

Process Safety Risk Management

Patrick Smalley – Tutis Energy
UKOPA Members' Meeting



“

Hello, I'm

Patrick Smalley

Compliance & Competence

Tutis Energy



About Tutis Energy

Tutis Energy Ltd was founded in 2014.

Approximately

98

1

countries

Delivered work across 11 countries and over 35 cities, including the UK, Ireland, Bahrain, Namibia, Saint Lucia, Malta, and multiple EU locations.

Sustainability

ISO 14001 certified for environmental management.

Reduced company fleet fuel consumption by 10% (2019–2024).

Over 90% of all documentation is managed digitally, reducing paper waste.

Promoting remote assessments and hybrid working to reduce travel emissions.

1+ years

of our clients return for additional support - reflecting our emphasis on long-term partnership and trust.

13+ cities

Based on normal feedback surveys, project reviews, and repeat engagement rates, we maintain a customer satisfaction rating of over

0

Gastech

5

We are regular contributors to global industry events and knowledge exchange. Presentation and work showcase at Gastech.

99+



Challenge:

Difficulty distinguishing between **operational risk** and **investment / delivery risk (Opex & Capex)**.

Impact:

Risk management effort is not aligned to the **highest-priority projects** – leading to delivery of programmes that don't effectively reduce operational risk, despite a high volume of known issues.



Key Issues:

- Assets operating outside **original design limits**
- Assets with **known defects**
- Lack of **consistency** in assessment and scoring across asset types and locations leading to spend allocation challenge
- Defects without consistent risk assessment across sites
- Difficulty prioritising investments
- Gap between defect identification and resolution
- Need for transparency and regulator confidence



What's the Solution?

ORAM

The ORAM Process Map



ORAM

Defined

✔ Operational Risk Assessment and Mitigations (ORAM)

✔ Allows investment to be spent in the right areas across the business

✔ Feeds into Strategic Asset Management Plan (SAMP)



ORAM Review Meetings

- ✓ **Purpose**
 - Assess operational asset issues raised by operations.
 - Evaluate risks to site performance, process safety, and system operation.
 - Identify and agree mitigations until issues are resolved.
- ✓ **Scope**
 - Applies to compressor stations and terminals.
 - Focuses only on operational asset issues.
 - Ensures risks are managed consistently across the network.
- ✓ **Objectives**
 - Review current register of asset issues.
 - Assess risk likelihood and consequence.
 - Assign risk ratings (High, Medium, Low).
 - Agree mitigations and confirm responsibility for actions.
 - Monitor, update, and report progress.
 - Ensure decisions and actions are recorded for assurance.
- ✓ **Membership / Attendees**
 - **Operations** – raise issues and provide site detail.
 - **Asset Health** – advise on prioritisation and investment impact.
 - **Asset Engineering / SMEs** – recommend and approve mitigations.
 - **Assurance** – check process compliance and consistency.
 - **Chair** – ensures meeting runs effectively and decisions are documented.
- ✓ **Outputs**
 - Updated ORAM register.
 - Risk scores agreed and validated.
 - Mitigations assigned with clear accountabilities.
 - Actions documented for follow-up.
- ✓ **Frequency**
 - Convened when new or significant issues arise.
 - Reviewed periodically (typically annually, or more frequently if required).

