Case Study

Darveen VT-979 Vehicle Mount Computer Powers Crane Tracking and Warehouse Management in Steel Plants

The Challenge

Steel plants operate in some of the harshest industrial environments, where heat, dust, and vibration are daily realities. Overhead cranes are vital assets, continuously transporting molten metal, semi-finished products, and finished goods across large warehouse areas. Any disruption to crane operations can directly impact plant efficiency, safety, and delivery schedules.

A leading Asia steel manufacturer sought to implement a crane tracking and warehouse management system to improve visibility of crane movements, ensure accurate material handling, and streamline warehouse inventory.

In addition to constant vibration inside crane cabins, the steel production floor presented extreme environmental conditions, with temperatures consistently exceeding 50°C and humidity reaching up to 90%. These harsh factors posed significant challenges for installing and operating computer hardware reliably.

The client defined a clear set of requirements:

- Windows OS for compatibility with existing applications and IT infrastructure.
- IP66/IP65 housing to prevent damage from dust and occasional water exposure.
- Large 15-inch display for operators to clearly view system dashboards and navigation interfaces.
- Intel processor to ensure high performance for real-time tracking, database synchronization, and visualization.

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- WLAN option to maintain stable wireless communication between cranes and central control systems.
- Rugged design to withstand vibration and shock, guaranteeing uninterrupted operation inside moving crane cabins.

Solution

After evaluating available industrial computing platforms, the steel manufacturer partnered with a leading industrial automation solution provider and selected the Darveen VT-979 vehicle mount computer as the ideal solution. By installing the VT-979 in overhead cranes, the plant deployed a crane tracking and warehouse management system (WMS) that enables real-time crane monitoring, precise material movement, and automatic inventory updates. The VT-979 also supports integration with manufacturing execution systems (MES) and yard management systems, ensuring visibility across production and logistics workflows.

Key Features of the VT-979

- 15-inch high-brightness display (sunlight-readable, 1000 nits) providing operators with excellent visibility in bright environments.
- Intel® 12th Gen Core™ processor delivering robust computing power for real-time crane tracking and integration with warehouse management applications.
- IP66 housing ensuring resistance against dust, humidity, and accidental water spray.
- 8 to 36VDC wide-range input and shock/vibration tolerance designed to operate reliably in moving vehicles and crane cabins.
- Wireless connectivity options including Wi-Fi 6E, Bluetooth 5.3, LTE, 5G, and GNSS to ensure cranes remain connected to the plant's central network at all times.
- Windows OS support for seamless compatibility with the customer's existing software ecosystem.

By integrating the VT-979 into each overhead crane, the automation partner successfully deployed the crane tracking and warehouse management system. The system enables operators to monitor crane positions in real time, execute precise material movements, and automatically update warehouse inventory databases.

Results

The implementation delivered several significant benefits to the steel plant:

- Improved operational visibility – Real-time crane tracking gives managers accurate insights into material movement, reducing delays and bottlenecks.
- Enhanced safety – Operators can clearly view instructions on the 15-inch high-brightness

screen, minimizing errors in high-risk environments.

- Reliable performance in harsh conditions – Thanks to its IP66 housing and shock/vibration resistance, the VT-979 continues to operate flawlessly even during long shifts in hot, dusty, and high-vibration crane cabins.
- Seamless integration – With Windows OS and Intel platform, the system integrates easily with the steel plant's existing IT infrastructure and ERP systems.

Conclusion

By deploying Darveen VT-979 vehicle mount computers inside overhead cranes, the steel manufacturer has achieved greater efficiency, accuracy, and safety in its warehouse operations.

In addition, the steel company has not only deployed the VT-979 in its own facilities but also exported the solution to steel plants in the United States, reflecting the trusted quality and reliability of Darveen's rugged computing platforms.

About Darveen

Darveen is a global solutions provider specializing in rugged industrial computing for harsh and demanding environments. Founded in 2007, we focus on panel computing and offer a comprehensive product portfolio including vehicle mount computers, industrial panel PCs, embedded box computers, in-vehicle computers, and rugged tablets. Our solutions are widely used in smart ports, logistics, heavy-duty vehicles, and more. As Industry 4.0 advances, we continue expanding into edge computing, industrial automation, medical, and marine sectors—delivering reliable, customized systems through agile and efficient manufacturing.

To learn more our products visit www.darveen.com
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