Let your gate operations take off

Safedock A-VDGS and SafeControl Apron Management

ADB SAFEGATE
Safe and efficient docking

Safety on the ground is a top priority for airports and airlines. More than 27,000 ramp incidents and accidents happen each year according to IATA, but did you know that many of these incidents could have been prevented? Safety is not the only challenge facing airports and airlines. By 2035, passenger traffic is expected to nearly double, creating capacity issues that airports need to address now to prepare for this growth.

**Optimizing gate operations through automation and integration**

Manual aircraft docking, particularly in bad weather, increases delays and the risk of incidents and accidents. ADB SAFEGATE offers solutions to optimize gate operations. Our Safedock Advanced Visual Docking Guidance System (A-VDGS) provides an automated approach to parking aircraft that speeds up the docking process and improves safety by reducing the opportunity for error. Integration with other systems serving the gate and apron area, in support of an airport collaborative decision making program (A-CDM), makes it possible to share critical data. Operators can manage in real-time to mitigate disruption and ensure a safe and efficient gate operation.

Safedock A-VDGS makes every docking at the gate the safest, smoothest and fastest possible. It has become the global standard, enabling the world’s busiest airports to handle more aircraft while maintaining a high level of safety. Safedock A-VDGS uses an infrared laser and patented 3D scanning technique to provide active guidance to pilots to support safe, efficient and precise aircraft parking in virtually all weather conditions and without marshalls. This saves time and fuel, reduces CO2 emissions and lets ground crew focus on turning aircraft. The automated system improves safety by ensuring aircraft/gate compatibility, verifying the position of the passenger boarding bridge (PBB) and scanning the apron for vehicles or other obstacles.

Together with SafeControl Apron Management, the Safedock A-VDGS is also used as a Ramp Information Display System (RIDS) to track the progress of the aircraft turn and share valuable information with flight and ground crews, further streamlining and shortening the turnaround.

Safedock A-VDGS and SafeControl Apron Management are part of ADB SAFEGATE’s complete range of solutions for the gate, airfield and tower areas, designed to help airports and airlines secure performance today, and prepare for the traffic demands of tomorrow.
Our gate solutions will help you:
- Avoid accidents by the gate
- Shorten turnaround times
- Reduce operational costs
- Allow for effective planning
Docking with Safedock A-VDGS and SafeControl Apron Management

As an aircraft approaches the gate, Safedock A-VDGS and SafeControl Apron Management can perform the following safety and efficiency enhancing procedures:

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Safedock is automatically prepared for expected aircraft</strong>&lt;br&gt;SafeControl Apron Management provides up-to-date flight information from AODB.</td>
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<td>2</td>
<td><strong>Gate preparation</strong>&lt;br&gt;The system checks compatibility of the assigned aircraft with the gate and adjacent gates and ensures the boarding bridge is in a safe position.</td>
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<td>3</td>
<td><strong>Checking GSE availability</strong>&lt;br&gt;SafeControl Apron Management can check whether integrated equipment (PBB, GPU, PCA etc.) is ready for use and indicate if they are not.</td>
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<td>4</td>
<td><strong>Automatic initiation of docking procedure</strong>&lt;br&gt;The docking procedure is initiated automatically via SafeControl Apron Management or can be manually activated, either locally via the operator panel or remotely via the HMI.</td>
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<td>5</td>
<td><strong>Apron scan</strong>&lt;br&gt;Safedock A-VDGS scans the apron, making sure there are no vehicles or objects in the way.</td>
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<td>6</td>
<td><strong>Verify position of PBB</strong>&lt;br&gt;Safedock A-VDGS verifies the position of the PBB.</td>
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<td>7</td>
<td><strong>Aircraft type check</strong>&lt;br&gt;Safedock A-VDGS uses our patented 3D laser scanning technique to measure the arriving aircraft to verify gate compatibility and ensure safe docking.</td>
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<td>8</td>
<td><strong>Parking</strong>&lt;br&gt;Safedock A-VDGS guides an aircraft to its correct position by providing the pilot with intuitive signals, via a high-intensity LED display.</td>
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<td>9</td>
<td><strong>Stop position</strong>&lt;br&gt;Allows for a wide range of aircraft stop positions, providing greater flexibility and future-proofing for new aircraft types.</td>
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<td>10</td>
<td><strong>Capturing on-block time</strong>&lt;br&gt;Safedock A-VDGS captures the moment the aircraft stops. Block times are tracked for all flights and can be reported back to AODB.</td>
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*Optional function available with Safedock A-VDGS, T1 model.*
ADB SAFEGATE has delivered more than 7,000 Safedock systems, making it the most widely used and trusted A-VDGS at airports around the world. Every three seconds, or 15 million times each year, an aircraft is safely docked with the Safedock system. With proven reliability and vast experience, ADB SAFEGATE is at the forefront of innovative and world-leading technology within this field. A trusted supplier of the world’s largest airports, ADB SAFEGATE has the necessary knowledge for successful implementations.

