Advanced Microwave Engineering - SMART 5.0 Anticollision System

tailor made anticollision solution

the challenge

The challenge is to create a safer and more productive work environment within the terminal area. We improve two Key Performance Indicators (KPI):

- Recordable Incident Rate (RIR)

- Lost time Incident rate (LTIR)

in specific areas where there are lots of vehicles (e.g. Shuttle Carriers) and pedestrians. We prevent injuries and crushes between two vehicles and vehicles vs pedestrian. Thanks to our technology we are able to provide data and index to implement corrective actions to enhance safety.

By investing in new proximity detection systems, terminal operators can grow both in business and work environment safety, because we reduce costs due to accident damages and maintenance costs.

In the meantime we obsess over data, because it provides operations leaders and safety professionals with measurables, objective facts and numbers that allow to detect and mitigate risks, solve safety problems and guide technical decisions. Frequently the Container and Port industry have safety plans in place, but those are mostly passive solutions (e.g. PPE, flashing lights on equipment to draw attention to its presence, installation of backup alarms, mirrors at corners and intersections, etc.). With SMART 5.0 and Data Insights we set the new rules to change the culture of safety.

the innovation

SMART 5.0 is the latest innovative tailor made anticollision solution, adaptable to any kind of vehicle, that minimizes the risk of machine to machine and machine to pedestrian collision.

SMART 5.0 is composed of just three devices:

1. touch screen display

2. CPU

3. sensor (The Key).

That means it's easy to install and it lowers Installation costs by reducing the number of sensors.

The sensor detects the correct position of vehicle and warns the driver in real time thanks to visual and sound alarms. It is possible and easy to set two alarms (Warning and Pre Warning) and shape the range and the size of the detection pattern (circular, rectangular, elliptical, and any other one) with the touchscreen display. The features of this solution in addition to that are Check list module, Badge module, GPS module, and Shock Module. The technology used by SMART 5.0 is Ultra-wideband (UWB)[1]

how it was implemented

The requirement was to install the solution on two Shuttle Carriers and because of the size of these vehicles, the goal was very challenging.

We have installed the Key sensors on top of the shuttle roof, and in the cabin we've installed the CPU and the touchscreen display in a visible area to the driver.

We have set, for both vehicles, two alarms warning at 10 m and Pre Warning at 20 m, shaping a rectangular area.

result

The leadership team and site managers were enthusiastic to see that in an easy way they have resolved one of their most import cost items, machine to machine collision and in the

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[1] Ultra-wideband (UWB) is a radio technology that can use a very low energy level for short-range, high-bandwidth communications over a large portion of the radio spectrum. UWB has traditional applications in non-cooperative radar imaging. Most recent applications target sensor data collection, precise locating, and tracking.

meantime to lower the risk of collision with other site infrastructure,such as automated doors. This can significantly reduce maintenance and repair costs.

Installing safety sensors throughout a facility provides real time information to avoid accidents. Collecting and analyzing the data also gives insight into where and when the most dangerous "hotspots" are.

conclusion

Our systems can reduce the risk of accident in the ports and terminal industry. The high precision and sophisticated technology combined with data reports can bring safety and efficiency to another level. We are able to measure progress by balancing safety and business results.

It is difficult to generalize the cost of accidents. However, having a system which provides a single measure of safety balanced with efficiency, means site managers can monitor progress and optimize operations.

AME believes that there is no real progress without safety.

LINK: https://www.ameol.it/en/