RISCAuthority

administered by

FPA Fire Protection Association

# S32: ATM gas attack security solutions for retrofit

S32 First published 2017 Version 01

*Front cover image courtesy of Burton Safes Limited*

IMPORTANT NOTICE

This document has been developed through the RISCAuthority and published by the Fire Protection Association (FPA). RISCAuthority membership comprises a group of UK insurers that actively support a number of expert working groups developing and promulgating best practice for the protection of people, property, business and the environment from loss due to fire and other risks. The technical expertise for this document has been provided by the Technical Directorate of the FPA, external consultants, and experts from the insurance industry who together form the various RISCAuthority Working Groups. Although produced with insurer input it does not (and is not intended to) represent a pan-insurer perspective. Individual insurance companies will have their own requirements which may be different from or not reflected in the content of this document.

The FPA has made extensive efforts to check the accuracy of the information and advice contained in this document and it is believed to be accurate at the time of printing. However, the FPA makes no guarantee, representation or warranty (express or implied) as to the accuracy or completeness of any information or advice contained in this document. All advice and recommendations are presented in good faith on the basis of information, knowledge and technology as at the date of publication of this document.

Without prejudice to the generality of the foregoing, the FPA makes no guarantee, representation or warranty (express or implied) that this document considers all systems, equipment and procedures or state-of-the-art technologies current at the date of this document.

Use of, or reliance upon, this document, or any part of its content, is voluntary and is at the user's own risk. Anyone considering using or implementing any recommendation or advice within this document should rely on his or her own personal judgement or, as appropriate, seek the advice of a competent professional and rely on that professional's advice. Nothing in this document replaces or excludes (nor is intended to replace or exclude), entirely or in part, mandatory and/or legal requirements howsoever arising (including without prejudice to the generality of the foregoing any such requirements for maintaining health and safety in the workplace).

Except to the extent that it is unlawful to exclude any liability, the FPA accepts no liability whatsoever for any direct, indirect or consequential loss or damage arising in any way from the publication of this document or any part of it, or any use of, or reliance placed on, the content of this document or any part of it.

# Contents

# Summary of Key Points

**The table below summarises the key points of the document.**

| | |
|---|---|
| **The gas attack technique** | • There are a number of gangs who find this crime to be lucrative and relatively easy to pull off. |
| **Development** | • The methodology is now well established in some criminal circles and incidence is on the increase. |
| **Serious property damage risk** | • The cost of reinstating devastated premises usually far outweighs the value of the ATM's contents and there is potential for total losses per incident in six figures or more. |
| **Exposure of innocent individuals to bodily risk** | • More concerning yet than the material damage risk is the exposure of staff and members of the public. |
| **What can the owner-operator do?** | • There are a number of devices for retrofit designed to combat this crime; some are costly, none appear to have been exposed to thorough independent evaluation and testing against a recognised standard. |
| **What is the long-term solution?** | • The ultimate solution may lie in a fundamental redesign and strengthening of the typical ATM on the part of the manufacturers but there may be insufficient pressure from the customer base at present. |

## Symbols used in this guide


Good practice


Bad practice


Discussion topic

Frequently asked question

# 1 Introduction

Those responsible for through-the-wall ATMs need to recognise that this new form of attack is proliferating and consider whether their risk exposure merits action.

RISCAuthority document *'S3 Convenience ATMs: recommended security measures'* contained guidance for controlling the criminal activity often attracted to premises containing stand-alone automated teller machines (ATMs) such as convenience stores, petrol stations and public houses. Crimes involving convenience ATMs are typified by hold-up and so-called 'rip-outs'. This document addresses another criminal method known as 'gas attack' where the target is typically, but not exclusively, a through-the-wall ATM rather than one of the smaller, lower capacity 'stand-alone' or 'freestanding' ATMs found inside business premises. Through-the-wall ATMs are subject to a wide range of other forms of physical attack aimed at gaining access to the contents or removing the machine from site.

# 2 The gas attack method

In a gas attack on an ATM, a compressed gas, usually bottled Oxyacetylene, is injected into the ATM and ignited. It is thought that these attacks started in Italy but it was several years before they reached the UK in early 2013. The number of gas attacks has grown every year since and is currently up 15% at the current rate of increase. Petrol stations, supermarkets and bank branches have suffered the largest share of attacks but any machine is vulnerable, particularly those located with good vehicular access and limited night-time activity.

Probably less than 50% of attacks succeed but, of those, the average monetary loss in currency from the machine is thought to be in the region of £33,000 although ATMs regularly containing in excess of £100,000 are thought to be not uncommon. There are no statistics on the total cost suffered through this attack type, i.e. including premises damage, loss of business etc, but the now familiar media reporting suggests this would be considerable. A number of criminals have been injured, some possibly seriously, in the course of implementing an attack but, as far as is known, no member of the public has yet suffered bodily injury although the potential for very serious operator liability exposure is clear.