Safedock A-VDGS is used at 300 of the world’s busiest airports, including:

- Amsterdam Airport Schiphol has invested in 158 Safedocks since 1980
- Bangkok International Airport has 159 gates equipped with Safedocks
- The Dallas/Ft. Worth International Airport has equipped nearly 150 gates with Safedock A-VDGS
- Dubai International Airport is using our most advanced Safedock T1
- Heathrow Airport has invested in 255 Safedocks
A Safedock A-VDGS
for every airport

**Our most advanced model opens your gate to the future**

- Apron scan to enhance safety
- Flexible mounting and increased range of stop positions to efficiently manage tight parking and larger aircraft
- More efficient docking in severe weather conditions
- Expanded Ramp Information Display System (RIDS) to support A-CDM
## Overview of features

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<th>Feature</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
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<td>Stop position 2-65 meters</td>
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<td>Improved docking in severe weather</td>
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<tr>
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<td>High resolution surveillance camera</td>
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<td>Departure/arrival information</td>
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<td>Connection to lead-in lights</td>
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<td>Aircraft verification/safety check (3D scan)</td>
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<td>ICAO compliance (includes recommendations)</td>
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<td>PBB interlock</td>
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<td>All aircraft types with one system</td>
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<td>PBB scan</td>
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<td>Active azimuth guidance</td>
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<td>Multiple centerlines</td>
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<td>Operator panel with emergency stop</td>
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Enhance turnaround efficiency with SafeControl Apron Management

By connecting Safedock A-VDGS to SafeControl Apron Management, you will maximize safety and efficiency through integration, data sharing and customized control and monitoring of the systems, equipment and processes on the apron. SafeControl Apron Management uses Safedock A-VDGS as intelligent sensors to collect and distribute real-time gate intelligence and accurate flight information between airport, airline and air traffic control systems. Vital information is shared, providing a key step toward implementing A-CDM to improve communication and efficiency. ADB SAFEGATE has more than 100 apron management systems installed around the world.

SafeControl Apron Management solves your toughest challenges on the ramp.

- Ensure safety at the gate
- Increase efficiency through collaborative decision making
- Maximize gate availability and uptime
- Improve gate turns and gate-to-gate performance
- Create a shared-use gate environment
- Generate and share critical information
- Reduce operating costs
- Allow for further improvements through analysis of data
- Prepare for future expansion with great flexibility – SafeControl Apron Management can easily be expanded and integrated with other systems

Real-time control and monitoring

SafeControl Apron Management is a highly adaptable system that offers centralized management with views based on user role. The system is used to configure adjacent gate rules to ensure aircraft/gate compatibility and to automatically initiate the A-VDGS process. SafeControl Apron Management is the integrator of systems and equipment in the apron area and provides constant monitoring of the A-VDGS and connected systems, allowing ground personnel to know the precise status of gate equipment. Ground staff also receive alerts to potential issues before an aircraft arrives so that delays can be avoided.

