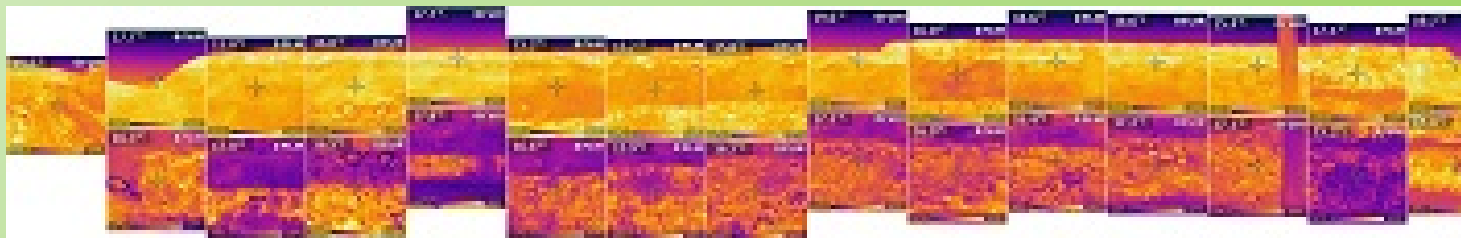
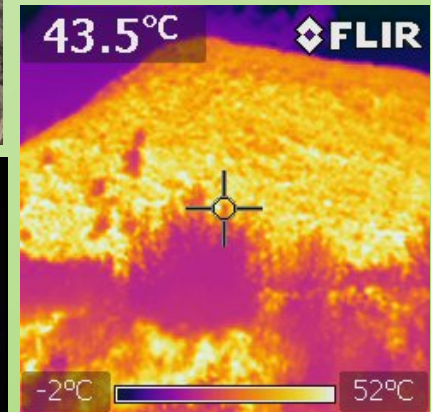
- Troubleshooting
- Concepts & design
- Innovative, practical, customer orientated and non-standard solutions
- Commissioning
- Consultations
- Compliance
- Training & education
- Control
- Monitoring
- Abatement
- Processing
- Energy recovery
- Site and systems assessment



# Troubleshooting

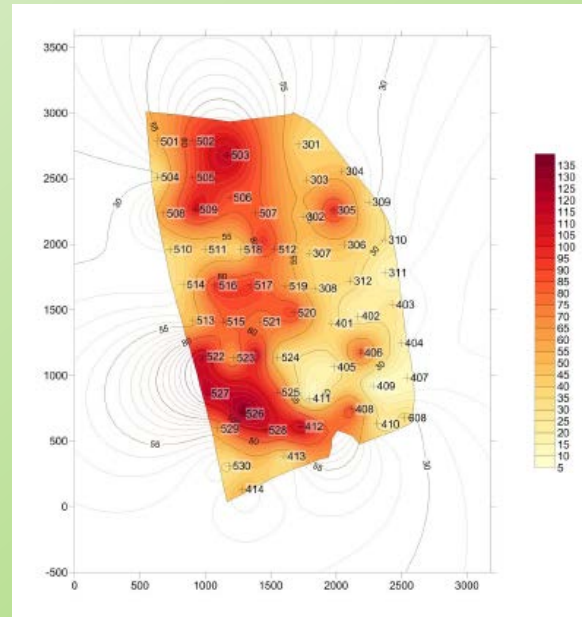
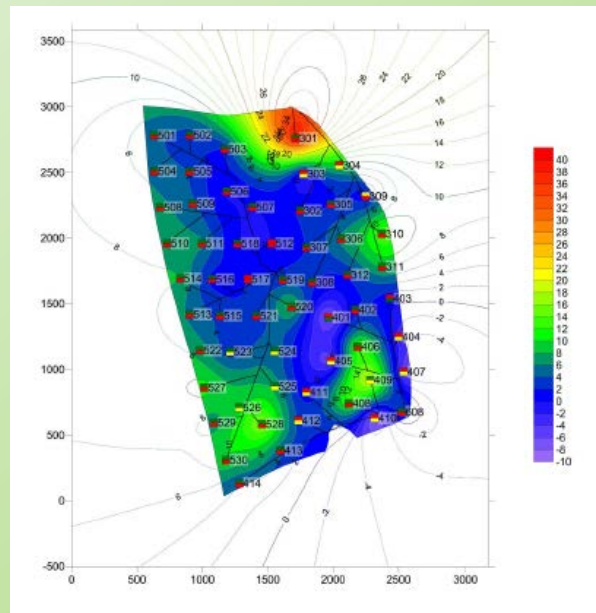


