AgilFence®
Perimeter Intrusion Detection System
A Product of ST Electronics

Meet the technology of the future for perimeter protection

AgilFence PIDS introduces a revolutionary technology to overcome the perennial issues of poor pin-pointing accuracy, low detection and high false alarm rates found in a typical PIDS.

The AgilFence PIDS is simply smarter.

QUICK AND EASY DEPLOYMENT
Fence mounted
Single run
UV-resistant and armour protected

HIGH PROBABILITY OF INTRUSION DETECTION
Highly sensitive sensors
Immune to interferences

EXTREMELY LOW FALSE ALARM RATE
Proprietary intelligent signal processing
Discriminates against nuisance alarms
Adapts automatically and dynamically to changes in physical environment
Not affected by rain, wind, wildlife, etc.

ACCURATELY PINPOINTS INTRUSION LOCATION
Customisable sensor cable length
Able to pinpoint to a very narrow zone (<10m)
Allows fast and accurate response
Significantly reduces the number of perimeter CCTVs required

www.AgilFence.com
About Us
Empowering thru’ Innovation

Singapore Technologies Electronics Limited (ST Electronics) is Singapore’s foremost electronics and Information Communications Technologies (ICT) systems provider with a track record that spans four decades.

Our portfolio encompasses an incredibly diverse spectrum of solutions, with particular focus on satellite communications (Satcoms), interactive digital media, e-Government solutions and services.

By investing heavily in research and development, we continue to stay at the forefront of technological advancements, harnessing our expertise to create cost-effective, purpose-built systems and solutions for our customers.

Quality and innovation are the hallmarks of ST Electronics. Anything worth doing is worth doing well – this is the philosophy that guides our staff in their daily work. With a firm belief that innovation can originate from various sources, we have in place schemes and avenues to harvest and reward creative ideas from staff. We also leverage the strengths, resources and technologies of our multi-faceted network of collaborative partners for new insights, to create mutual benefits.

Mission
To deliver innovative electronics solutions that exceed customer expectations and constantly create value for our stake holders.

A wholly owned subsidiary of public-listed Singapore Technologies Engineering Ltd (ST Engineering), ST Electronics is headquartered in Singapore. ST Engineering reported revenues of S$5.99b in FY2011 and ranks among the largest companies listed on the Singapore Exchange. It is a component stock of the FTSE Straits Times Index, FTSE ASEAN 40 Index, MSCI Singapore and other indices.

ST Engineering has more than 22,000 employees worldwide, and over 100 subsidiaries and associated companies in 23 countries and 41 cities.

For more information, visit www.stee.stengg.com
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The AgiFence PIDS from ST Electronics is a solution designed and developed in Singapore for perimeter security. It offers highly accurate and instantaneous intrusion detection, enabling a facility’s security force to respond quickly and effectively to intrusions and threats.

Simply Smarter
A single run for all your needs!

AgiFence PIDS can be deployed quickly. It only needs a single run of optical fibre cable around the perimeter fence line (compared to double or triple runs for other solutions), riding on an optical fibre backbone.

The system is incredibly simple yet robust. Sensing cables are UV-resistant and protected by armoured cable. Cable ties are also UV-resistant and highly durable, allowing the cables to be easily fence-mounted.

The AgiFence PIDS sensor cables are custom-made to suit the requirements of individual sites. This allows the system to be tailored for optimal performance with localised pinpointing accuracy and effective false alarm control which is unique to the site.

It is really that simple.

Total Cost of Ownership is significantly lower when you do not need power in the field!

The system is quick and easy to deploy, requires no field maintenance, broken cables can be easily repaired on site and signal loss/fault can be detected and managed centrally.
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Smart, Small & Sensitive

Fibre Bragg Grating (FBG)

FBG is a wavelength reflector constructed in a short segment of optical fibre that blocks and reflects particular wavelengths of light while transmitting all others.

When a strand of optical fibre is embedded with a series of FBG sensors, it works like a pulse line capable of sensing slight disturbances to the physical parameter. Any attempt to climb or cut the fence will impose a strain on a nearby sensor which in turn affects the wavelength reflected.

How it works?

Under normal conditions, and at steady state, each FBG sensor works like a mirror that reflects back only a certain colour of light.

Any type of intrusion will affect the steady state and changes the colour of the sensor that is reflected back to the system. When such a change is detected, the system will translate it into an intrusion alert.