- Update flight database with the latest flight information
- Automatically send actual block IN & OUT times to flight database
- Share flight information with ground and flight crews
- Warn operators of weather events
- Track and report use of ground support systems
- Track position of in/outbound aircraft within range of A-VDGS
- Produce valuable data, such as turnaround times and GSE usage, that can be used for performance improvement by changing workflow or gate assignment

Ramp Information Display System (RIDS)

When a Safedock A-VDGS is not actively docking an aircraft, it can receive information from SafeControl Apron Management and display critical arrival or departure information for pilots and ground crew. Information is sent to the Safedock display via an automatic feed from a connected system or as free text entered from a SafeControl Apron Management work station. It is also possible to show the status of connected GSE on the RIDS display.
Great savings and low cost of ownership

Our gate solutions improve performance and customer satisfaction, which in turn increases your revenue. We also offer a low cost of ownership with flexible installation parameters, ease of configuration changes, extended lifetime of our laser technology and our extensive support network.

Apron scan
The Safedock T1 and SafeControl Apron Management offer an optional apron scan feature to enhance standard operating procedures, helping to ensure that no vehicles or other objects are in the way of arriving aircraft. Objects as small as a tow bar are detected by the A-VDGS and marked on the SafeControl Apron Management display.

Stop position
The Safedock T1 allows for an increased range of aircraft stop positions of 2-65 meters, providing greater flexibility and future-proofing for new aircraft types. T2 and T3 allow aircraft stop positions of 8-50 meters.

Improved docking in severe weather
A more sensitive laser scan and larger pilot display improve performance during poor weather conditions. Aircraft can be accurately identified and parked from 65 meters.

Ramp Information Display System (RIDS)
Safedock A-VDGS can display useful departure and arrival information during the turnaround process to support A-CDM and avoid the investment in a separate RIDS. The T1 offers expanded RIDS capability with 49 static alpha/numeric characters plus scrolling or alternating text. With Safedock T2 you can display messages of up to 30 characters.

Extended readability
Safedock T1 and T2 feature larger, high-intensity LED displays for improved visibility and better performance in poor weather.

High-resolution camera
With automatic recording of each docking you can explore the cause of an accident to prevent it from happening again and avoid paying for mistakes made by others.

Graphical user interface
SafeControl Apron Management provides a modern graphical user interface that ensures situational awareness at the gate, from real-time gate occupancy status, to up-to-date flight information from AODB and status of all integrated equipment. The system allows for remote control of the Safedock A-VDGS and provides views based on user role.

A-SMGCS integration (GAP-Filler)
The Safedock A-VDGS technology used for docking can also be used to track the position of aircraft at the gate as they arrive or are pushed back for departure. Position details are sent to the A-SMGCS via SafeControl Apron Management. SafeControl Apron Management can also use A-SMGCS data to automatically activate docking systems based on the proximity of aircraft to the gate.

Stand equipment communication
To ensure safe and efficient gate operations, Safedock A-VDGS enables the exchange of information with other stand equipment. For example, on gates with multiple centerlines Safedock can send information to the PBB so it can be prepositioned for quick connection.

Connection to lead-in lights/
Auto-controlled apron lights
Via SafeControl Apron Management, Safedock A-VDGS can be connected to the apron lights, ensuring they are only used when needed to reduce fuel consumption and emissions. The configuration can be adapted to different gates and locations.

Aircraft verification safety check
Our patented 3D laser technology scans the gate area vertically and horizontally to capture and track aircraft. The unique horizontal scan measures parts of the aircraft on either side of the centerline to discriminate between aircraft types and subtypes. Safedock verifies with 100% accuracy that the approaching aircraft is compatible with gate and adjacent gate rules and is safe to park.

Automatic start of docking
SafeControl Apron Management enables fully automated docking by starting the A-VDGS and initiating the docking via a feed from your flight information system (FIS), saving valuable turnaround time.

GSE integration
GSE (e.g. boarding bridges, 400Hz ground power units, pre-conditioned air) can be monitored and controlled by SafeControl Apron Management. Integration of other equipment allows our systems to check for obstacles, such as opened pop-up pits or wrongly positioned PBB, which also allows for early indications of equipment failure.

Parking accuracy of 10 cm
Accurate parking facilitates faster gate turnovers by minimizing the time to get the aircraft in the correct position and connected to the PBB.

