

Vehicle Profiling for Drive-Through Facilities

The Challenge

[IMC Engineering](#) is developing drive-through vehicle profiling systems that automatically classify incoming vehicles based on their dimensions. The systems must be able to accurately measure the length, width and height of moving vehicles and assign them to a particular size category. This profiling will impact other parameters like optimal load, adequate invoicing, infrastructure safety, etc. The systems are custom-made for various industrial locations like seaports, loading docks, controlled-access facilities, etc.



The existing generation of vehicle profiling system built by **IMC Engineering** requires the use of around 200 sender/receiver combinations. IMC seeks to develop a new generation of the profiling system that will provide improved sensing capabilities, simpler installation, and reduced maintenance over its lifespan.

The envisioned solution must also meet outdoor installation requirements and be able to operate day and night, including under adverse weather conditions.

The Solution

After evaluating various potential solutions, IMC Engineering selected the Leddar™ optical sensing technology, setting its choice on the **Leddar IS16 Multi-Element Industrial Sensor**. Perfectly suited to outdoor applications, the Leddar IS16 Industrial Sensor has no moving parts and is encased in a weather-resistant enclosure. Its measurements remain unaffected by vibrations, dust, lighting conditions, or temperature variations.

For this application, six Leddar IS16 Industrial Sensors are required.

Two Leddar IS16 sensors are placed at the entrance of the driving lane at a height of 6m, facing down. With their 45° beam they can measure the maximum height and width of each incoming vehicle, which can move at up to 30km/h.

Four other Leddar IS16 sensors installed along the driving lane (facing sideways) measure the speed and calculate the exact length of the vehicle, for optimal profiling.

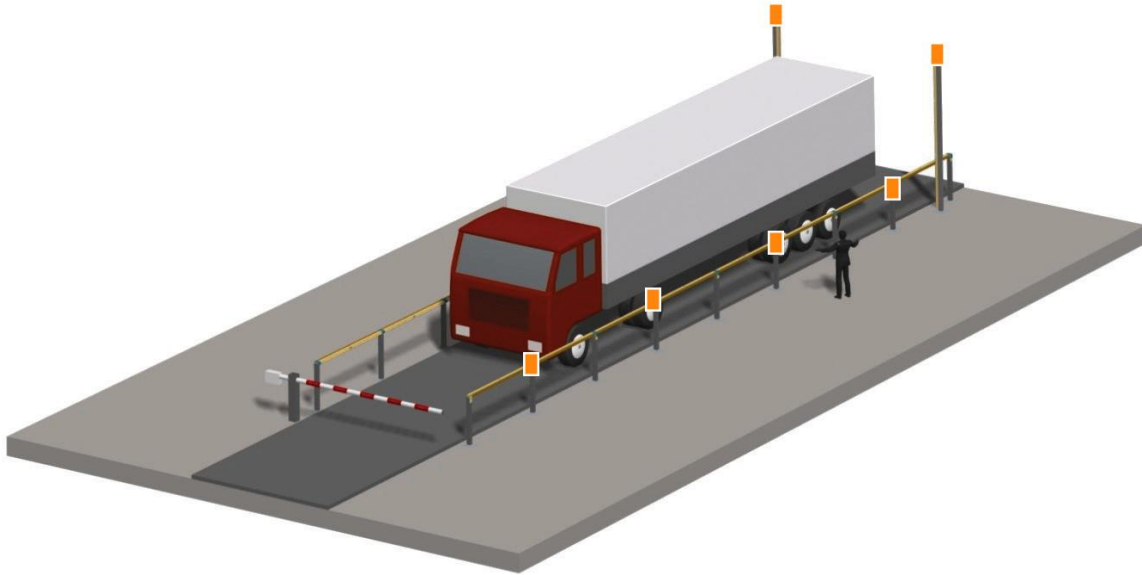


Fig. 1 – Position of Leddar IS16 modules along the vehicle's path

The Leddar IS16 Industrial Sensors use a novel, inherently eye-safe technology that performs detection and ranging by time-of-flight measurement using pulses from invisible, infrared light.

Product features:

- Wide diffused light beam and multiple segments provide robust detection of all vehicle types under all environmental conditions.
- Active illumination and immunity to ambient light ensure reliable day and night operation.
- Robust IP67 enclosure allows for permanent outdoor installation.
- Compact and cost-effective design results in a high-efficiency, largely maintenance-free system.
- Optional sensor assemblies are available for solutions requiring custom mechanical integration.

The Outcome

When driving through the entrance of the lane, the vehicle enters the detection zone of the first two Leddar IS16 sensors. These two sensors calculate the maximum height and width of the vehicle. As the vehicle drives through, the four other Leddar IS16 Sensors measure the speed and calculate the exact length of the vehicle. The system then uses this data to determine invoicing and dispatching of the vehicle, for example. It also can serve as a detector for collision hazard, hence protecting the infrastructure against potential damage.

IMC Engineering finds that the new vehicle profiling system featuring Leddar sensors proves to be significantly more flexible and cost-effective. Providing the same profiling functionalities as the previous generation with the integration of only 6 sensors, the new system is easier to install and promises to generate significant savings on maintenance, for a significantly reduced total cost of ownership.

Product References

- [Leddar IS16 Industrial Sensors](#)

This Application Note was written in partnership with [IMC Engineering Inc.](#)

Since 1993 IMC Engineering delivers gate automation systems for port authorities, seaports and intermodal terminals. Due to the modular and flexible setup, IMC Engineering provides automated solutions increasing efficiency and reducing operational costs. They have a proven record of delivering solutions, continuously adapting the offer to industry and technology standards. They start with your business case and customize a solution that delivers results. IMC has systems operational throughout Europe.