*emissions*  
*odours*  
*fires*

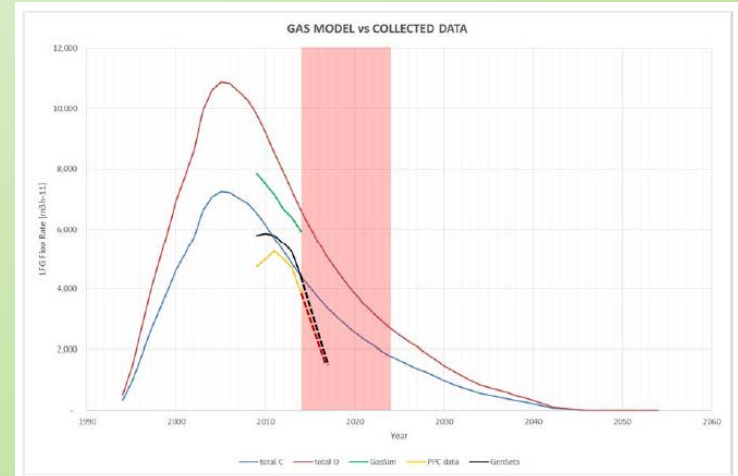
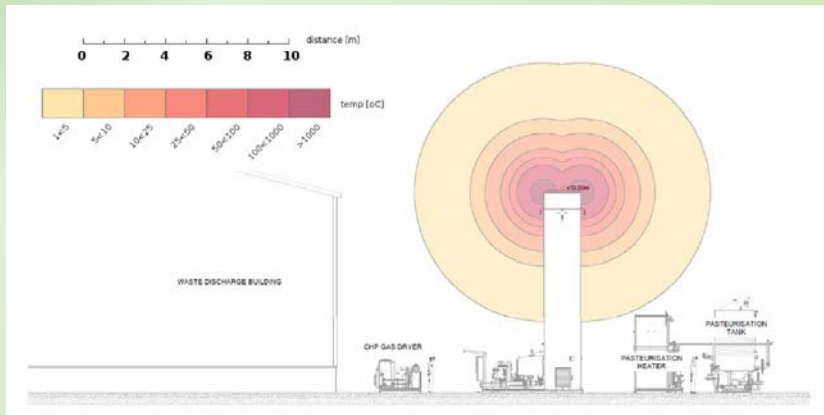