ST Electronics' proprietary intelligent signal processing system allows multiple FBG sensors to share input data giving it the ability to adapt automatically to different physical environment and weather element. Its precise discrimination and analysis of events enable the AgilFence PIDS to achieve a high probability of detection with an extremely low false alarm rate at all times.

That is a system that you can count on.

AgilFence PIDS allows the sensors to be customised to any desired effective distance, this results in a more localised pinpointing accuracy of any intrusion attempt.

This unmatched high performance level significantly reduces the number of CCTV's required to be deployed around the perimeter, compared to other systems.
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Intrusion Detection

Protection you can trust

A PIDS that is vulnerable is ineffective and gives a false sense of security.

The AgilFence PIDS is able to provide an extremely high detection rate even with hard to detect intrusions such as attempts to cut or scale the fence with a ladder. It has a 99.9% detection rate when the cable is cut or an attempt is made to remove it.

AgilFence PIDS has been proven over multiple independent field tests to be consistently reliable in intrusion detection and dependable in false alarm control.

Protection Against Intrusion Attempts

AgilFence PIDS immediately sets off an alarm when the sensing cable is cut, or when a few cable ties are cut.

When the cable is cut or damaged, the system is only compromised for that one channel (around 200m).

All field-installed components are passive and do not require power to function. Hence, there is no worry about malicious tampering of field switches, inducers, control boxes and other field equipment.

Immunity to interference

By virtue of having no electronics in the field, AgilFence PIDS is also unaffected by RFI, EMI, lightning or thunder storms.

BROKEN CABLES? No problem. Fusion splicing can be easily carried out on-site in less than 60 minutes.
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Broken Cables? No problem. Fusion splicing can be easily carried out on-site in less than 60 minutes.
The AgilFence PIDS can adapt and adjust automatically to different physical environmental factors and weather elements by simply communicating with each other.

Isn’t communication great?

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### Smart Sensors

#### Managing false alarms

With a multiple array of sensors comes a multiple array of inputs. This provides a great wealth of information that the system uses.

Each sensor is constantly comparing inputs with neighbouring sensors before declaring an alarm.

For example, during thunderstorms with heavy rain and wind, each sensor will ‘sense’ the disturbance. As an array of sensors will experience the same disturbance that produces similar wavelength changes, the system is able to instinctively know that it is not an intrusion. However, if at the same time an isolated area senses a disturbance which is unlike the rest, an alarm will be triggered.

Rest assured that bad weather will not compromise the system’s detection ability with this algorithm. The input are also measured in such small wavelength changes and at such a high sampling rate that it cannot be duplicated by an army of people simultaneously climbing the fence.

Concerns such as perching birds, passing heavy vehicles can be eliminated through various system parameters which do not affect the system’s detection ability.

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### Exceptional False Alarm Control

#### A super intelligent signal processing system

Let us show you a unique sensing method that enables the multiple sensors to communicate with each other all the time. This allows the system to analyse every event and precisely discriminate various environmental effects such as:

- Wind
- Rain
- Vehicle vibration
- Perching birds
- Vegetation
- Aircraft landing/taking off, etc.

Like the boy who cried wolf, a sensitive system with frequent false alarms is often ignored until it is too late. High false alarms rates are a nuisance and often lead users to desensitize the system so as to lower the false alarm rates. This results in a system that is only sensitive to violent shakes.

**Why make this trade-off?**
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In most other systems, the sensing cables used may be inexpensive but each loop or zone works only as a single source of input.

As zones are large, isolated incidents such as jet blasts from a plane engine within a large zone can only be recognised by these systems as an alarm; or the system has to be set to ignore such incidents. This is because such systems do not allow for further refinements and the only choice available to users is to make the whole zone less sensitive.
Alarm Verification

The monitoring of surveillance CCTV screens is a tiring and often time not full-proof method of intrusion detection. When an alarm is triggered it is often difficult to locate the intrusion and activate the appropriate camera to confirm the intrusion. This is especially so when the area monitored is large.

Alarms can be caused by site workers, neighbours, and even birds and animals such as monkeys. Direct contact with all of these elements trigger genuine alarms. No algorithm can detect malicious intent from the harmless and one should never try to isolate them as it decreases the overall sensitivity of the system.

But these nuisance alarms must be managed.

