



# Gashawk - Understanding the cost of gas detection systems in hazardous industries

Trolex eBook

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## INTRODUCTION

From petrochemicals to mining, automotive to construction, organisations are continually focused on improving efficiency and making effective use of financial resources. However, these industries are also highly regulated, placing significant and ostensibly inflexible budgetary demands. From individual gas monitoring devices to ventilation and dust extraction, the costs of protecting the workforce are not just associated with the initial up-front investment: indeed, in many cases it is the cost of the replaceable consumables, such as filters and gas cells, that dominate annual expenditure.

But are these costs justified? Traditionally gas detection companies, for example, have competed on the initial purchase cost, and recouped on overpriced replacement cells. With an 18-36 month cell replacement cycle, up to six cells per unit and often tens of thousands of units in the field, the implications of £250 per cell on the annual budget is huge.

This model is set to change: with identical gas detection cells now available for just £25, the cost of ownership over a three or six year period will plummet, as demonstrated in (Table A).

*In this eBook, we consider the new thinking enabled by total cost of ownership focus – from the investment in individual products, such as personal gas detection systems, to supporting a multi-environment management model.*

TABLE A



**1000**

gas detection  
units capable  
of monitoring

**4**

gases with a  
3 year cycle  
of change

	Industry costs	Trolex costs	Cost difference
Original equipment purchase cost	£400k to £600k	£400k to £600k	<b>0%</b>
Cost of replacement cells over a six year cycle	£2,000,000	£200,000	<b>1000%</b> mark-up
Total cost of ownership	£2,400,000	£600,000	<b>75%</b> saving



## LEGISLATIVE COMPLIANCE

Most organisations typically review specific aspects of the safety equipment portfolio on a rolling four to five year period. The focus is not only on ensuring any new regulations are met but also to maximise exposure to technology innovation and, of course, take advantage of any opportunities to drive down costs.

With a regulatory and safety-first approach, product comparison will require a robust assessment of quality and performance. But when the consumables such as gas detection cells are exactly the same product, often from exactly the same manufacturer, the comparison can only be made on price.

The implications from a safety perspective are subtle but worth considering. Individuals routinely handling gas detectors will know the recommended replacement time frames for any particular cell – and many units will raise an alert if the cell is due to be replaced – meaning few are likely to operate with a unit that is completely dysfunctional. Given the cost, however, there will always be a temptation to push the replacement cycle as far as possible – and cells, like all monitoring equipment, will become less sensitive and accurate over time.

*With a different price point, the decision to shorten the replacement cycle becomes far easier; providing greater consistency and confidence in the monitoring solution.*



## INNOVATIVE BATTERY TECHNOLOGY TO DELIVER PRODUCTIVITY GAINS

There are a number of other factors that can contribute to a product's overall cost of ownership – including the quality of the battery technology. Longer battery life means less frequent charging and hence a minimum requirement to interrupt work to charge – a key consideration when a charging station may be as far as half a mile away.

With up to seven days' battery life, even with infrared sensors installed, employees have no need to interrupt activity to recharge. This also ensures there is less risk of employees 'just waiting' until the end of shift to recharge and hence potentially exposing themselves to hazardous gas.

The use of inductive charging technology means less charge failures due to corroded contacts and less repairs and maintenance, and the ability to change batteries in hazardous or explosive environments, enables employees to carry on working safely without having to relocate across the site to change batteries.

*Considering the way safety equipment is used and the potential implications for productivity will affect the total cost of ownership calculation.*



## FUTURE PROOFING THE BUSINESS

Radically reducing the cost of consumables will release significant budget that Safety Managers could then use to explore new and innovative safeguarding solutions. The ability to confidently consider improvements in areas such as ventilation and personal monitoring enable organisations to go beyond basic compliance to current legislative requirements and proactively future proof the business.

