

# Improved safety, efficiency and profits

Safedock® Docking Guidance and Gate Operating Systems





*"We have been using Docking Guidance Systems since 1988. We will definitely continue to do so at the new gates we're planning to build. The reason we're concentrating on a docking system is due to the fact that it gives us the possibility to effectively take care of the increasing volumes we're experiencing here, without creating bottlenecks at the gates. Over the past two years, there has been a 20% increase in volume and everything suggests that this trend will be maintained. The reason why Safedock, in particular, previously has been chosen, is because we found it to be the most superior system on the market."*

Leopold Kitzler, Vienna Airport,  
Vienna, Austria.



## Efficiency where it matters.

It is all about getting the right plane to the right place as quickly as possible. About pre-setting the passenger boarding bridge in the right position and making sure the plane leaves the gate precisely when it is supposed to. All so you can start the process again with the next flight.

There is a lot of money to be made on shorter turn-around time. The Safedock can help you earn it – easily. More than 100 airports on five continents are already enjoying the benefits.

**Efficiency is based on planning.** All airports plan, but the trick is to make the planning work in practice. With Safedock/GOS, you have a real-time overview of the airport's gates allowing you to centrally monitor and control the processes involved. If something should go wrong, you can quickly find a solution – without creating any subsequent problems in the process.

**Efficiency is based on precision docking.** Safedock verifies that the correct aircraft type has been selected

and provides proper guidance to the pilot. In addition, the passenger boarding bridge can be automatically set-up for the plane type in question. Precision is not just a question of faster docking; it can also mean faster connection of the passenger boarding bridge.

Safedock is the only system on the market with precise information for an over-the-wing bridge. The use of over-the-wing bridges continues to increase, following the trend of growing aircraft sizes. Therefore it is important to have a system in operation now that can already cope with the expected demands of tomorrow.

**Efficiency is based on precise charges.** Safedock reports the time a particular plane parks at and leaves the gate. It is a winning proposition for you because the sums are always correct right from the start and because no one has to spend time sorting out disputed amounts.

**Efficiency is based on maximising labour performance.** Fewer personnel are needed at the gate, freeing

resources for other responsibilities and tasks. For example, a gate team able to handle five gates instead of four in an airport with 20 gates means annual savings of EUR 500.000 or USD 600.000.

Effective docking is built on real-time information. By continually having information on whether a gate is free or not, or whether a gate has been allocated to a particular incoming aircraft or not, gives the ramp control the information it needs to be able to make the right decisions both in the short and long-term.

When docking functions as it should, the result will be apparent throughout the entire operation; with good gate flow as a result. Traffic jams and gridlock can be eliminated and planes are able to land without delay. For airlines, this means fewer delays and lower costs through, for example, reduced fuel consumption – vital necessities in a tough, competitive market.



# A safer way to park aircraft

In the absence of Safedock, there is a great deal that can go wrong when docking. Should a plane attempt to dock at an incorrectly set-up passenger boarding bridge, the damage could be extensive to both the plane and the bridge, resulting in operational interruptions and delays throughout the entire airport. Should the wrong plane enter the gate, the damage could be equally extensive.

With Safedock, the passenger boarding bridge can be pre-set according to the expected plane. Before start of docking,

the position of the passenger boarding bridge is verified. When entering the gate, the pilots verify that the correct plane and subtype is selected and displayed. Should this not be the case, Safedock's verification check will result in the STOP message being displayed. If the passenger boarding bridge is moved during docking, the display will immediately show STOP. When the bridge is returned to its correct position, the docking can continue.

The pilot's approach speed is monitored and if too fast, the pilot is told to slow down.

All information is presented with a clear LED display, and as this is visible to both pilots, the level of safety is thus increased.

The plane is guided to the correct position with a stopping precision of 0.1 metres and an azimuth-precision of 0.2°. Safedock also checks the height information, which is important for the use of over-the wing bridges, necessary in the event of quick disembarking from large planes such as the A380.

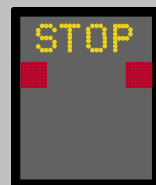
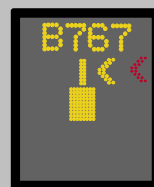
If needed, Safedock can be used at gates with multiple or curved centre lines.

