

A yellow excavator is shown working on a large pile of grey gravel or crushed stone. The background features a bright, hazy sky with soft clouds, suggesting a sunrise or sunset. The excavator's arm is extended, and its bucket is positioned near the top of the pile.

Case Study

Digitizing Cement Plant Excavator Operations with the Darveen RTC-I101 Rugged Tablet

Construction machinery is entering a data-driven era. Telematics connects excavators, loaders, and other heavy equipment to the back office. Managers get real-time visibility into machine location, utilization, fuel use, and maintenance needs, so they can plan smarter, cut waste, and fix problems before they cause downtime. The payoff is real: idling can account for 10–30% of the fuel construction equipment burns, and telematics-guided operator coaching has improved fuel economy by 5.4–9.3%.

As a result, the global construction machinery telematics market is set to triple, from USD 1.4 billion in 2024 to USD 4.4 billion by 2034. McKinsey estimates that if construction productivity caught up with the rest of the economy, an entirely achievable goal, the sector would gain about USD 1.6 trillion in added value.

A cement plant in France set out to capture these gains by bringing digital workflows into its excavator cabs. The plant deployed the [Darveen RTC-I101 rugged tablet](#) as an in-cab terminal, creating a dependable platform for

task management, material data collection, and real-time communication.

Challenges

An excavator cab in a cement plant is one of the harshest places for electronics. Before the upgrade, the plant faced six recurring pain points:

- **Relentless vibration:** Constant shaking while digging and loading loosened components and caused ordinary tablets to freeze or fail.
- **Pervasive cement dust:** Fine dust got into ports and housings, damaging interfaces and shortening device life.
- **Glare and temperature swings:** Direct sunlight washed out standard screens, while hot days and cold nights pushed electronics past their limits.
- **Unstable vehicle power:** Voltage fluctuations and ignition surges damaged unprotected devices and caused unexpected shutdowns.
- **Cramped cab space:** Operators needed a mount that holds firm over rough ground but still lets the tablet come out quickly.

- **Paper-based workflows:** Handwritten work orders and logs slowed dispatch, introduced errors, and delayed data reaching the back office.

The Solution: A Complete In-Cab Computing Package

The plant chose an end-to-end Darveen solution: the [RTC-I101](#) industrial rugged tablet, the VD100L vehicle dock, and the VC19D wide-voltage vehicle power supply. Every component was designed to work together, so nothing had to be pieced together on site.

RTC-I101 Rugged Tablet Computer

The RTC-I101 is a rugged tablet computer engineered for the toughest job sites. It serves as the operator's command center for receiving tasks, recording operations, and transmitting data:

- **Built to survive the cab:** IP67 dust and water protection and MIL-STD-810H vibration and drop certification keep it running through cement dust and nonstop shaking.
- **Clear in direct sunlight:** A 10.1" capacitive multi-touch display with up to 700 nits stays sharp and readable, even in a sun-filled cab.
- **Always connected:** 4G LTE, dual-band Wi-Fi, Bluetooth 4.2, and

GPS/GLONASS/BeiDou positioning enable real-time dispatch and location tracking.

- **Reliable Windows performance:** An Intel® Celeron® N5100 processor and Windows 10/11 run existing plant software without changes.
- **Ready for every shift:** A removable 5000mAh battery delivers up to 6 hours of runtime, and -10°C to 50°C operation handles summer heat and winter cold.
- **Flexible industrial I/O:** USB 3.0, USB-C, Gigabit RJ45, Mini HDMI, and rugged aviation connectors for RS232, plus an optional NFC reader, UHF RFID reader, and 1D/2D barcode reader for material tracking.

VD100L Vehicle Dock

The [VD100L](#) locks the tablet securely inside the excavator cab and absorbs vibration, so the device stays stable through the roughest digging cycles. Quick-release mounting lets operators remove the tablet in seconds. Integrated power and signal connections keep cabling clean in tight cab spaces.

VC19D Wide-Voltage Power Supply

The [VC19D](#) is an automotive-grade power module that handles excavator voltage swings. It provides surge and reverse-polarity protection, filtering out spikes during engine



start-up and operation. The industrial rugged tablet stays safely powered from the start of a shift to the end.