# Troubleshooting

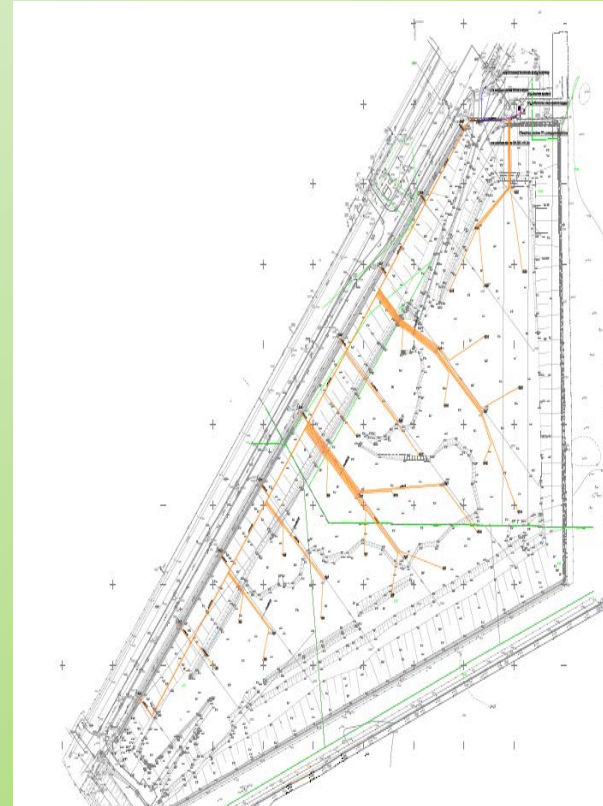
## Gas field problems



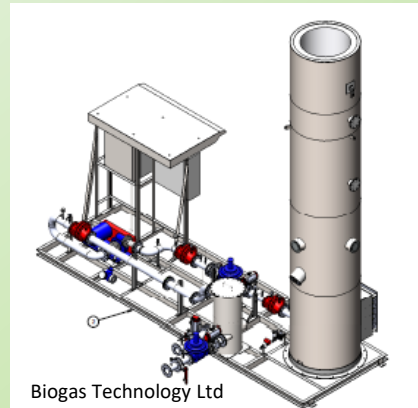
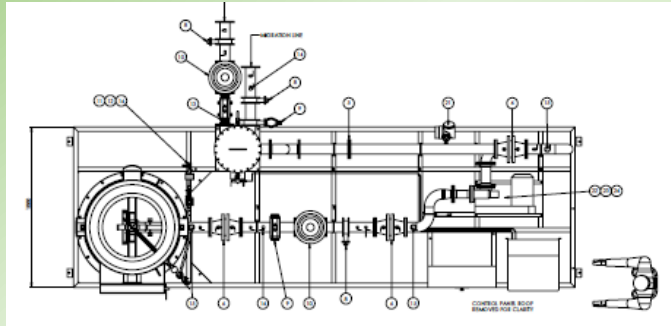
# Troubleshooting Specialist support



# *Concepts and projects*



# Design & research



# *Equipment design & manufacturing: landfill gas and biogas control*

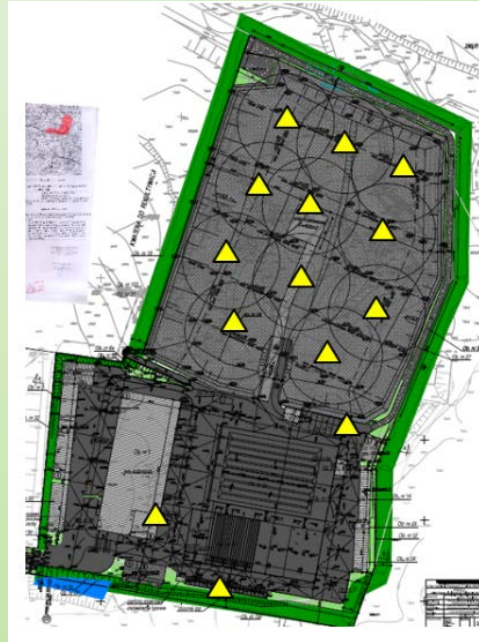


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# *Commissioning, gas field adjustment, monitoring, gas audits*



# *Explosion Protection Documents*



*HAZID, HAZAN, HAZOP*



**Biooxidation unit - Ireland**



**Site assessment - Poland**



**Biogas processing - Poland**



**Landfill gas power station - Poland**



**Site assessment – Mexico**



**Site assessment – Mexico**



**Site assessment – Greece**



# Training



## CIWM Landfill - Closure, Aftercare and Economics



The first [closed landfill course](#) run by Rafal Lewicki and Berwick Manley took place this week at the Marriott Hotel in Northampton. The two day course was well attended by local authorities and waste management companies who are responsible for historically closed landfill and those that are going through the closure process.



HOME NEWS & INSIGHT MEMBERSHIP KNOWLEDGE TRAINING DEVELOPMENT EVENTS NE

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## Practical Management and Control of Landfill Gas

### Practical Management and Control of Landfill Gas

Learn how to best manage and control landfill gas from landfill inc

#### Overview

The course follows a logical sequence of formally taught sessions, i tutor-supported exercises based on real landfill gas management and non-technical employees a sound level of theory together will study examples directly related to their work activities.



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Assessing, Capturing and Utilising  
Methane from Expired and Non-  
operational landfills



An EU LIFE+ project  
for 2012-2015

### ACUMEN project report - Managing landfill gas at closed and historic sites



The ACUMEN project was made possible with the support of the European Union LIFE+ Programme.

