

# Testifire: innovation and benefit profile

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Testifire is the new tester from detector testers. Equally suitable for single sensor, multi sensor and multi criteria detectors, Testifire tests old, new, simple and sophisticated fire detectors and presents benefits that are as numerous as its innovations. This article profiles both.

## Evolving challenges

Fire and life safety detection evolution has in recent years been characterised by increasingly sophisticated sensing seeking to defeat false alarms through discrimination between 'false' and 'real' stimuli. This has been accompanied by the advent of multi (or combined) sensors comprising independent (and/or inter-dependent) technologies. Meantime, carbon monoxide sensors now appear in single sensor and multi sensor detectors (in both life and fire safety applications).

Alongside the above we now 'enjoy' increasingly stringent chemical and environmental directives that impact aerosols and other traditional test media. Wide ranging health and safety regulations encompass transport, storage, pressurisation, chemicals and particulates and, in whatever field we find ourselves, there is a need for proof of procedures and a traceable, accountable documentary evidence trail, matched only by a constant and increasing pressure to reduce the time, cost and price of everything.

## Testing evolution

On the surface, the technology that has enabled detection advances might be seen as having passed by fire detector test tools. Aerosol smoke detector testers were first used in the 1960s (patented by Cerberus in 1963) and, aside from formulation and delivery enhancements led by No Climb (now detector testers), the basic technology of pressurised chemicals has remained unchanged as drawbacks have multiplied. Heat detector testing remained a major challenge until No Climb produced and patented the cordless heat detector tester in the 1990s and CO detector testing has relied on inefficient pressurised CO canisters. Meanwhile, there has been no link between the tester and the audit/field management software programmes which have grown in popularity/use over recent years.

## Innovation overview

Testifire is, however, hugely innovative and totally unique – the result of a 5 year research programme and more than 20 international patents. A radical contrast to previous products in this field Testifire delivers 'intelligent' CO, Smoke and/or Heat functional test stimuli from a single device. Significantly enhancing productivity Testifire permits previously 'un-testable' detectors to be properly



tested in line with standards and, through its RFID and Bluetooth based Communications Module, Testifire can provide the audit trail's missing link between test equipment and field reporting systems (with applicability to intelligent as well as conventional detectors).

## Innovation in stimuli generation solves old and new problems

Testifire generates its intelligent stimuli on demand, without the need for the pressurised storage required by aerosol canisters the world uses today. Smoke is generated from minute quantities of a specially-formulated fluid supplied in a replaceable capsule. In use the fluid is heated to a vapour and nucleation is then forced by a moving air stream with the result that 'real smoke' is simulated cleanly and safely. CO is generated similarly and equally safely on demand from the controlled heating of activated carbon tape (again supplied in a replaceable capsule). The heat both



processes require is generated through energising a miniature element by means of rechargeable, energy-efficient Nickel Metal Hydride cells. The heat can, of course, also be used solely for the purpose of testing heat detectors by means of a 'beam' of hot air specially targeted at the heat sensor. Finally, the fan that delivers these stimuli to the sensor can also blow them clear when they are no longer needed – enabling rapid detector re-reset with no repeat alarms.

Recent developments in detection technology have been challenging for field test equipment. High levels of data processing within fire panels and sophisticated sensors designed to defeat false alarms have been increasingly impervious to traditional test media such as aerosol canisters. In point of fact some detectors have become almost 'un-testable in the field' and this together with the need (but often inability and sometimes unwillingness) to test more than one sensor in a multi sensor detector is testing the faith, credibility and professionalism of the industry as much as detectors in some areas of the world. Testifire changes that completely:

- Optimised smoke characteristics, together, if necessary, with accompanying CO or heat stimuli enables field testing of complex detectors, some of which simply can not be properly tested any other way

- Enhanced heat beam and multiple heat settings render testable a wider range of heat detectors
- Individual or, if required, multiple simultaneous stimuli from the same device enable not only 'witness' tests for the first time on detectors with complex algorithms but also significant time and productivity enhancements for all types of fire detector

The changes have other advantages though – the design of Testifire is such that, unlike aerosol canisters, which can be applied too close to a detector possibly leaving a liquid residue on it, Testifire – by design – cannot be inadvertently misused in this way. For those that did not misuse aerosols there is the advantage of wider temperature operating ranges too.