Key Personnel Inputs

Asset Health Manager
prioritisation & investment

Asset Engineering Manager
mitigations & SMEs

Area Operations Managers ORAM
application & mitigations

Assurance Manager
oversight and audit



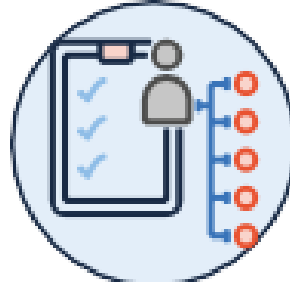
ORAM in Action



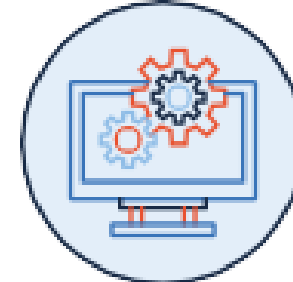
Generates Site
Risk Registers



Produces Visual
Dashboards



Produce Action
Lists and
Traceability



Feeds into
Investment
Strategy



Provides Assurance
and Operational
Clarity

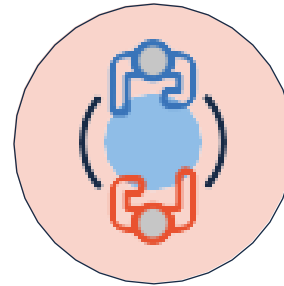
Benefits of ORAM



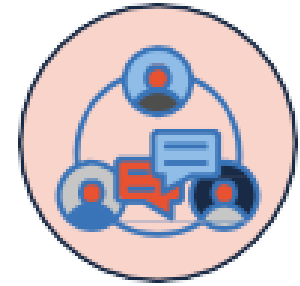
Consistency across sites
/ networks



Transparent, auditable
decision-making



Supports Budget &
Investment allocation



Build regulator
confidence

Lessons Learned



Cross-disciplinary engagement is essential



ORAM provides a common language for risk



Ensures money spent focused on highest risks



How

PERICULUM

SAFETY MANAGEMENT

PAGES

Dashboard

Risks

Actions

Meetings

Processes

ADMIN

Users

Roles

Risk Attributes

Gas Tech Ltd.

Help Tour

Risk Information

ID 167 / Area 2F

Modified

Tue, 07 Oct 2025 10:22:20 GMT

Primary asset

Pipe

Secondary asset

Below Ground Pipe and Coating

Category

Corrosion

Sub category

New Item

Hazard

Leakage from high-pressure gas pipelines leading to uncontrolled release, potential fire, and operational disruption in terminal area.

Defect Code

Comments

Record updated following guidance from terminal safety team.

Owner(s)

JAMES WILLIAMS

OLIVIA TAYLOR

Project Information

Is Project Started?

Project Code

Project Cost

Estimated Completion Date

Scoring

Estimated Event Cost

Control Option

Finance

SOS

Safety

Environment

Frequency

Control Measures

ID

DESCRIPTION

0

Regular pipeline inspections and integrity checks

1

Leak detection sensors installed and monitored

2

Emergency shutdown procedures tested regularly

3

Staff trained in hazard recognition and response

4

Preventive maintenance schedules strictly followed

Comments

Click the comment to edit

Record updated following guidance from terminal safety team.

Actions 1 - 4 of 4

ID

LAST UPDATED

DUE DATE

ASSIGNED TO

DESCRIPTION

COMMENTS

0167-0620

06/07/2024

17/02/2024

Albert Hughes

Insulation degradation on cryogenic transfer lines between tanks 3 and 5

Florence Walker
Replaced damaged insulation sections and installed improved moisture barriers with vapour detection

0167-0626

27/08/2024

18/08/2024

Sophie Green

Heat exchanger fouling causing reduced thermal efficiency in processing unit 4

Albert Roberts
Performed chemical cleaning to remove deposits and implemented improved feedback filtration

0167-0624

15/07/2024

17/08/2024

Elizabeth Patel

Emergency shutdown valve response time exceeding regulatory requirements

Frederick Wright
Overhauled valve actuator system, replaced solenoid and verified proper operation through multiple test cycles

0167-0626

25/04/2023

25/04/2023

Frederick Hill

Gas chromatograph calibration drift exceeding tolerance limits

Henry Hall
Performed full recalibration procedure using certified reference gases and replaced faulty analyser components

BACK

Record updated following guidance from terminal safety team.

Actions 1 - 4 of 4

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Risk History

CREATED DATE

FRANCE

SOS

SAFETY

ENVIRONMENT

FREQUENCY

RISK SCORE

CONTROL OPTION

COMMENTS

01/01/2025

4

5

4

2

4

20

Medium

Olivia Jones
Data refreshed to maintain accuracy in risk scoring.

01/01/2025

4

5

4

2

4

20

Medium

Emily Taylor
Updated to align with recent maintenance and monitoring findings.

24/06/2025

4

5

4

2

4

20

Medium

Thomas Evans
Record modified following internal safety review.