As soon as the plane is parked, block-on time is recorded and as soon as the plane leaves the gate, block-off time is recorded. These functions result in fast and accurate invoicing.

With the correct plane parked in exactly the right place at the correctly set-up passenger boarding bridge, time schedules

can more easily be maintained without compromising safety in any way. In fact, quite the contrary. With Safedock, the level of safety is even improved. Something that will ultimately benefit everyone.

Standard Model  
Compliant to ICAO



This is how the plane is directed to the correct stop position:

## Standard model:

- Check that the correct aircraft is displayed. The scrolling arrows indicate that the system is activated.
- Follow the lead in line.
- When the solid yellow closing rate field appears, the aircraft has been captured by Safedock. The display provides azimuth guidance information and Safedock now checks that the aircraft is the correct type.
- Look for the flashing red arrow and the yellow arrow, which provide azimuth guidance information.
- The flashing red arrow shows which direction to steer. The yellow arrow gives an indication of how far the aircraft is from the centre line.
- When the aircraft is 12 m from the stop position, closing rate information is given. "Distance to run" is indicated by turning off one row of LED's in the closing rate field for each one half meter that the aircraft advances towards the stop position.
- When the correct stop position has been reached, all of the LED's for the closing rate field will be off. The word "STOP" will appear in the display and two red rectangular fields will light in the azimuth guidance area of the display. If the aircraft stops in the correct position, "OK" will be displayed after a few seconds.

## S-model:

- Check that the correct aircraft is displayed. The scrolling arrows indicate that the system is activated.
- Follow the lead in line.
- When the solid yellow closing rate field appears, the aircraft has been captured by Safedock. The display provides azimuth guidance information and Safedock now checks that the aircraft is the correct type.
- Look for the flashing red arrow and solid yellow arrow, which provide azimuth guidance information.
- The flashing red arrow shows which direction to steer. The solid yellow arrow symbolizes the aircraft and gives an indication of how far the aircraft is from the centre line and stop position.
- When the aircraft is 12 m from the stop position, closing rate information is given. "Distance to run" is indicated by turning off one row of LED's in the closing rate field for each one half meter that the aircraft advances towards the stop position.
- When the correct stop position has been reached, all of the LED's for the closing rate field will be off. The word "STOP" will appear in the display and two red rectangular fields will light in the azimuth guidance area of the display. If the aircraft stops in the correct position, "OK" will be displayed after a few seconds.



S-Model  
Compliant to ICAO and IFALPA





## Managing gates automatically

The fewer disturbances and interruptions there are at the gates, the smoother things run in the entire airport. The Gate Operating System, GOS, is therefore the tool you need. The system incorporates visual guidance of each plane, ensuring it gets to the right gate, and central monitoring ensuring that everything goes according to plan.

In addition, the process can be automated or manual. Safedock can be started from the operator panel at the gate, from GOS or from the airport's central system, i.e. FIS.

The system effectively guides pilots so that the plane arrives at the correct position at the gate. Once the plane is in the correct position, the loading/unloading process can be carried out quickly – and safely.