Indeed, with the increasing sophistication of personal monitoring devices, including employee vital signs, there is an inexorable shift towards individually focused safety regulations. The ability to combined real-time information about an individual's health – from air quality to heart rate – will become increasingly key in safeguarding individuals, enabling Safety Managers to take immediate action in the event of an incident and provide organisations with accurate data to mitigate the risk of legal action in the future.

*Personal gas detection has been required for many years; but as regulators extend this model to include exposure to silica, for example, the ability to combine real-time hazard monitoring with personal biometrics will provide individual employee health profiles.*



## MULTI-ENVIRONMENT MONITORING

It is also important to consider the costs associated with plugging together multiple disparate environmental control systems. With many organisations now juggling fixed gas detection, wireless gas detection, as well as dust, temperature, vibration and airflow monitoring, the cost and complexity of environmental control continue to rise.

In an era increasingly dominated by the need for real-time information to support immediate remediation and deep, continuous insight into the quality of the environment, the requirement is for a complete and comprehensive environmental system. The challenge however, is in hooking together diverse systems to provide that essential overview.

A single environmental solution that provides a single source of information and management across the entire operation can not only transform cost of acquisition but also drive down the costs associated with managing multiple supplier relationships and creating different maintenance cycles.

In addition, with a simple, single overview of the complete environment, organisations have far better control, ability to understand evolving hazards and, critically, the information required to support the on-going investment strategy.

*A single source and integrated platform minimises the long term cost of ownership by streamlining both purchase and maintenance processes, as well as eradicating integration costs.*



## COMPLEX MULTI-GAS ENVIRONMENTS

While considering the total cost of ownership, rather than up front price alone, will offer value even if organisations are operating in environments with just one or two gases; for those companies in highly complex environments where workers are at risk of exposure to up to five or six different gases – requiring four high-cost gas detection cells – the total cost of ownership benefits delivered by a low cost consumable model is very significant.

For example, operatives in the gas utilities sector will need to measure oxygen, levels of flammable materials in the atmosphere, as well as carbon monoxide and hydrogen sulphide. Replacing high cost sensors through the equipment and operation's life-cycle can easily reach extreme levels and have a big impact on the financial viability of projects.

Similarity within mining operations, workers will need to monitor for multiple toxic and flammable gases like carbon monoxide, nitrogen dioxide, nitric oxide, oxygen and methane.

Each of these gases needs to be monitored in real-time and it is essential that gas cells are not allowed to degrade to the point where they might be inaccurate or slow to respond if mining companies are to maintain optimum health and safety levels.

*However with the exaggerated cost of consumables making regular replacement a high expenditure process, there may be many that are tempted to do just that.*

## CONCLUSION - TOTAL COST OF OWNERSHIP OVERVIEW

Cost and efficiency remain essential business drivers for organisations globally; yet for those operating in highly regulated industries it often appears there are few options to control expenditure. Short cuts are simply not an option when it comes to workforce safety and regulatory compliance.

However, by considering the total cost of ownership rather than just the up-front costs organisations can gain a new perspective on expenditure. Assessing the costs over a three to six year lifecycle rather than simply comparing a product's initial price will provide not only a chance to drive down overall budget but also a better insight into the quality and value of the investment.

- Comparing initial cost of purchase with the total cost of ownership across the entire lifecycle, including the cost of consumables such as gas detection cells, will reveal significant differences in end to end costs.
- It is also important to consider other operational costs – such as productivity lost to recharging devices. Can a company improve performance by, for example, leveraging a product with a longer battery life? Or one that can be recharged or changed within a hazardous environment, rather than being taken off site? Minimising employee downtime delivers a tangible return on investment.
- Regulations continue to evolve, with a growing shift towards tracking individual employee well-being. Is there an opportunity to future proof the business and achieve market leading safety standards by leveraging lower cost consumables to increase the replacement cycle?

*By applying this thinking to every aspect of the environment and comparing the total cost of plugging together multiple single environment monitoring solutions with a single, multi environment solution, organisations have a chance to achieve a very significant cost reduction whilst also driving up productivity and safety.*

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