#### **Innovation in physical design and size**

Testifire's 'traditional tester shape' belies some of the innovation behind Testifire's physical design and size. Over 70 custom-moulded components made from 9 different polymers and rubbers make up the product's complex electromechanical design. All of this is of course, of little interest to the user but, by creating Smoke, Heat and CO stimuli in a single test unit, the several test devices previously required to carry out routine detector maintenance have been reduced to just one. The result is:

- less to transport, carry and store
- less bulk and less weight for the user on site
- nothing to interchange on the end of a pole at height
- significant benefits to the user in time taken to test

#### **Innovation in environmental, hazard and health and safety solutions**

Aerosol canisters are under pressure in more ways than the obvious. Non flammable propellants have high GWP (Global Warming Potential) ratings and are becoming increasingly expensive. Cheaper, flammable propellants are under fire not just for their inherent issue of flammability but also for their high VOC (Volatile Organic Compound) ratings. Since all aerosol canisters are pressurised, health and safety regulations mean that transport and storage can be difficult and expensive. This is not just a problem for manufacturers and re-sellers. Costs are (and will increasingly be) passed on where possible through higher prices to users. In brief, legislation is closing in on aerosol canisters and costs (and prices) are rising. Testifire avoids these issues:

- Replacing pressurised canisters with benign capsules eliminates the above hazard drawbacks and their associated costs
- Introducing capsules addresses both the GWP and VOC concerns while retaining safe, non-flammable test stimuli
- On-demand generation of safe-to-use levels of real CO in particular addresses concerns over testing of CO detectors properly, utilising true and appropriate stimuli

#### **Innovation in automation compliance and audit**

Testifire's Communications Module permits reading from, and writing to, RFID tags fitted to detectors either at time of manufacture, during, or after, field installation. Through a Bluetooth link

these tags communicate with a PDA loaded with appropriate software. The result is:

- auto configuration of tests with Testifire automatically implementing the correct test or test sequence for the detector, taking the confusion or complexity out of testing single or multi sensor detectors – new or old
- documented traceable reports with data stored on the RFID tag fitted – and always available – at the detector itself as well as within software linked to the PDA (and taken off-site).

### Innovation in the ability to evolve and adapt

Testifire's intelligence allows for its evolution, even while in the field. Each Smoke or CO capsule contains data which controls the functioning of the unit. This means that performance can be enhanced in units which are in the field, simply by plugging in a revised capsule at a later date. A web-based upgrade facility also provides the ability to upgrade the product with changes to the firmware. This dual update concept helps the field-based product develop in line with advances in detector testing.

### Time and productivity benefits

The '4 tools-in-1' design principle means not just less to carry but also immediate switching between tests and even, in some cases, up to three tests at the same time (where this has been enabled by detector and system manufacturers).

## Reported time savings of almost an hour per day are common.

This, the rapid activation of detectors, the clearing cycle that reduces time spent awaiting fire panel resets and the lack of repeat alarms mean detectors can be tested quicker. Reported time savings of almost an hour per day are common. Time is money and Testifire saves both.

### Refill capacity, transport, storage and environmental benefits

Through eliminating aerosol canisters the refill capsules can assist in the fight against climate change and against the pollutive aspects of VOC's. At a commercial level the capacity of both CO and Smoke capsules is significantly more than that of an aerosol canister (more tests per refill). Capsules, unlike aerosols, are also not classified as hazardous and no special arrangements are required either for their transport or their storage. As a result they can be supplied more easily and more cheaply (not to mention more safely) than their pressurised counterparts and no special handling is required by the user.

### Compliance benefits

Testifire's simultaneous stimuli capability can render the testing of multi sensor detectors as quick and cost effective as single sensor detectors. More importantly, as Testifire is the only way of field testing certain sophisticated and complex detectors its use can literally represent the difference between a demonstrably dependable system and one which cannot be showed to be relied upon.



The audit and accountability trail that Testifire offers, through use of the communications module, assists not only in the efficient management of Service and Maintenance personnel but also the provision of documented evidence where required that given detectors have been visited and the dates, times and personnel conducting that visit.

### Summary – Innovation that delivers benefits

Innovation is not enough. Today's society seeks benefits and Testifire offers them in abundance.

Testifire has been designed not only to meet the many evolving challenges facing those testing detectors in a demanding world but also for ease of use and low cost of ownership. It has been approved for safety and EMC to European standards and is currently undergoing third-party certification in the USA and Canada. Fire detector manufacturers around the world are recommending it for testing their detectors.

## Today's society seeks benefits and Testifire offers them in abundance.

Use of Testifire means less time and cost on service and maintenance while achieving best possible testing of modern as well as older systems. Eliminating accidental/inadvertent misuse of aerosols removes the danger of detector damage and even risks of false alarms that might result. Reducing costs, enhancing reliability, avoiding misuse and minimising false alarms can enhance not only the performance of fire systems but also the reputation, credibility, reliability, productivity and profitability of those whose job it is to test the systems on which we all depend.

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