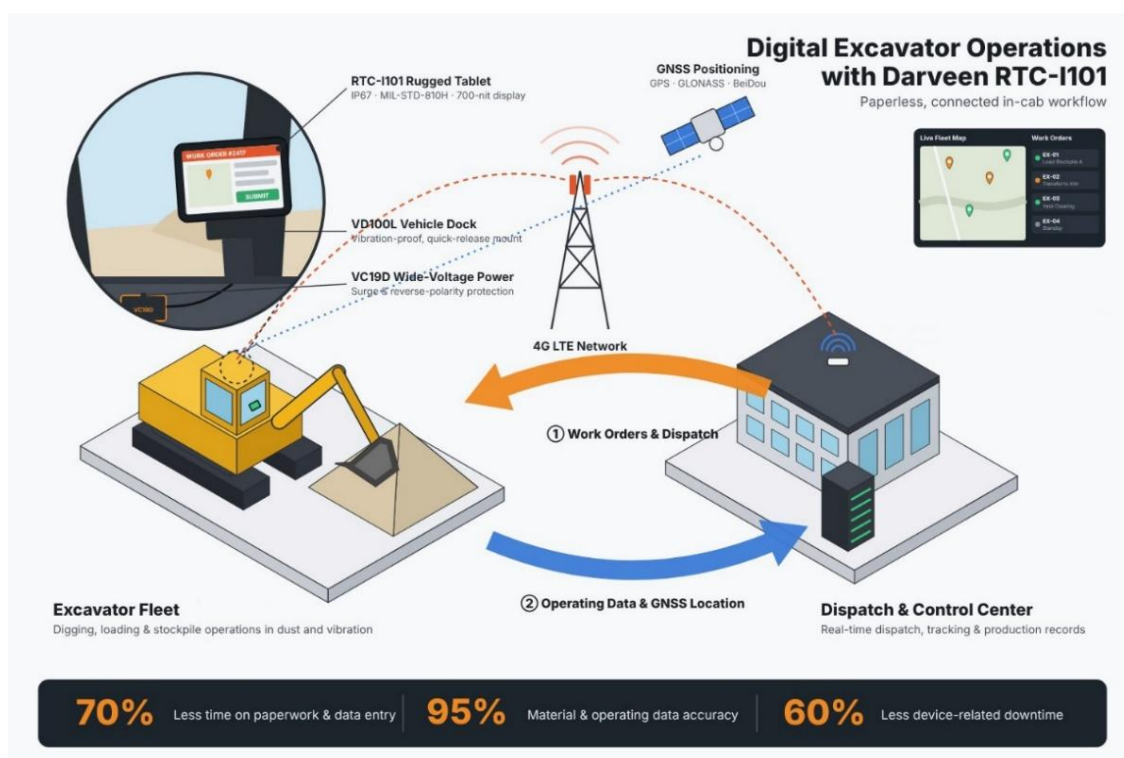
The Results

Every excavator cab at the plant is now a connected digital workstation. Operators receive work orders, log material data, and get dispatch instructions without leaving the seat, and the back office sees every update in real time. The impact showed up quickly:

- **70% less time on paperwork:** With work orders and operating logs on the in-cab rugged tablet, operators spend far less time on manual data entry and more time moving material.

- **95% data accuracy:** Real-time digital entry replaced handwritten records and manual transcription, giving managers material and production data they can trust.
- **60% less device-related downtime:** The rugged tablet computer, vibration-proof dock, and surge-protected power supply keep every cab running, shift after shift.

Deployment was just as smooth. Because the industrial rugged tablet, dock, and power supply come as one fully matched package, there were no accessories to piece together and no compatibility testing, so the plant rolled out quickly and can easily scale to more excavators.



About Darveen

Established in 2007, Darveen is dedicated to developing rugged industrial computing solutions tailored to the diverse needs of vertical industries. Our product portfolio includes vehicle mount computers, industrial panel PCs, industrial displays, embedded box computers, and rugged tablets. With nearly two decades of experience in product design and manufacturing, Darveen's solutions are widely adopted in smart ports, warehousing and logistics, and heavy-duty vehicle applications. Riding the Industry 4.0 wave, Darveen is expanding its reach into edge computing, smart manufacturing, industrial automation, healthcare, and marine sectors.

To learn more our products visit www.darveen.com
Or send us an email to sales@darveen.com
Darveen Co., Ltd. All Rights Reserved.