

**PATENT
PENDING**

SafeBeacon

Preventing runway incursions



**Avoid one of
today's greatest
safety threats**

These incidents and accidents could have been prevented:

ITALY

8 October 2001, report nr: EW/G99/10/09

- ▶▶ A passenger aircraft collided on take-off with a business jet that had just landed. 118 people were killed.

CANADA

23 October 2001, report nr:A01O0299

- ▶▶ A B767 cleared for take-off was forced to reject the take-off when a tractor towing an A310 crossed the runway ahead of it. The tractor had been cleared to cross the active runway by ATC.

AUSTRALIA

1 August 2007, report nr:07-005

- ▶▶ The crew of a Beech 1900 aircraft holding on an angled taxiway mistakenly accepted the take-off clearance for another aircraft that was waiting on the runway and had a somewhat similar call sign. The pilots of both aircraft read back the clearance. The aerodrome controller heard, but did not react to, the crossed transmissions.

Source: www.skybrary.aero

IATA Safety Report

- Accidents increased by 30% in two years
- Main reason for accidents: the human factor
- Total accident cost: 260 million USD

IATA recommends more training

ACI Survey

- In general, 15 accidents occurred per submitted airport per year
- 30% of damages to/by moving aircraft were made by aircraft manoeuvring

ACI recommends more up to date information and continuous monitoring activities

FAA Runway Safety Report

- Key factors that have impact on the runway safety:
 - Pilot awareness and attention
 - Controllers losing situational awareness or forgetting instructions
 - Ambiguous pilot-controller communication
- The two most common types of operational error causing incidents:
 - ATC forgetting about an aircraft or vehicle
 - Inadequate coordination among ATC's



Runway incursions – why do they happen?

An airport is an extremely busy place, with a lot of people interacting in different ways and a lot of ongoing processes. Flight schedules are tight, and time is money. Even though airports put a lot of efforts into safety systems and measures, mistakes can happen:

▶▶ **Breakdown in communications**

Use of non-standardised phraseology, or if the pilot/vehicle driver fails to provide correct readback of an instruction. The pilot-vehicle driver may misunderstand the controller's instructions and vice versa. The transmission can also be blocked, overlong or complex.

▶▶ **Pilot factors**

Inadequate signage and markings can be a severe risk. Also if controllers give instructions when pilot workload and cockpit noise are very high. Pilots can be pressed by complicated procedures, leading to rushed behaviour in able to make his slot time.

▶▶ **Air Traffic Control factors**

Factors like distraction, workload, experience level, inadequate training, lack of a clear line of sight from the control tower, human-machine interface or incorrect or inadequate handover between controllers can cause serious problems.

▶▶ **Airside vehicle driver factors**

A driver can fail to obtain clearance to enter the runway, give inaccurate reporting of positioning or fail to comply with ATC instructions. Absence of radiotelephony training and equipment can also cause problems.

▶▶ **Aerodrome design factors**

Roads and taxiways adjacent to the runway or insufficient spacing between parallel runways is a constant risk, as well as departure taxiways that fail to intersect active runways at right angles or no end-loop perimeter taxiways to avoid runway crossings.

The solution is always the Safegate Effect

How many aircraft can your airport handle today, and yet still maintain a high level of safety? Can this number be increased?

Ask Safegate Group and the answer will be yes. We provide solutions for aircraft guidance on the ground, in a smart and responsible way. The Safegate Effect – safety, efficiency and environmental benefits – is the result of what we do for airports all over the world. By enabling a total system of smooth operations, for example the fastest way from touchdown to gate, fewer planes are waiting in line on the ground or circling in the air. Our solutions

also provide full status awareness of equipment on the ground, and full control over aircraft and vehicle positions on the ground. The result is optimal safety, increased efficiency and reduced power and aircraft fuel consumption, which lead to a cleaner environment.

Safegate Group provides solutions that secure the performance of your airport today, and get you prepared for the traffic demands of tomorrow. By choosing SafeBeacon you gain several benefits that together will improve overall safety.

“As long as there are airports where pilots are expected to cross active stop bars, the danger exists that pilots will not stop at a stop bar when they are supposed to.”

Bert Ruitenbergh,
International Federation of
Air Traffic Controllers' Associations



What is so special about SafeBeacon?

Everybody agrees on how dangerous a runway incursion is, but not always why they occur, what they cost and how to prevent them. The challenge is to decrease runway incursions to a minimum with an easy installation, using a solution that works with the total system but without disturbing the overall operations – and at competitive pricing.

For airports with heavy workload for controllers, a monetary delay can be the difference between a possible incursion and a fatal accident. It takes an aircraft five seconds to move the 90 metres onto the runway. Can you guarantee that your controllers will react and act within this limited period of time?

▶▶ How does SafeBeacon increase safety?