20/05/2025

4

5

4

2

4

20

Medium

Thomas Taylor
Record updated to support terminal risk mitigation strategy.

23/04/2025

4

5

4

2

4

20

Medium

James Jones
Record updated following guidance from terminal safety team.

18/03/2025

4

5

4

2

4

20

Medium

William Taylor
Record updated to support terminal risk mitigation strategy.

16/07/2024

4

5

4

2

4

20

Medium

Thomas Williams
Data refreshed to support ongoing risk management initiatives.

22/02/2024

4

5

4

2

4

20

Medium

James Evans
Information refreshed following latest inspection data.

25/08/2024

4

5

4

2

4

20

Medium

James Williams
Data refreshed to reflect terminal hazard analysis.

27/08/2024

4

5

4

2

4

20

Medium

William Taylor
Record updated to improve clarity and consistency of risk reporting.

16/07/2024

4

5

4

2

4

20

Medium

Emily Evans
Information revised to include recent control measure implementations.

16/06/2024

4

5

4

2

4

20

Medium

William Taylor
Record updated following guidance from terminal safety team.

30/05/2024

4

5

4

2

4

20

Medium

Olivia Williams
Data refreshed to maintain consistency in risk reporting.

14/03/2024

4

5

4

2

4

20

Medium

Charlotte Evans
Record updated to support terminal risk mitigation strategy.

14/03/2024

4

5

4

2

4

20

Medium

Olivia Evans
Information revised to include updated maintenance recommendations.

30/01/2024

4

5

4

2

4

20

Medium

James Williams
Record revised to ensure compliance with terminal safety standards.

18/07/2023

4

5

4

2

4

20

Medium

James Evans
Data refreshed to support proactive safety planning.

30/07/2023

4

5

4

2

4

20

Medium

William Smith
Data refreshed to maintain consistency in risk reporting.

10/08/2023

4

5

4

2

4

20

Medium

Olivia Jones
Record revised to ensure compliance with terminal safety standards.

28/08/2023

4

5

4

2

4

20

Medium

Olivia Evans
Data refreshed to maintain consistency in risk reporting.

20/06/2023

4

5

4

2

4

20

Medium

Emily Brown
Information updated to incorporate latest hazard assessment.

23/05/2023

4

5

4

2

4

20

Medium

Charlotte Brown
Record updated to support terminal risk mitigation strategy.

25/04/2023

4

5

4

2

4

20

Medium

Emily Williams
Record updated following review of current operational risks.

14/03/2023

4

5

4

2

4

20

Medium

Emily Evans
Information revised following scheduled site inspections.