LED display
A high-intensity display with high refresh rate allows for optimal viewing by pilots and ground crew. The display automatically adapts its resolution to changing ambient light conditions, providing better performance in poor weather. Averaging 300W, Safedock A-VDGS has low power consumption, which is beneficial for the environment and the product’s lifecycle.

Distance to go indicator
A digital countdown of the distance between the aircraft and the stop position assists the pilot and minimizes mistakes.

Closer clearance distance
ICAO Annex 14 regulations allow for tighter wing span clearance at gates if an A-VDGS system is used.

Blocks on/off
Safedock A-VDGS shares real-time information via SafeControl Apron Management on when the aircraft is parked, ready for pushback and when it has left the gate, providing accurate data for planning and revenue management.

Storage of configuration files
With SafeControl Apron Management you always have the latest data available in one central location.

Real-time information
Real-time information regarding operation and gate status ensures that the right decisions are made and that maintenance is planned efficiently.

Less fuel burn and fewer emissions
Safedock A-VDGS provides the fastest way from touchdown to gate without the need to wait for ground crew. This decreases delays and wasteful fuel burn.

ICAO compliance (includes recommendations)
ICAO Annex 14 recommends that VDGS should display “STOP” in red. All Safedock models display text in red without the need for an additional display.

MARS
To increase efficiency, airports often use complex MARS (Multiple Aircraft Ramp System) configurations to allow parking of multiple smaller aircraft when a larger aircraft is not occupying the gate. Safedock A-VDGS and SafeControl Apron Management offer the flexibility to handle multiple centerlines and complex gate layouts.
Ensure ground control safety

**Safety**
According to the Flight Safety Foundation, 80% of airport accidents occur at the gate and apron area. These are busy, confined areas where aircraft, vehicles and people are in constant motion in all types of weather conditions.

Safedock A-VDGS safely and smoothly guides an aircraft to its correct position by providing the pilot with intuitive signals. With Safedock A-VDGS and SafeControl Apron Management you can reduce congestion and the number of personnel on the ramp, thereby increasing safety for both passengers and staff.

Increase airport efficiency and capacity

**Efficiency**
Safedock A-VDGS and SafeControl Apron Management link all gates via a local or wide area network and integrate with airport and airline information systems to provide real-time gate status and shared flight data. This results in the fastest time from touchdown to gate and a more efficient ramp operation that is scalable for the future.

Safedock A-VDGS and SafeControl Apron Management let ground staff know at a glance which gates are occupied or available, ensuring aircraft are parked quickly and smoothly in the correct configuration and allowing last minute gate changes and tight time schedules to be met. Safedock A-VDGS and SafeControl Apron Management eliminate reporting delays by automatically capturing and reporting actual in-and-out times for tracking gate utilization and accurate billing. A more efficient airport can defer costly expansion, which means a faster return on your investment.
Let the environment benefit

**Sustainability**

By shortening the time from touchdown to gate, Safedock A-VDGS and SafeControl Apron Management help keep fuel and power consumption to a minimum.

Gate and apron solutions from ADB SAFEGATE mitigate time spent waiting for gates or ground crew and track the status and utilization of ground power units which results in a significant reduction of fuel burn.

When aircraft are parked faster and gates turned around more efficiently, CO₂ emissions are reduced. With ADB SAFEGATE you bring air travel a little closer to nature.

“Airport performance – safety, efficiency and environmental benefits – is a result of what we do for airports all over the world. Our solutions have become a global standard with thousands of installations over the years”

Christian Onselaere CEO, ADB SAFEGATE
ADB SAFEGATE is a leading provider of intelligent solutions that deliver superior airport performance from approach to departure. We partner with airports and airlines to analyze their current structures and operations, and jointly identify and solve bottlenecks. Our consultative approach enables airports to improve efficiency, enhance safety and environmental sustainability, as well as reduce operational costs. Our portfolio includes solutions and services that harmonize airport performance, tackling every aspect of traffic handling and guidance, from approach, runway and taxiway lighting, to tower-based traffic control systems and intelligent gate and docking automation.

ADB SAFEGATE has 900+ employees in more than 20 countries and serves some 2,000+ airports in more than 175 countries.

adbsafegate.com