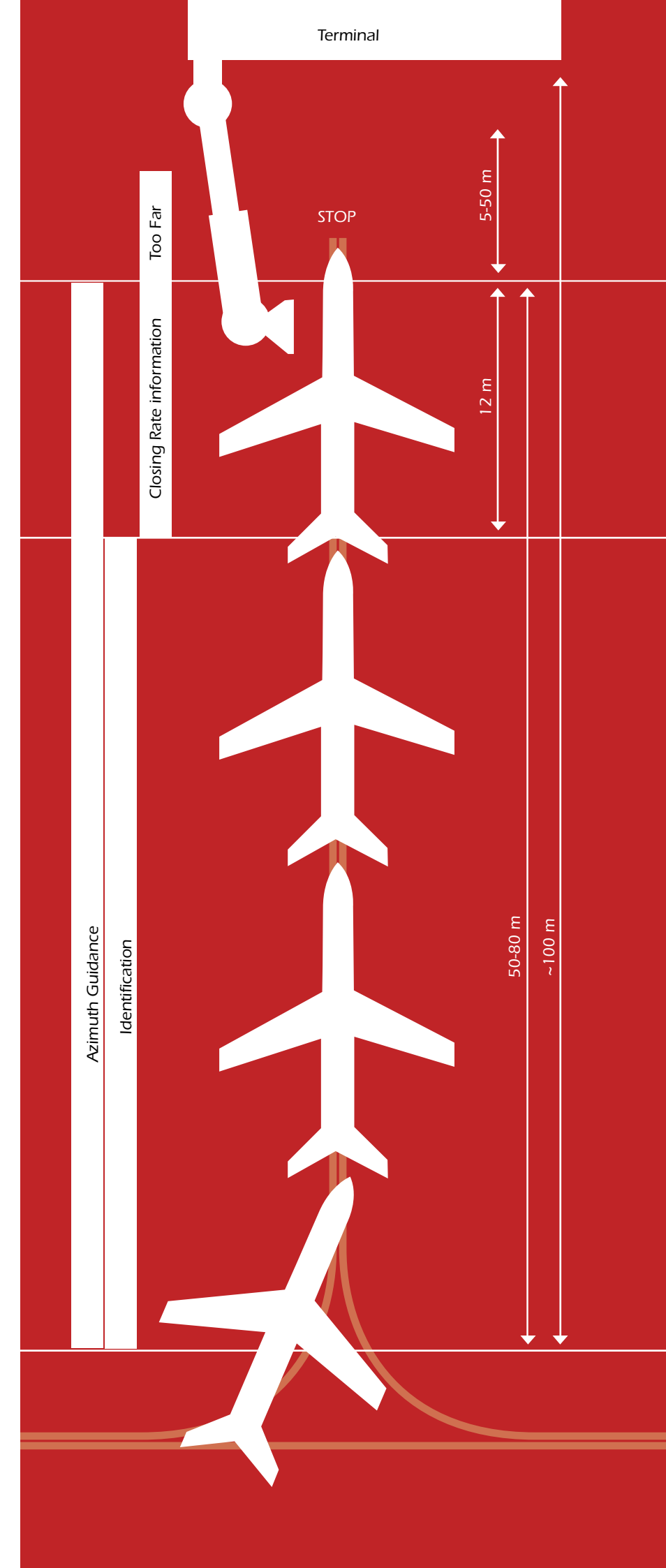
The shorter the turn-around time, the better. However, if a plane develops a technical problem, a passenger is delayed, marshallers are unable to perform the docking due to electrical storms or if a marshaller fails to turn up on time, plans can go horribly wrong – and the plane which has just landed and is supposed to

dock at this gate will not be able to, so the hunt for another gate begins. If one is not found fast, the plane just stands there – and blocks other aircraft. Even new landings and take-offs can be affected. Problems spread like ripples on a pond, with long delays as a direct result. Without the correct information, the ramp control is unable to make the right decisions. If it is possible to squeeze in one extra docking per day and gate, it will mean a saving of two gates at an airport with 20 gates; an investment equivalent to EUR 6.000.000 or USD 7.100.000.

These problems can be avoided when traffic control has an overview of the status of the airport's stands; an overview that allows them to monitor all activities and make last-minute changes without having to wait for the marshaller.

In addition, GOS allows optimised central maintenance of Safedock and generates statistics for gate use. This too contributes to efficiency by providing valuable planning information and minimising operational interruptions.

*Most commonly the Safedock is connected to a LAN together with GOS for maintenance purposes and specific customer requirements. Communication to FIS and/or GMS (Gate Management Systems) normally is handled over LAN.*





# The Safegate Effect



## Airborne by all means, but the easiest place for airlines to improve profit is on the ground.

The airline industry is a tough market the world over. An ever-increasing number of new carriers are competing for the same passengers, and price is often used as the principle weapon. Up until now the focus has been on reducing costs through major organisational changes and reduced schedules. Safegate brings the problem down to earth by offering a solution that will not only save money for the airlines, but will also increase the level of safety and on-time performance. A way of both accelerating and braking at the same time.

### Less personnel

With Safegate, the entire docking procedure can be conducted using fewer people - without the slightest compromise to safety or efficiency. In fact, it is quite the contrary. By allowing the same work team to handle additional responsibilities, Safedock will prove to be both a fast and profitable investment.