With AgilFence PIDS, the system offers a robust ‘skin’ and ‘eyes’ solution.

The PIDS works like the skin to detect intrusions and the pinpointing system is able to trigger the assigned camera to verify the incident automatically. The system is able to call-out and show a pop-up of the image stream automatically enabling security personnel to make informed decisions to dismiss the alarm or take immediate action.

Seamless Integration

Working with CCTV cameras

Complementing the AgilFence’s ability to provide accurate pinpointing of suspected intrusion locations down to 10m, CCTV cameras can be activated to verify alarms. Cameras with Pan-Tilt-Zoom (PTZ) capabilities and 500m radius can be placed as far away as 1,000m apart and yet be able to automatically zoom to the intrusion site when triggered. This will reduce CCTV system cost significantly.

PTZ cameras also allow continuous manual tracking of the intruder once he is within the perimeter.

An EO/Thermal camera is necessary for areas which are poorly lit, such as airport runways. ST Electronics’ CORIS-P is a wide-area surveillance camera pairing an EO/Thermal camera and a 37x zoom day/night camera mounted on a pan-tilt head is the perfect solution for large installations utilising a minimum number of cameras without compromising coverage and image quality.
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AgilFence iPAMS

ST Electronics has also developed an intuitive alarm management software to take advantage of the pin-pointing abilities of AgilFence PIDS.

IPAMS (Integrated PIDS Alarm Monitoring System) is easy to use and totally customisable to the needs of the user. It can be used as a platform or can be expanded as a complete ISMS solution.

When an alarm is triggered, IPAMS will receive a pop-up image of the intrusion location. This saves time in having to locate the best camera to verify the alarm.

IPAMS will also be able to show the exact location of the alarm, this is crucial especially for large sites.

The system is customisable to view a single or multiple sites, allowing a central alarm management system monitor all alarms.

Mobile applications to display alarm messages as stream videos of intrusion are also available.

These smart tools allow security forces to respond quickly and effectively to alarms.

Getting Along
Integration with an existing security management system

We understand that most sites may have existing security management systems. AgilFence PIDS make it easy for an existing system to receive our system alerts.

If you are saddled with a complicated legacy system, fret not. We have a team of software experts who are able to offer you a solution to best fit your needs.

High Level Integration
AgilFence PIDS can be seamlessly integrated with other third party systems via TCP/IP using the AgilFence IPAMS.

Low Level Integration
Optional dry contacts and other software interfacing capabilities are also possible to allow interfacing with existing security management systems and devices.
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Cost Savings
Superior performance with lower total cost of ownership

NO POWER IN THE FIELD
The laying of power cables is expensive but with the AgilFence PIDS you can expect less civil and infrastructure costs since it does not require power in the field. There is no need for weather stations, electronics boxes, locator units, transducers, etc.

MAINTENANCE
If a sensing cable is broken, it can be easily repaired on site by trained personnel within an hour.

The system can also check centrally for faults or breaks without any additional equipment.

LESS MANPOWER
Personnel needed for patrolling and monitoring can be reduced with AgilFence's IPAMS and its ability to pinpoint the exact location of alarm.

Case Study
Single large site

Perimeter Length: 13 km
Example: Airport

With AgilFence PIDS it requires:
15 PTZ cameras spaced 900m apart.

With zone-based systems, it would require:
130 fixed cameras spaced 100m apart or
260 fixed cameras spaced 50m apart (excluding blind spots)

Savings can be realised in:

Capital Expenditure
Cost of cameras, data storage and switches
Cost of infrastructure for pole and mounting
Cost of civil work for cabling for data and power

Operational Expenditure
Cost of camera channel licence
Cost of maintenance

Knowing that your facility is well secured - that's priceless.

A 2km perimeter requires only 2 PTZ cameras
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System Architecture
_Bringing everything together_

Optical Fibre Backbone
AgilFence uses an optical fibre backbone that can be shared with CCTV system.

Backend System
_Small footprint, mighty steps_

- AgilFence Sensing Unit
- AgilFence Signal Processing Unit
- Keyboard + Display
- UPS
System Architecture

*Bringing everything together*

- **NETWORK SWITCH**
- **PATCH PANEL**
- **LEAD-IN FO CABLE**
- **SPLICING BOX**
- **AgilFence Sensor Cables**
- **Cameras**

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