

A photograph of a highway at night, showing a white truck on the left and a train on the right. The image is heavily blurred to convey a sense of motion. The truck is in the foreground, moving towards the viewer. The train is in the background, moving away from the viewer. The road is illuminated by yellow streetlights, and the overall scene is dark with a warm, orange glow from the lights.

Automatic Vehicle Identification



Automatic Vehicle Identification (AVI)

Automatic Vehicle Identification (AVI), can be implemented to provide solutions where vehicles and drivers need to be identified in order to control and monitor vehicle and driver related activities. AVI systems offer the ultimate in fast and secure long-range identification based on Radio Frequency Identification Technology (RFID).

Identification (RFID). Our unique vehicle identification system has been developed based on our extensive knowledge of RFID, access control and object identification. The system features automatic vehicle identification from distances up to 10 meters (33 feet) even when a vehicle is travelling at high speed. Vehicles are automatically identified without any action required by the driver, thus providing maximum user convenience. systems can operate reliable even under harsh environmental conditions and will withstand exposure to dirt, rain, snow and ice without impact to its performance. The AVI system is modular in design and can be configured to integrate many different aspects of a particular user's operations.

AVI solutions

The AVI systems has been implemented in many different operations around the world where vehicles needed to be identified as part of a comprehensive system designed to provide:

- Convenience
- Revenue enhancement
- Efficiency improvement
- Highly secure vehicle access
- Automatic data collection

Our AVI systems are successfully utilised in projects in the parking, traffic, transport, aviation, petrochemical and railway industry.

Parking is one of the most important sources of revenue to local governments and airports. The new trend in this industry is to reduce the dependence on cash in both off- and on-street parking using AVI.

Cashless payment is introduced to reduce risks and improve efficiency in collecting revenue from parking operations. The AVI system automatically controls the vehicle access to the parking facility and charges the driver based on prevailing parking rates. The system also provides the parking operator with a host of valuable operations data, which can be used to better manage and improve utilisation and efficiency of the operation.

Drivers simply drive through the gate without having to stop. If authorised the gate is automatically opened within a fraction of a second.

In addition to off-street parking our AVI technology is also implemented for the identification of on-street parked vehicles. A RFID transponder replaces the traditional paper-parking permit. Enforcement is conducted by scanning the RFID transponder with a handheld, providing for improvements in efficiency and accuracy of operations. Permits can be renewed and changed online reducing the administrative costs and inefficiencies associated with traditional parking permit management.

Improving security is another growing concern in parking operations. The AVI system also features the unique ability to identify both driver and vehicle simultaneously. This is an important safety feature in areas such as vehicle depots where drivers change frequently.

Traffic congestion, traffic jams and pollution continues to increase in many areas around the world. To create a viable living environment and a pleasant city centre municipalities are introducing clear zones and pedestrian areas, where all but essential traffic is excluded by the use of

bollards. Vehicle access is limited to essential functions such as emergency services, residents, disabled people and public transportation. In these areas AVI technology has been successfully deployed to automate access for essential services.

Security is of strategic importance to airports, which are meant to be open to the general public while maintaining highly secured areas with restricted access. offers airport authorities a higher level of security by accurately controlling and monitoring people access and traffic flow in several strategic locations of the airport premises.

Special attention is given to the gates that secure the areas between the land- and airside of the airport, to prevent unauthorised vehicles from entering the loading platforms. For some services, the doors of airside gates can be configured to only open when the vehicle is identified and authorised to service the terminal. In addition to controlling the airside area of an airport, vehicles entering the landside area of the airport in the vicinity of the

terminal should also be monitored. The goal is to regulate the commercial vehicles allowed to service the terminals to maintain security and high quality of customer service. Additionally a vehicle dispatch system can be implemented to control the movement of traffic and charge these commercial vehicles based on their transactions.

The transport and petrochemical industry are faced with increasing plant security and registration requirements. In order to meet these new requirements loading/unloading, weighing and refuelling of trucks is automated with state of the art AVI control systems. AVI ensures the plant operator, that authorised trucks are properly processed at all stages in plant operations.

