



Autonomous wheel loader

Tested in: Road construction - highway near Gran Sasso Nord, Italy

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Autonomous Wheel Loader Machine

- A fully electronic control machine has been developed in place of a hydraulic or mechanical one.
- All the systems, like steering, powertrain and implement hydraulic can be controlled electronically.



Autonomous Wheel Loader Machine

- 20-ton operating weight.
- 3.5 m³ bucket volume and 7-ton payload.
- Future-proof vehicle with cutting-edge devices, such as 4D radars, lidars, thermal cameras, ultrasonic sensors, GNSS antennas, an industrial computer, etc.



Autonomous Wheel Loader Machine

- Communication between the machine's own electronic systems and additional devices, such as industrial computers, sensors, and cameras, is established to enable autonomous functions and remote control.
- Algorithms and software concerning the machine's operating conditions are developed.



Autonomous Wheel Loader Machine

- The connection between the digital twin and AWL was configured and validated to enable the exchange of information between them.
- The map of the location was created from data recorded by the drone's onboard sensors, adapted to AWL navigation.



Autonomous Wheel Loader Machine

- During the road construction use case, a typical and very common operation, the Y-cycle was tested and validated (load and unload) to illustrate the autonomous and teleoperated functions.



Autonomous Wheel Loader Machine



Autonomous Wheel Loader Machine

- The machine loaded and carried some gravel, then dumped it at another location (called load and carry).
- The AWL travelled from point A to B autonomously and safely. It followed optimal trajectories by avoiding obstacles and areas frequently accessed by human operators.



Autonomous Wheel Loader Machine

- Remote supervision of the machine from the office comfort.
- Compact and ergonomic.
- Easy and stylish.
- Less effort and fatigue.
- Possible to use from an office or any remote location.