Eurocontrol found that accident rates could be reduced with over 50%, by helping air traffic controllers to detect runway incursions and prevent collisions. By installing a system like SafeBeacon your airport is less dependent on:

- Aerodrome design
- Multiple line-ups
- Multiple simultaneously active runways
- Non-standard phraseology
- Pilot workload
- Air Traffic Controller workload
- Distractions
- Weather

How does your airport act to prevent runway incursions?

“If you think safety is expensive, try having an accident”

Stellios, Easy Jet

Technology that makes a difference

SafeBeacon is a system that is easily installed at every stop bar in the airport. When an aircraft crosses the line without clearance from the control tower, the Microwave Barrier Detector will detect the aircraft and an alarm will follow immediately. The alarm breaks through all other communication within a close distance from the aircraft, and also in the control tower. This will give everyone a rapid notice that something is wrong, creating the opportunity to take actions to avoid runway incursions or accidents.

Small airports

Runway incursions happen at all airports – small and large. Not all small airports can afford to invest in expensive systems such as ground radar, but would still like to decrease runway incursions.

Large airports

At large airports SafeBeacon can be installed to safeguard even faster response to mistakes, decreasing the risk for incidents and accidents. In addition, with large operations an additional warning system can safeguard that you have the margins on your side.

How to connect with ASP-SafeControl

SafeBeacon is connected with the Microwave Barrier Detector located at the StopBar. The installation can be made quickly and without disturbance to daily operation, for instance no additional drilling and backfilling is needed. SafeBeacon can be placed and programmed for each airport's specific need, for example how to detect the aircraft, by the nose or the wheel.

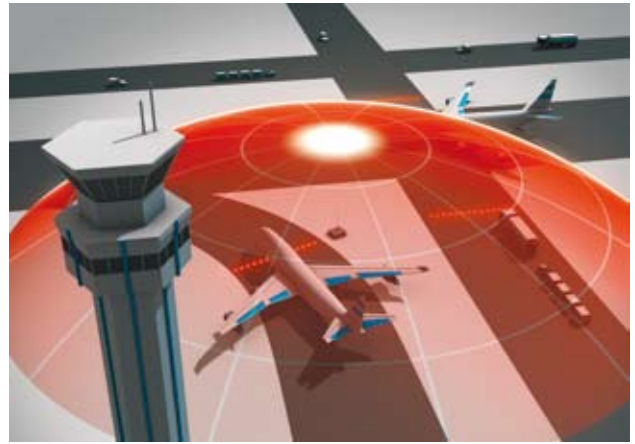


Traditional solution



As the aircraft passes the MBD a signal is sent to the tower. ATC have to react and act to the signal, and so does the pilot. How long does this procedure take? How long time do you have?

SafeBeacon solution



As the aircraft passes the MBD an instant alarm will break through all other communication within a close distance from the aircraft (including ATC personnel). SafeBeacon will give you the seconds you need to prevent a potential runway incursion.

Capabilities and characteristics

- The transmitting power will be adjusted so that only the vehicle in the near vicinity of the transmitter receives the warning message
- The set-up is decentralised, automatic, autonomous, simple and extendable
- Allows the emission of different standardised warning messages
- Mounting sites, electrical power and sensors exist
- Compatible with all existing on-board installations
- No modifications on the globally installed base necessary
- Minimal equipment for any kind of vehicles is a VHF COM receiver only
- Works on all VHF-channels (AM 118-138 MHz, 800 channels) used by civil aviation simultaneously
- Special channels can be blanked

Check in to the future

How many aircraft can your airport handle today? Can this number be increased without adverse effects on the airport's safety level? It is a known fact that traffic volume will rise in the foreseeable future. More movements will demand monitoring of the entire airport. Requirements will be sharpened and the development of an integrated system control-

ling not only ground movements but also air traffic close to the airport is of the highest interest. The International Civil Aviation Organization (ICAO) already describes A-SMGCS, Advanced Surface Movement Guidance and Control System, as the answer to the future modern airport need to control the entire airport space in one superior system.

To a larger extent than today's systems, A-SMGCS will rely on automated processes to give both pilots and traffic controllers exact information about positions and directions. Safegate Group delivers complete A-SMGCS solutions already, as well as all vital parts relating to it. Safegate Group can check your airport into the future – today!



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THORN **IDMAN**
Airfield Lighting

SAFEGATE
GROUP 

Safegate Group offers solutions for increased safety, efficiency and environmental benefits to airports around the world. The company was founded in 1973 and has its headquarters in Malmö, Sweden. Safegate Group has over 70 partners around the globe in order to be close to its customers. The latest members of Safegate Group, Thorn AFL and Idman, have both over 40 years of experience in airfield lighting solutions for airports and heliports worldwide. Safegate Group's complete range of products and services, a "one-stop shop", provides solutions to customers and airborne travellers around the globe.

For more contact information and details:

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