### Faster turn time

Safedock ensures that the aircraft arrives at the right gate, and in the right position quickly – a key performance issue for any airline. Eliminating

waits for ground marshallers and faster bridge docking can shave precious minutes from the schedule.

Within the highly competitive airline industry, there is no better return on investment than on-time performance.

### Lower operational costs

Effective guidance to the gates and efficient handling once there means lower operational costs for the flight. Time spent waiting means investments are needlessly tied up on the ground and unproductive. Through Safedock's automated guidance to the correct stop position, results will be seen in reductions in fuel burn, engine time, airframe time and crew time.

### Less damage on the ramp

Due to the fact that Safedock verifies the safety critical plane-type at the beginning of the docking procedure, only the correct plane is allowed to enter the gate. Communications with the passenger boarding bridge ensure that the bridge is in the correct position, avoiding the possibility of collision. Interlock with adjacent gates prevent incompatible aircraft types from attempting to park next to each other. These features, together with an effective

guidance system for pilots, minimise the risk of damage to aircraft, boarding bridges, or ground equipment, and reduces the possibility for injury to personnel.

### More effective planning

GOS enables you to centrally manage and monitor the entire docking process in real time. The GOS database provides data that will enable you to measure performance and plan for maximum utilisation of your personnel and equipment. To get an even more powerful gate automation tool, GOS can also be integrated into your gate management or flight management systems.

Safedock/GOS saves costs and improves productivity through:

- reduced labour
- faster turn times
- reduced operational costs
- reduced damage risk
- more effective planning
- lower costs
- higher productivity and
- greater safety

Truly a winning combination.

# Technical Data

▪ **Distance between DGS and stop position**  
5 - 50 meter

▪ **Stop position accuracy**  
0,1 meter

▪ **Azimuth guidance accuracy**  
0,2°

▪ **Display type**  
High intensity LED

▪ **Display visibility distance**  
100 - 200 meter

▪ **Vertical scanning range**  
-24° / +10° (down/up)

▪ **Horizontal scanning range**  
+/- 15°

▪ **Encapsulation**  
IP 54/65

▪ **Operational temperature**  
-40°C to +55°C

▪ **Control Panel Interface**  
RS 485

▪ **Data interface**  
RS232, Current Loop or Ethernet

▪ **Power Supply**  
115/230V AC, 50/60Hz, 300 VA

▪ **Laser classification**  
Class 1 according to EN/IEC 60825-1 (2001)