EC Project ref: LIFE11 ENV/UK/402

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### ACUMEN PROJECT - EMISSIONS FROM INSTALLATIONS APPLIED TO MITIGATE RESIDUAL METHANE AT CLOSED LANDFILL SITES

R. LEWICKI, P. MANCZARSKI,  
M. ASKIN, S. ROBINSON



Full report (EN)

[https://landss.soton.ac.uk/sites/landss.soton.ac.uk/files/attached\\_files/node-39/151203-acumen-project-report.pdf](https://landss.soton.ac.uk/sites/landss.soton.ac.uk/files/attached_files/node-39/151203-acumen-project-report.pdf)

Layman's report (EN/PL)

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/482218/ACUMEN Laymans report with translation.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/482218/ACUMEN_Laymans_report_with_translation.pdf)



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The Monitoring of Landfill Gas

Second Edition

Produced by the IWM Landfill Gas Monitoring Working Group for the Institute of Waste Management

WYTYCZNE W ZAKRESIE KONTROLI I MONITORINGU GAZU SKŁADOWISKOWEGO

MINISTERSTWO ŚRODOWISKA

Sfinansowano ze środków Narodowego Funduszu Ochrony Środowiska i Gospodarki Wodnej na zamówienie Ministra Środowiska

Listopad 2010

dr inż. Piotr Manczarski<sup>1</sup>  
dr inż. Rafał Lewicki<sup>2</sup>

Wytyczne dotyczące zamykania i rekultywacji składowisk odpadów komunalnych

Sfinansowano ze środków Narodowego Funduszu Ochrony Środowiska i Gospodarki Wodnej.

Warszawa, marzec 2012 r.

AREA CLASSIFICATION FOR LANDFILL GAS EXTRACTION, UTILISATION AND COMBUSTION

INDUSTRY CODE OF PRACTICE

ESA ICoP 2, edition 1: Nov. 2005

Page 1 of 39      ESA ICoP 2, edition 1: Nov. 2005

KLASYFIKACJA STREF ZAGROŻENIA WYBUCHEN W MIEJSCACH WYSTĘPOWANIA BIOGAZU SKŁADOWISKOWEGO

sozosfera.pl    ODPADY    OCHRONA PRZYRODY    EKOTURYSTYKA    OCHRONA POWIETRZA    PRAWO    ZIELONA ENERGIA    OKIEM

System odgazowania składowiska. Jak przygotować specyfikację? Cz. II

2 lata temu

W pierwszej części artykułu (czytaj) zostały przedstawione wybrane elementy systemu odgazowania składowiska, które opisano pod kątem opracowania specyfikacji

System odgazowania składowiska. Jak przygotować specyfikację? Cz. I

3 lata temu

Po decyzji o budowie systemu odgazowania składowiska następuje etap przygotowawczy, w efekcie którego opracowuje się specyfikację projektową, określającą...



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Assessing, Capturing and Utilising Methane  
from Expired and Non-operational Landfills



An EU LIFE+ project  
for 2012-2015

The ACUMEN project has been made possible with the support of European Union LIFE+ Programme (LIFE11/ENV/UK/402)

# RELEVANCE OF ACUMEN PROJECT FOR THE UK AND EUROPE

Dr Rafal Lewicki  
Enviraf Ltd



Norfolk County Council  
at your service



ggs



Department of Energy & Climate Change



ASIA CLEAN ENERGY FORUM 2016



Manila 6 - 10 June, 2016

## LANDFILL GAS UTILISATION

Session B – WtE Technology

dr Rafal Lewicki



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7 June 2016

XV Samorządowe Forum Ekologiczne  
28-29 maja 2014, Ryn

## Aspekty technologiczne wykorzystania biogazu z biogazowni rolniczych

dr inż. Rafał Lewicki



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**K35** USŁUGI  
PRZYJAZNE  
ŚRODOWISKU

- **TROUBLESHOOTING**

- Landfill gas & biogas installations
- Odours
- Landfill fires
- Compliance

- **DESIGN**

- Landfill gas collection systems
- Gas flares & burners
- Gas trains & processing
- Consultations

- **TRAINING & EDUCATION**

- CIWM - Practical Management of Landfill Gas (since 2001)
- CIWM - Landfills: Closure, Aftercare, Economics (since 2017)
- Bespoke training
- Publications (i.a. Sardinia, [www.sozosfera.pl](http://www.sozosfera.pl))



- **PROJECT SUPPORT**

- Project management
- Independent commissioning
- HAZID, HAZAN, HAZOP, EPD
- Participation in EU funded projects
- Specialist project support

- **OTHER ACTIVITIES**

- Scientific paper peer review
- Guidance and government publications
- Industrial & investment initiatives support



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**THANK YOU FOR YOUR ATTENTION**

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