

Buyers Often Miss The Largest Costs When Evaluating Gas Detectors

OBJECTIVE: Outline selection criteria that quickly and easily identifies total cost of ownership (TCO) during gas detector product evaluations.

The Demands of Industrial Safety

Risk managers and safety officers must regularly balance the need for safety with concerns about fiscal responsibility. Within this challenging global economic climate, it is especially important to operate at peak efficiency with minimal waste. Choosing instruments that meet performance standards for the lowest TCO can help make efficient operations a daily reality.

Unfortunately, selecting the right instruments for your particular application in the highly specialized world of industrial safety is neither straightforward nor simple. Evaluating gas detectors is no different.

Buyers face a tremendous variety of:

1. Product choices
2. Brands
3. Features and performance
4. Capital costs
5. Technologies
6. Maintenance schedules
7. Operating costs
8. Labor and workflow challenges

By following a simple and straightforward 2-step evaluation process, organizations can avoid purchase decisions that burden them with many thousands of dollars in unnecessary costs each year. But first, it is important to avoid the biggest mistake of all when evaluating gas detectors.

Detector Cost

From a financial perspective, the biggest mistake buyers make is that of overweighting the capital cost of a detector when comparing brands. In reality, the capital cost differential between brands is small, usually no more than a few hundred dollars, and insignificant when compared to that of other criteria.

Gas Detector Purchase Price Differential

1 instrument cost differential:	$\$795 - 595 = \200
7 instruments cost differential:	$\$200 \times 7 = \$1,400$
25 instruments cost differential:	$\$200 \times 25 = \$5,000$

But buyers have limited time for evaluating products, and the easiest data to evaluate is the capital purchase price. Vendors are fully aware of this buyer behavior, and have been capitalizing on it with marketing strategies similar to ink jet printers, in which the capital cost of the printer is subsidized by the cost of frequently replaced — and highly profitable — ink.

Over 4 years, sensors can cost more than the detector does itself.

Sensor Cost

If detectors are like ink jet printers, then sensors are like ink jet cartridges. When buying a printer, how often do people make their choice after evaluating the cost and longevity of print cartridges? Gas detectors are no different. *In fact, over five years, sensor replacement costs can easily dwarf the purchase cost of the detector itself!*

The capital cost of a detector is only part of the equation.

The key to evaluating sensor cost is to focus on *longevity*. A sensor that often has to be replaced costs more than a sensor that doesn't. There is tremendous variation among sensor brands with regard to longevity. Some sensors are warranted for 18 months, others for as long as 5 years. Since gas detectors have a typical replacement cycle of 7 years, sensor longevity has a very large impact on operating costs, and thus, on TCO.

Sensor Replacement Cost Comparison

The box below compares the replacement cost of a typical 4-gas detector with one methane and 3 electrochemical sensors (for O₂, CO, and H₂S) which last an average of 30 months, with the replacement cost of a detector whose electrochemical sensors last an average of 60 months:

7-Year Sensor Replacement Cost	
Average 30-month sensor life	
1 instrument (3 gases):	$\$180/\text{sensor} \times 3 \times 2 = \$1,080$
7 instruments:	$\$180/\text{sensor} \times 3 \times 2 \times 7 = \$7,560$
25 instruments:	$\$180/\text{sensor} \times 3 \times 2 \times 25 = \$27,000$
Average 60-month sensor life	
1 instrument (3 gases):	$\$180/\text{sensor} \times 3 \times 1 = \540
7 instruments:	$\$180/\text{sensor} \times 3 \times 1 \times 7 = \$3,780$
25 instruments:	$\$180/\text{sensor} \times 3 \times 1 \times 25 = \$13,500$

Inefficient Workflow Impacts Labor Costs

Workflow efficiency is more than a catchy buzzword. In today's global environment, it is a mandate. Inefficient labor means wasted money. Therefore, buyers should consider how gas detectors impact workflow.

The place to start is with the calibration schedule. The more a detector's sensors need to be calibrated, the more labor is diverted to calibration duties from value-added tasks. Sensor brands differ greatly regarding their recommended calibration frequencies. Some brands need to be calibrated every month, whereas others need to be calibrated every 6 months. At first, this may sound a bit trivial, but over the average life of a detector, the costs are significant.

Over 6 years, calibration labor can exceed the cost of the detector.

More Calibrations Means More Need For Labor

Track the time it typically takes to get the detector from the field and bring it to a tech. The tech then prepares the instrument, calibrates it, and documents the results – a process that takes 15 to 30 minutes. Now, multiply this process by the number of instruments in the field, and then multiply it again by the number of calibrations needed per instrument per year. Then, multiply it by the 7-year average life of a detector. With an average labor cost of \$25/hour, it looks like this:

7-Year Labor Cost	
12 calibrations per year per instrument	
1 instrument:	$\$150/\text{yr} \times 7 \text{ years} = \$1,050$
7 instruments:	$\$1,050 \times 7 = \$7,350$
25 instruments:	$\$1,050 \times 25 = \$26,250$
2 calibrations per year per instrument	
1 instrument:	$\$25/\text{yr} \times 7 \text{ years} = \175
7 instruments:	$\$175 \times 7 = \$1,225$
25 instruments:	$\$175 \times 25 = \$4,375$

Conclusion

By simply adding up the operating costs of sensor longevity and calibration schedule and subtracting the purchase cost differential, our "true" total cost comparison for 25 instruments would look like this:

7-Year Total Cost Comparison		
	Dräger	Brand X
Sensor Costs:	\$13,500	\$27,000
Calibration Costs:	\$4,375	\$26,250
Purchase Cost Difference:	+ \$3,875	
Total Cost Differential:	\$21,750	\$53,250

As this paper illustrates, a higher-quality, longer-lasting sensor can save thousands of dollars over those that have a shorter lifespan and a more frequent calibration schedule. By identifying sensor warranties and calibration schedules, safety officers and industrial hygienists can quickly and successfully provide an accurate gas detector cost comparison and ensure the efficiency of their gas detection operations.