08/03/2023

4

5

4

2

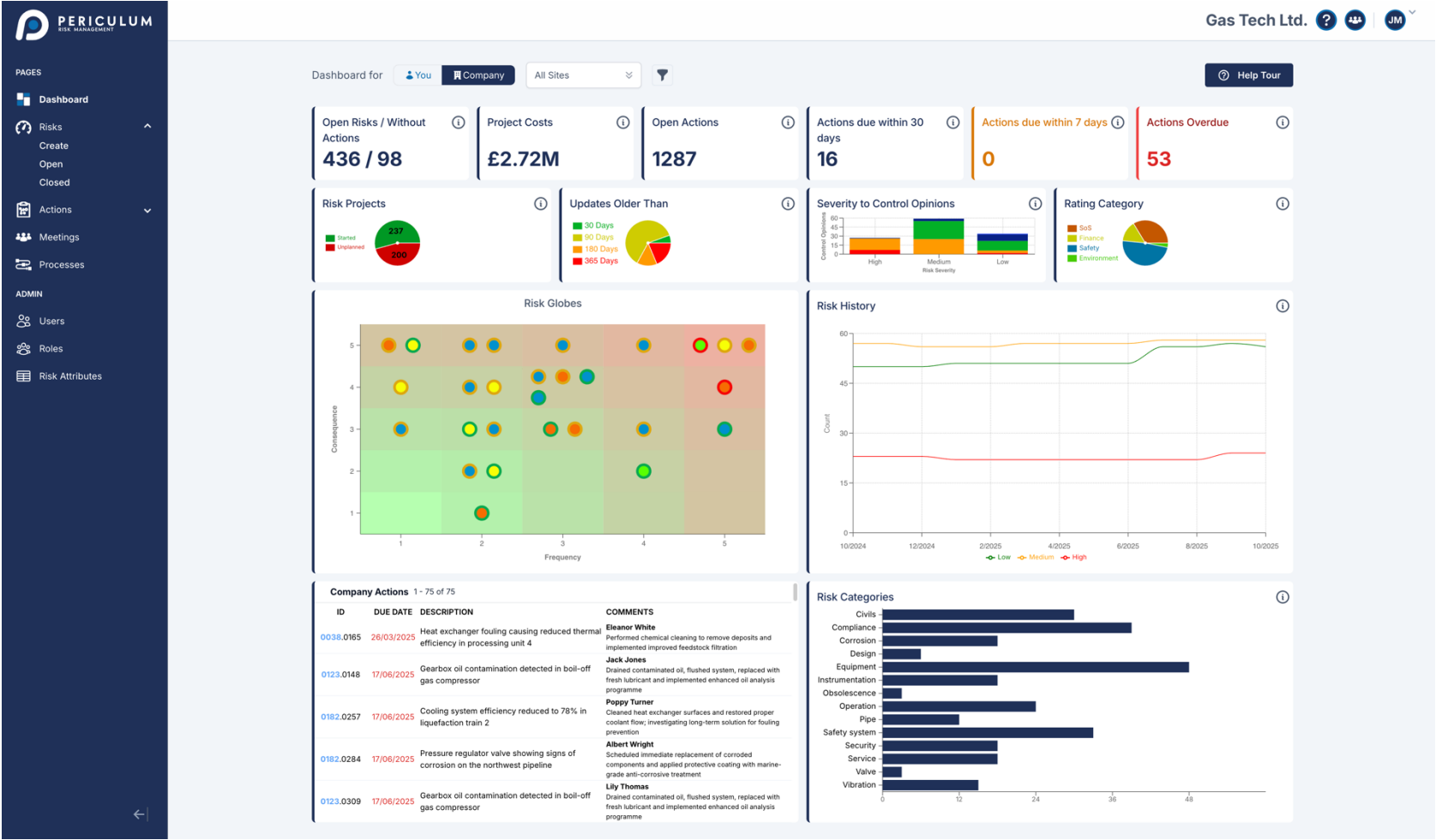
4

20

High

Olivia Taylor
Data refreshed to reflect terminal hazard analysis.