Class 1 according to ANSI Z136.1

Class 1 according to JIS C 6802-1997 with amendment 1-1998

▪ **External light requirement**  
Not required

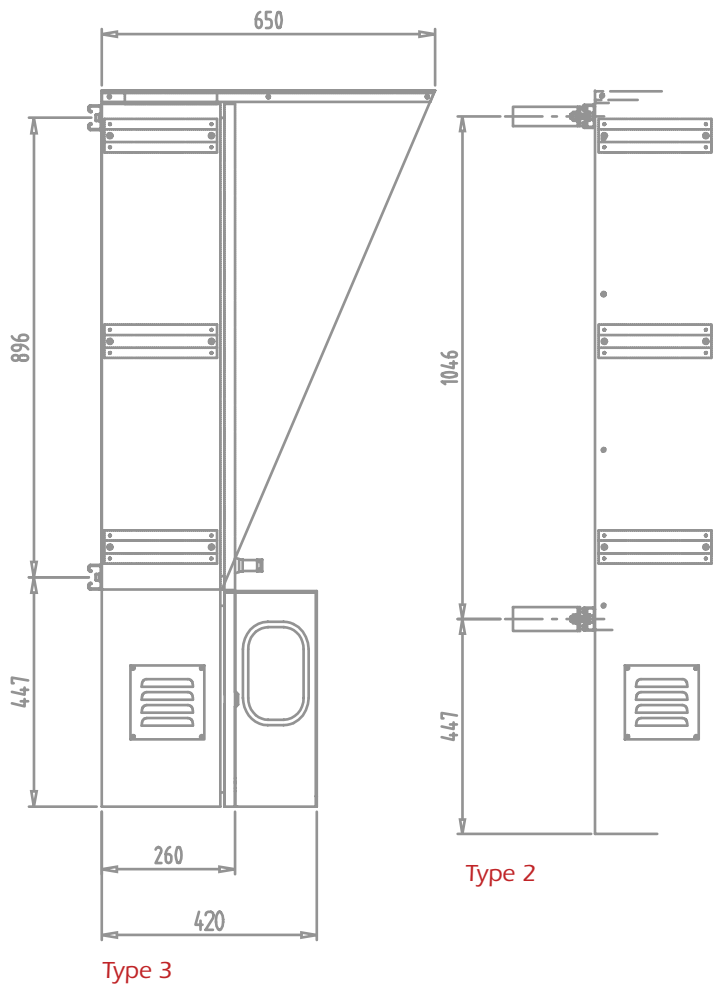
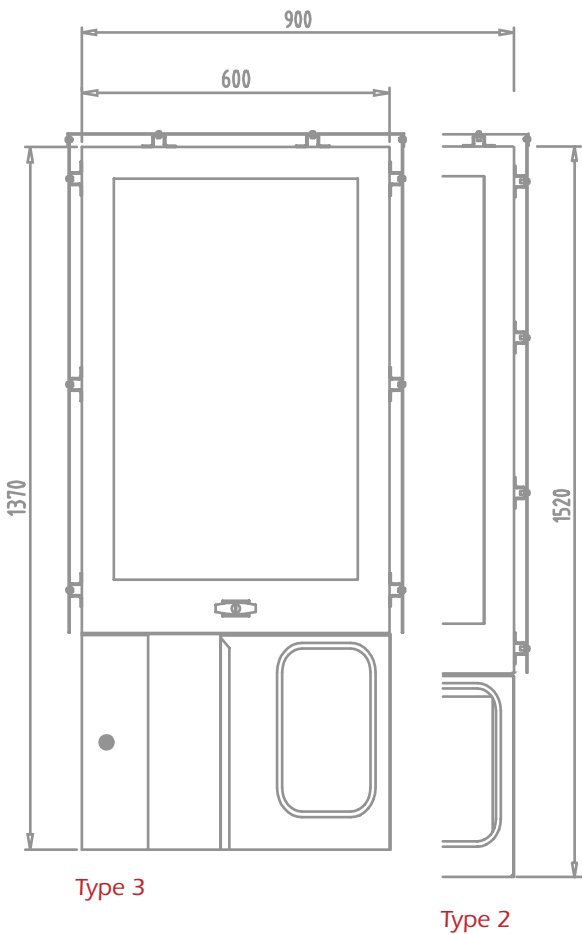
▪ **Operator's Panel dimension**  
260x160x90 mm

▪ **Weight Type 2**  
85 kg

▪ **Weight Type 3**  
75 kg

▪ **Display Dimension Type 2**  
1520x900x260 mm (650 mm incl. sun cover)

▪ **Display Dimension Type 3**  
1370x600x260 mm (650 mm incl. sun cover)



## A solution that is as simple as it is effective.

Safedock is fast and simple to install and commission at the gate, because the scanning unit and the display are both housed in the same cabinet. After a brief gate closure of only half an hour, the system is ready to use.

The laser technology itself is superior to all comparable systems, both regarding accuracy and fog penetration and Safedock exceeds all international standards for laser safety.

Safedock can easily be supplemented with a surveillance system if visual contact is required from the ramp control to the gate, although this is not necessary for precise and safe docking.

The comprehensive Configuration and Maintenance software utility facilitates the set-up of Safedock and makes it easy to use and maintain.



# A future that's ready to takeoff.

The future is certain to bring ever-greater traffic volume to the world's airports.

More movements will bring higher demands for monitoring the entire airport. All indications point to concerned authorities tightening requirements and airports that fail to measure up will be left out in the cold.