For the first few years of criminals' employment of this method, court sentences were modest as the crime was classified as no more serious than other types of theft but, more recently, the Crown Prosecution Service has agreed that the crime is more correctly categorised as 'causing an explosion' as a result of which sentences are much heavier.

# 3 Security solutions

Improving the security of the 'ATM safe', the security enclosure within an ATM that contains the cash cassettes, is fundamentally challenged by the fact that, of necessity, the enclosure (unlike a normal safe) must have certain openings, in particular a large enough opening to allow the transport assembly required to transfer notes from the cassettes to the actual cash dispenser. The door allowing replenishment of the cassettes is of a strength commensurate with the enclosure itself just as with a conventional safe. However, the standard metal shutter mechanism fitted as part of the note transport assembly does not have significant security value in brute force terms and no national or international standard for the overall security of an ATM is known to exist.

Consequently, criminals normally exploit this point of access to route a rubber tube into the interior of the enclosure through which the gas is introduced and subsequently ignited with a suitable electrical device. The entire attack can be successfully completed (success being the distortion of the safe door sufficient to allow easy access to the contents) in about 4 minutes, although inexperienced attackers have been known to allow gas to be released into the enclosure for up to 40 minutes.

The purchase or replacement of an ATM represents an opportunity to specify those products that have their grade suffixed by 'GAS' or 'GAS EX' to improve the possibility of mitigating an attack.

It has always been the case that the specification of the standard 'safe' enclosure as supplied to the volume market has been equivalent, aside from the penetrations that must be made in it, to a conventional theft resisting safe only of minimum quality. The requirements for the security grades of ATM 'safes' are to be found in *EN 1143-1 Secure storage units. Requirements, classification and methods of test for resistance to burglary. Safes, ATM safes, strongroom doors and strongrooms.* Over the years, the nominal strength of the 'safe' enclosure fitted inside the majority of ATMs has been exploited innumerable times through attackers using mechanical tools – drills and angle grinders etc as well as flame attacks. For that reason the standard product could offer no better resistance to gas attacks when they were first adopted by criminals.

ATMs with a safe enclosure at a higher grade than basic models had been and remain available but, due to the size of the initial rollout and/or ignorance of the security issue, few of the more secure ATMs had been installed. Recognising the problem, in 2012 the committee responsible for the EN 1143-1 standard supplemented the tests for resisting manual tools with one for resistance to gas attack denoted by the grade suffix 'GAS' e.g. 'CEN grade II GAS'. Designs capable of satisfying the test at a given grade typically both strengthen the enclosure and door assembly and, through the design, allow the detonation gases to vent without jeopardising the contents. However, such is the size of the present day ATM estate that a programme of replacement with gas resisting models is unlikely to be implemented. It is thought that few gas resisting types, typically grade III GAS and grade IV GAS, have been deployed as a result of the costs involved and that may not change significantly until the roll-out of the next generation of machines. However, there is mitigation to some extent here in the UK through the highly focused targeting of gas attack gangs through the activities of regional police forces and the Organised Crime Command of the National Crime Agency and there have been a number of high profile convictions of prolific gangs. At the same time, there is regular, formal liaison between the regional police and ATM operator networks, business and financial institutions.

In some parts of the world, particularly where mining is prevalent, solid explosives are much easier to obtain than is the case in the UK where controls are very tight. In these overseas territories attacks on ATMs using solid explosives are common but so far there is no recorded case of such an attack in UK neither do informed sources see this as a significant risk in the foreseeable future. However, the EN 1143-1 grade suffix 'EX' denoting resistance against use of solid explosives exists along with the 'GAS' suffix. ATM safes resistant to both gas and solid explosive attack have their grade suffixed 'GAS EX'.

Aside from ATM safe specification to the CEN GAS/GAS EX grades, some ATM manufacturers offer supplementary security devices to counter gas attack as a factory fitted option. However it appears that the main market for supplementary gas attack solutions is for installation within machines already deployed. In the main, these products take one or other of the following forms:

## Product types

1. A sensor, usually an explosive gas detector, is connected with a canister containing an explosion suppression chemical fitted inside the ATM 'safe' which, on activation, is intended to suppress or neutralise the gas by changing its chemical composition.
2. A sensor, usually an explosive gas detector, is connected with a system intended to dissipate the explosive gas and supplant it with an inert gas.
3. A sensor, usually an explosive gas detector, is connected with a system that floods the interior of the ATM 'safe' with fast setting foam.
4. A device, when triggered before the gas can reach a high concentration inside the ATM, prematurely ignites the explosive gas.
5. Explosion absorbent materials designed to damp the shock waves of a detonation are installed inside the ATM 'safe'.
6. A sensor, e.g. a gas and/or shock sensor, is connected to a device which degrades the notes in the cassettes by e.g. ink staining or gluing together.