How



How

PAGES

Dashboard

Risks

Create

Open

Closed

Actions

Meetings

Processes

ADMIN

Users

Roles

Risk Attributes

←

All Sites

▼

Help Tour

Risks 1 - 95 of 95

OPEN

⚙️

▼

ID	PRIMARY ASSET	SECONDARY ASSET	CATEGORY	SUB CATEGORY	HAZARD	PROJECT COST / STARTED	CONTROL OPINION	Score ↓	ACTIONS
0167	Pipe	Below Ground Pipe and Coating	Corrosion	New Item	Building Integrity Issue from structural deterioration affecting safety of occupied control buildings	£40K	MEDIUM	20	0
0189	Pipe	Civil assets - pipe supports and pits	Corrosion	Pipework above ground	Pipeline Rupture causing sudden massive gas release and potential fire explosion scenario	£140K	MEDIUM	20	2
0150	Site	Station process control system	Obsolescence	Process control	SCADA Security Compromise allowing remote manipulation of supervisory control and data systems	£33K	MEDIUM	20	2
0154	Site	After Coolers	Corrosion	Structural steel	Inadequate Escape Routes preventing safe evacuation during fire or gas release emergencies	£27K	MEDIUM	20	2
0213	Pipe	After Coolers	Corrosion	Ball Valve Sealant Line below ground	Emergency Response Deficiency with inadequate preparedness for major accident scenario response	£65K	NOT SET	20	1
0142	Pipe	Process valves	Valve	Isolation valves	Shift Handover Inadequacy failing to transfer critical information about ongoing operations	£68K	MEDIUM	20	0
0060	Site	Process valves	Compliance	Isolation valves	Insider Threat from employees or contractors with malicious intent and system access	£16K	MEDIUM	20	2
0127	Compressor	Electrical - including standby generators	Obsolescence	Control system	Expansion Joint Rupture causing sudden loss of containment at high pressure connections	£105K	HIGH	16	1
0176	Pipe	Filters and Scrubbers (incl. Condensate Tanks)	Corrosion	Condensate tank	Management Review Failure with inadequate oversight of safety and operational performance trends	£142K	MEDIUM	16	2
0144	Site	Miscellaneous	Compliance	New Item	Mercury Contamination in gas stream posing environmental and equipment metallurgy degradation risk	£143K	MEDIUM	16	3
0059	Pipe	Below Ground Pipe and Coating	Corrosion	Pipework > 2 inches below ground	SCADA System Malfunction preventing remote monitoring of terminal operations and equipment	£20K	MEDIUM	15	0
0156	Pipe	Pig Trap	Corrosion	Pig trap	Groundwater Pollution from underground leaks migrating to aquifer and water supply	£142K	MEDIUM	15	0
0175	Pipe	Below Ground Pipe and Coating	Pipe	Pipework < 2 inches below ground	Inadequate Preservation of idle equipment allowing degradation during extended shutdown periods	£54K	MEDIUM	15	1
0170	Site	Electrical - including standby generators	Service	LV switchboards	Static Electricity Build-up creating ignition source risk in flammable atmosphere areas	£91K	HIGH	15	1
0184	Site	Below Ground Pipe and Coating	Pipe	All buried pipework	Emergency Response Deficiency with inadequate preparedness for major accident scenario response	£189K	MEDIUM	15	1
0202	Site	Pipework	Equipment	New Item	HVAC Fire Damper Failure allowing fire and smoke spread through ventilation ductwork	£155K	MEDIUM	15	3
0052	Site	Cathodic Protection	Equipment	Isolation valves	Chemical Spill of hazardous materials contaminating soil and groundwater around terminal	£82K	MEDIUM	15	1

Tutis Energy's Delivery and Current Role

Development Phase:

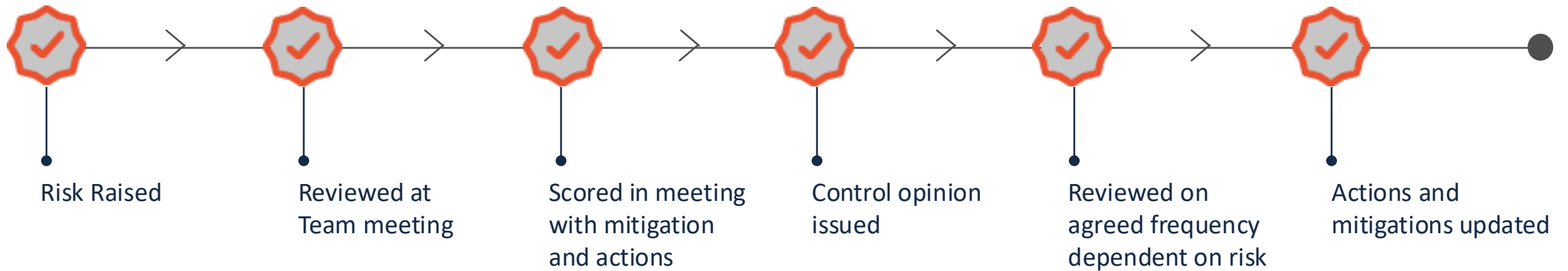
- Facilitated and chaired the initial ORAM meetings across National Gas network
- Led the drafting and development of the ORAM procedure
- Designed training packages and delivered roll-out sessions to operational teams
- Supported embedding of ORAM into daily operational and asset management processes
- Worked with National Gas to ensure alignment with Safety Case ie COMAH, PSR.

Ongoing Role Today:

- Provision of the ORAM software platform used across compressor stations and terminals
- Annual **Audit & Assurance reviews** at each location to ensure compliance and consistency
- Updates and refinements to the methodology as industry and regulatory expectations evolve



Process Diagram



ORAM embeds
process safety into
daily operations

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