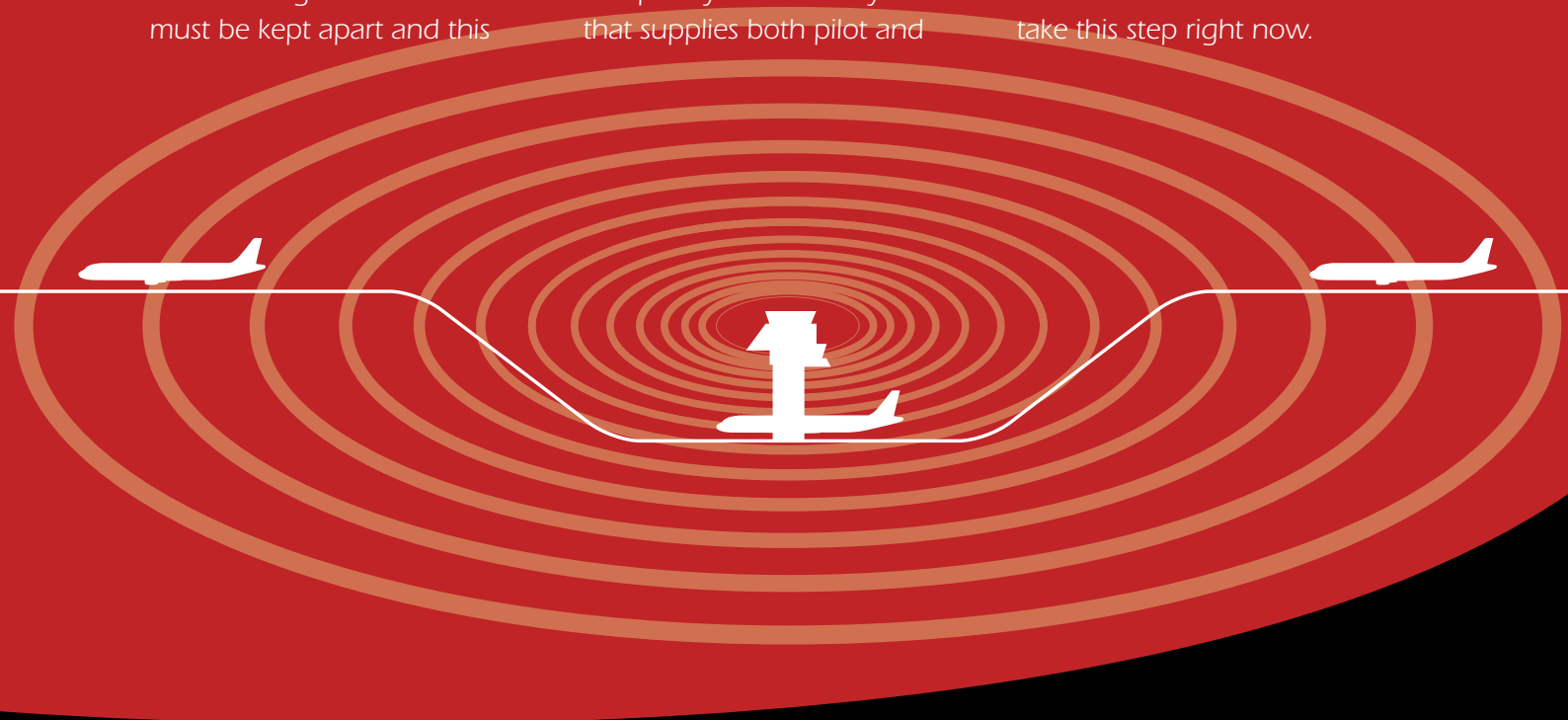
Planes and ground vehicles must be kept apart and this

just cannot be guaranteed by a manual system – not around the clock and not at every level of visibility. Therefore new methods and measures are on the drawing board. Some measures will be recommended, others required. A-SMGCS (Advanced Surface Movement Guidance and Control Systems) is just such a method. It is a completely automatic system that supplies both pilot and

air-traffic control with exact information about position and direction. Everything is monitored and controlled by one and the same system.

The result will be an airport that is both safer and more effective.

Safegate's products ASP/Safe-Control and Safedock/GOS are central to A-SMGCS. You can take this step right now.



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*The company was founded in 1973 and has seven offices. With agents in more than 50 countries, Safegate is represented and operates on a truly global basis. ASP was installed for the first time in 1989 and is in use today in over 50 airports. Since 1977, Safedock has been installed in more than 100 airports on all five continents. Every five seconds, around-the-clock, a plane docks somewhere with the aid of Safedock.*

Functions subject to technical specification

[www.safegate.com](http://www.safegate.com)