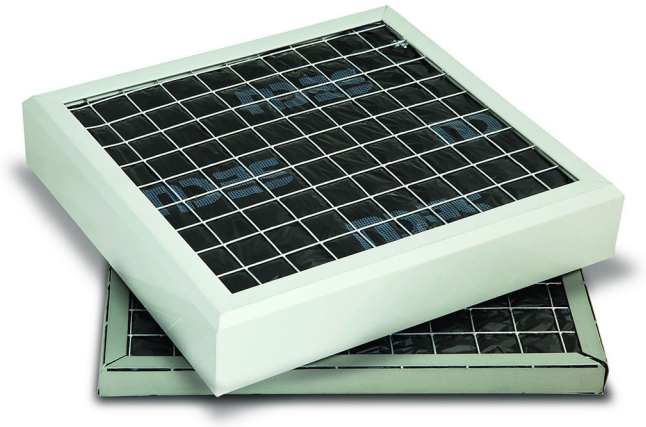
Either integral with any of the above products or fitted additionally:

- The fitting of sensors, e.g. explosive gas, thermal, shock detecting, etc connected to local or remote alarm notification and/or local security fog generation.
- Tracking devices within the note cassettes.

The contents of the appended table are taken from the websites of the vendors appearing in the results of a search for ATM gas attack solutions carried out in February 2017. The contents of the table, and the existence or otherwise of other products in this market, have not been verified or researched.

In addition to the products tailored specifically to deal with gas attacks, various other retrofit innovations are available that deter and mitigate attacks of all types, for example:

- A security fog function integrated with the ATM, that operates when the ATM is attacked
- Banknote degradation (e.g. staining) devices independent of any gas attack solution.
- A device to release forensic staining when the ATM is attacked.
- Uprated physical protection (steel jacketing etc) for the cash cassettes inside the ATM.



**Explosion absorbent 'mat' for attachment inside sides and door of ATM**

*Courtesy of Burton Safes Limited*

# 4 Conclusion

The jury is out at the present time as to whether this crime trend will be cracked before a member of the public is injured (or worse).

What is clear is that there are numerous products in this market with no uniformity of design approach, albeit that versions of the first type on the above list seem to dominate. At the current rate of attack with the attendant risks to property, business and persons, there is clearly a pressing need for a product evaluation and attestation scheme of some kind but none seems to exist at present, at least not in the UK. On the contrary, the competition between vendors is intense, many aiming to discredit the design philosophy of competitors' products as part of their marketing. It is inviting to assume that product type 1 above is the most popular on grounds that it is the most efficacious but there is no independent evidence of this or any potential drawbacks. Purchasers of these devices should consider claims of compliance with technical standards cautiously as they may relate only to parts of the device rather than its success in neutralising or suppressing a detonation. Unless and until potential customers have access to more accurate and impartial information, a "buyer beware" approach is all that can be recommended.

Property owners and managers should take into account the additional risk to their premises represented by the presence of an ATM. Should an arrangement be proposed through which an ATM machine would be placed on the premises, the owner would be advised to ascertain what, if any, measures will be taken to address the gas attack risk.

# 5 Appendix

| Vendor | Product | Description |
|---|---|---|
| Loktec | ATM Gas Protection System (GPS) | Gas detection sensor + 'combination of incombustible gas and aerosol fire extinguishers' |
| Gunnebo UK | Gas Attack Protection (GP-X) system | Gas detection sensor + 'UL approved' aerosol fire extinguisher. |
| 3SI (Belgium) | AGN (Autonomous Gas Neutralization) system | Gas detection sensor + neutraliser, optional alarm connection, ink staining, siren |
| Mactwin (Dutch) | Gas Protection Unit (GPU) | Gas detection sensors + neutraliser, alarm connection |
| Spinnaker | Core | Occupies an ATM cassette position. Contains gas detection and neutralisation devices. Optional tracker included. |
| Medusa | ATM Protection | 'A fast setting foam is injected into the ATM In less than 30 seconds. This displaces the gas, blocks the gas pipe and prevents further intrusion.' |
| Acketts | AGS (Anti Gas System) | 'Ignites gas inserted eliminating the possibility of significant gas build-up within the safe.'<br>'Infra-red sensor and potassium compound (for) fire protection'.<br>Alarm connection. Back up battery. |
| Associated security | Anti-Explosion Mat (AEM) | '…simply fitted inside the Grade III-IV ATM safe and absorbs the power of the explosion rendering the attack useless… ' |
| Burton Safes | Explosion absorbing module | Suitable for CEN grade III-IV ATM<br>'Lower graded safes such as CEN-L and UL291 can also be protected but, additional security may be needed…' |

**FAQ**

Assuming the efficacy of these devices is largely unproven, why should I be persuaded to fit one? In answer to this, the likely catastrophic effect on the building, and the business carried on there in the event of a gas attack, should be taken into account when making this decision.

RISCAuthority

administered by FPA Fire Protection Association

**Fire Protection Association**
London Road
Moreton in Marsh
Gloucestershire GL56 0RH
Tel: +44 (0)1608 812500
Email: info@riscauthority.co.uk
Website: www.riscauthority.co.uk