AVI system reliably operates in the extremely difficult and rugged environments of the railway industry. Identification of train cars and engines are conducted in order to monitor rolling stock in tunnels, enable automation of the refuelling process, manage trains at the yard or provide updated arrival and departure information.



Convenience

Our AVI solutions offer an extreme high level of convenience by automatically identifying vehicles and drivers in motion from large distances without any driver intervention.

True hands-free access

Our long-range identification system facilitates true hands-free vehicle identification based on patented microwave technology. In contrast to proximity systems, drivers no longer need to present their badge or open the window to swipe a card. Positive identification does not require driver intervention, the vehicle is automatically identified. A high level of convenience is accomplished by not intruding on the driver, providing the freedom to concentrate on driving and making navigation easier and safer. This is particularly important in the petrochemical industry where trucks need to navigate through the loading terminals stored with fuel.

The AVI system can be deployed to improve the convenience of vehicle access. This makes the system particularly well suited for VIP lanes with fast parking entry and exit. In addition to car park access the system can also be installed to facilitate fast secure employee vehicle access to company parking facilities.

Fast identification

Vehicles and drivers can be identified from distances up to 10 meters (33 feet) and at speeds up to 200 km/h (125 miles per hour), providing for fast and reliable identification even under the most challenging conditions encountered in the traffic, transport, and railway industry.

In case of emergency, when police, fire brigade or ambulances need to pass the bollards restricting urban areas, fast access is extremely important. Also the secured service gates to the airside of an airport must be quickly accessible by emergency vehicles. In these operations drivers cannot afford to lose precious time by presenting a proximity badge or inserting a card.

Cashless payment

AVI enables implementation of transaction management, where drivers are invoiced for the actual usage of a service. Drivers no longer need cash to pay for transactions or obtain tickets or other manual proof of payment. Invoicing is based on the registered AVI events.



Revenue enhancement

The real time information that becomes available from the AVI system can be used to manage operations more efficiently and adjust strategy to real time demand. When applied in the parking industry, increased car park utilisation, growth of the customer base and cashless payment can be achieved with AVI to enhance revenue.

Increased car park utilisation

Car park operators can monitor and analyse the parking behaviour of frequent users, knowing exactly when they are parking in the facilities. AVI provides the marketing and management information necessary to run the facilities more efficiently and to grow the customer base. Parking spaces can be allocated according to real time demand directly resulting in improved car park utilisation and revenue enhancement. Free parking spaces allocated to frequent users can be dynamically allocated for transient users when demand is rising.

Enhanced parking experience

In addition to improved utilisation, car park operators can enhance the customer parking experience by offering customers highly convenient parking by eliminating the need to stop on entry and egress. No coins are needed. Parking expenses can be invoiced based on registered AVI events. As a result of the value added features, car park operators can differentiate themselves from competitors. Convenience can become an important element in growing the existing customer base.

Transaction based payments

Generating revenue from vehicles such as busses, rental cars and taxis on the landside of an airport is becoming an increasingly lucrative practice and significant source of revenue to airports. Charging the vehicles based on their transactions gives airport authorities a better insight in the commercial traffic flow and daily transactions. Moreover it offers operators the possibility to implement consolidated billing. Transaction management and pay for actual usage can be implemented based on the entry and exit times, which are automatically registered by AVI in the central database.



Efficiency improvement

AVI facilitates process automation, decreases operating expenses, reduces congestion and improves vehicle and equipment utilisation.

Decreased operating expenses

Drivers no longer need cash or coins to pay for their parking expenses, resulting in a reduced need for pay stations. Direct capital costs, operating and maintenance expenses related to new parking revenue equipment is therefore reduced.

Cashless payment also ensures that cash collection is run more efficiently and automatically eliminates the theft risk associated with storing cash in pay stations. In the transportation industry, AVI contributes to process automation of several vehicle related activities, reducing the operational costs related to these activities.

