

New Cat[®] 789D Autonomous Water Truck defeats dust and controls costs through automated water delivery

- Automates both truck and water delivery to help optimize the complete haul road watering process
- Fully integrated Cat[®] Water Delivery System connected with Cat MineStar[™] to manage water application
- Designed to reduce overwatering and underwatering, allowing sites to enhance safety while lowering water consumption

IRVING, Texas, March 4, 2025—Helping prevent haul road overwatering and underwatering, the new Cat[®] 789D Autonomous Water Truck (AWT) enhances productivity by enabling mine operations to digitally track water consumption and reduce waste. Fully integrating into the mine site's Cat Command autonomous haulage fleet to control haul road dust, the market's first commercially available AWT is built on the field-proven 789D mining truck chassis and integrates the truck, tank and Cat Water Delivery System (WDS), connected with Cat MineStar[™] technology.

Featuring Command for hauling, the new 789D AWT offers the same potential for greater utilization than staffed equipment. The fully autonomous truck reduces shift changes, meal breaks and other operational delays to improve efficiency. Complying with watering plans, the water truck seamlessly interacts with other autonomous equipment and integrates with customer mining processes and systems managed by MineStar.

The 789D is the largest Cat water truck product offering that can accommodate up to 165,000 l (43,588 gal), depending on tank configuration. The AWT senses when the water tank is running low and can be programmed to integrate with the water refill station to fully automate the water refill process. The auto shutoff feature prevents tank overfilling.

"To meet customer requirements for dust control, Caterpillar implemented a MineStar-integrated watering model based on many years of site watering studies and Cat WDS performance data," explains Corey Wurtzbacher, general manager and vice president of technology and global sales support at Caterpillar. "This model allows the truck to monitor traffic, weather and road conditions, prioritize what areas need watered, when the areas need watered, and how many passes it should take to apply the correct amount of water saturation, for the given conditions. The integration of Caterpillar's many years of autonomous truck operations and water delivery development have been combined to make a high performing autonomous watering solution."

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Fully integrated system

When Caterpillar set out to develop an autonomous water truck, integration with Cat MineStar Command for hauling and the Cat WDS was key to the entire integration process. The team began building communication between the truck on-board systems and the office control console to work together with the Cat WDS interface. To ensure seamless operation and proper communication between the water delivery system and MineStar, a compatibility check has been implemented in Cat WDS to confirm all truck control systems are running compatible software and reporting any onboard failures to the MineStar system for appropriate corrective action.

Fully integrated into the truck's design, the exclusive Cat WDS varies waterflow based on truck speed and automatically determines the correct amount of water needed to control dust. Knowing where, when and how much water to dispense, the 789D AWT helps customers conserve water, a scarce resource at many mining locations around the world.

When truck speed drops below the minimum watering speed setting, determined by site operations, the system halts water delivery to help prevent overwatering, poor traction, and damage to haul road intersections and other stopping areas. When truck speed exceeds the minimum watering speed setting, the system begins depositing the specified amount of water commanded by MineStar. Cat WDS actively monitors water level and automatically turns off watering once the tank is empty. To reduce potential damage, the system has multiple safeguards in place to prevent the water pump from running dry. This feature helps prolong water pump life and extends service intervals.

The automated system's flat, controlled spray pattern delivers optimal liters-per-square-meter (gallons-per-square-foot) coverage across the haul road. Larger, heavier droplets designed to reach the ground aids in reducing spray loss to wind and evaporation.

Reducing health hazards associated with airborne particles, automated water delivery supports the reduction of dust that limits operator visibility for staffed equipment to enhance overall site safety. Remote tank fill control, complete with auto shut-off to prevent overfilling, eliminates the need for a worker to be involved in the refilling process, reducing the potential of slips and falls.

Mines can quickly switch the flexible 789D AWT from autonomous mode to staffed mode as necessary for tasks like front water cannon operation. The cannon has a capacity of distributing up to 2,839 l/min (759 gal/min) with a spray distance reaching 60 m (200 ft). Even with staffed operation, Auto Mode water delivery automates the watering process to leverage variable water flow and automatic determination of the correct amount of water needed to control dust.

Scalable technology, supported by Cat dealers

Cat Water Solutions integrates the 789D truck chassis with the proven Cat WDS and innovative MineStar

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technology. If the site is not yet ready for a fully autonomous water truck, MineStar has cloud-based solutions that will work in the interim and allow customers to utilize, track, and measure the productivity of the 789D before it is put into autonomous operation. Options include a basic or premium package.

The basic package allows sites to track their asset and see, when, where and how it is performing:

- Location of truck
- Water level
- Fuel level
- Watering mode
- Truck speed
- Truck refills
- Water dispersed
- Truck utilization per shift

Premium will allow sites to track how their water trucks are tending to the site's watering needs:

- Overall watering heat map to show the age of water currently put down by all trucks in a shift
- Watering heat map by truck to show where each truck watered and what mode was utilized
- Utilization of fill spots by each truck
- Replay of truck watering activity for up to 8 previous weeks of data, depending on how many assets are tracked
- Suggested area to water based on age of water and traffic utilization

When the site is ready for full autonomous mode, the water truck can be integrated into the MineStar ecosystem to work alongside the rest of the mining fleet.

This integrated autonomous water solution is fully supported by the Cat dealer and parts network. Covered by a Caterpillar factory standard warranty, the 789D AWT is eligible for Cat equipment protection plans (EPP) and customer value agreements (CVAs). Retrofit kits are available for existing Cat 789D truck platforms in the field.

More information on the new Cat 789D Autonomous Water Truck can be found by contacting a Cat dealer or visiting cat.com/watersolutions.

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NOTE TO EDITORS

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