Reduced congestion

AVI helps to speed up the traffic throughput and reduce the congestion around barriers, loading docks, weighing platforms and refuelling areas making navigation safer and easier. Controlling this function manually will cause congestions in the traffic flow especially during peak hours, which could result in costly delays.

AVI can also control the complete vehicle traffic flow on airports providing reduced congestion and increased security at arrival and departure terminals. Additionally fast access will reduce congestion in front of parking facilities during peak hours.

Improved vehicle & equipment utilisation

AVI ensures that equipment such as loading/unloading docks, weighing platforms and refuelling stations can be utilised more efficiently by facilitating process automation. As a result more transactions can be handled during the same time period. As a consequence less equipment is needed and capital costs are decreased.

By identifying vehicles at several strategic locations in a vehicle depot, fleet managers can obtain detailed information about of vehicle readiness. Based on this real time information vehicle utilisation can also be increased thus potentially leading to reduced new vehicle requirements.





Highly secure vehicle access

With the two key user concerns being security and convenience, our AVI solution offers just the right combination of features to meet changing security market demands.

The increased focus on security drives the need for even more secure and reliable security management systems. The AVI system ensures that all aspects of vehicle and driver movement are automatically controlled and monitored at all times. This guarantees complete integrity of the security system throughout the installation.

Secured convenient access

The hands-free, fast and reliable characteristics of the AVI system add elements of convenience to the required security aspects of vehicle access systems. Drivers are not exposed to assaults while waiting for a gate to open or inserting a gate pass. Many different enhanced security features such as biometrics can be added on to the AVI solution to further enhance system security.

Independent driver and vehicle ID

The AVI system offers unique patented ability to not just identify the vehicle ID but simultaneously identify that of an authorised driver as well. A RFID personnel badge and the vehicle ID are combined into one system readable number. This ability significantly improves security in areas where several different drivers are driving vehicles.

Automatic data collection

AVI systems automatically conduct error free data gathering pertaining to vehicle and vehicle related activities.

Error free real time tracking

Integrating important yard management information such as vehicle maintenance history, fuel consumption and availability becomes readily available, enabling efficient yard and fleet management. Dynamic driver and vehicle situations can be monitored to analyse vehicle movement, and keep track of drivers by vehicle. Operational changes can easily be implemented based on the data collected.



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Systems integration

AVI systems are designed for seamless and flexible integration to existing management systems in industries such as parking, traffic control, loading control and weighing systems which are based on open industry standards.

The AVI solution is a comprehensive solution, which can be implemented to control all aspects of access control in a facility. The system has been developed to easily address all user requirements from vehicle to personnel facilities access. A personnel RFID badge can be integrated into the system to manage access to all areas of a company or public facility in conjunction with hands-free vehicle access. The system is also configured with an open systems integration protocol allowing for easy integration with many other OEM manufactures access systems.

Integration of different operations based on AVI

AVI technology is applied in a wide range of operations in various markets. The many different operational platforms can easily be integrated based on the AVI standard. One of the examples is the integration of on- and off-street parking systems both based on AVI technology. It offers frequent users of a car park the same cashless payment convenience when parked on-street using the identical AVI tag as a part of a mobile phone parking payment scheme.

TRANSIT has currently been integrated into many various operations such as:

Aviation

- Terminal bus control
- Secured service gates
- Taxi dispatch system
- Commercial traffic regulation
- Access control

Parking

- Cashless parking
- Mobile parking
- On-street parking
- Frequent user parking
- Corporate parking
- Residential areas
- Gated communities
- Hospitals
- Universities/ campus
- Airports

Traffic

- Taxi dispatch systems
- Traffic priority systems
- Automatic toll collection
- Access control

Transport

- Access control
- Yard management
- Corridor monitoring
- Fuelling
- Weighing
- Washing
- Loading

Petrochemical industry

- Automatic loading control
- Access control

Railway

- Automatic train refuelling
- Rail yard management