

Trustworthy in Task



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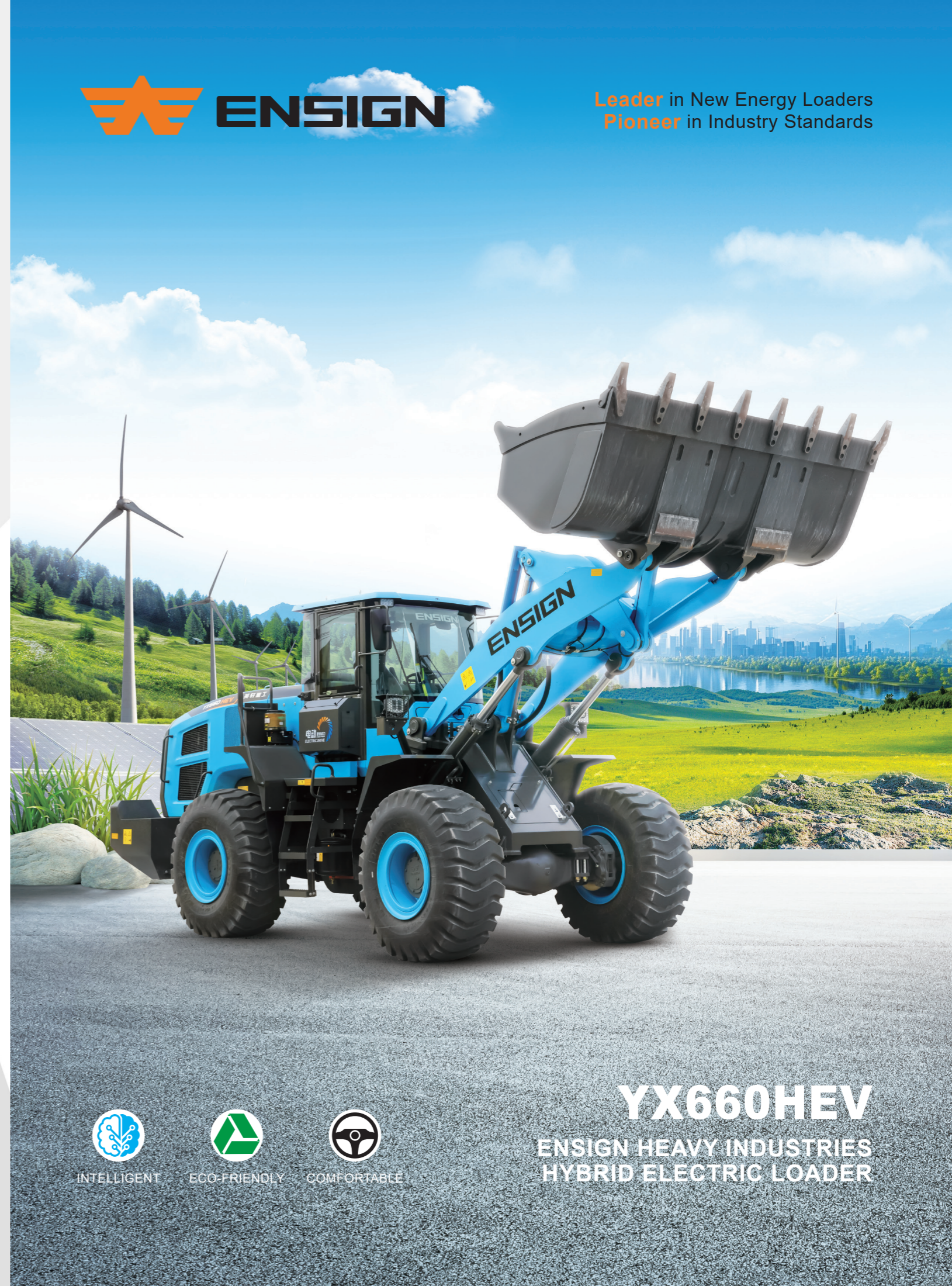
#### NOTES

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2024.11



Leader in New Energy Loaders  
Pioneer in Industry Standards



INTELLIGENT



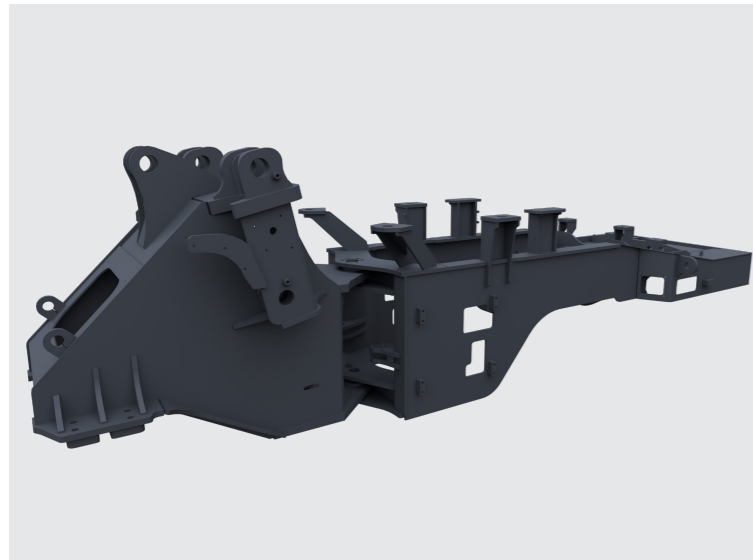
ECO-FRIENDLY



COMFORTABLE

## YX660HEV

ENSIGN HEAVY INDUSTRIES  
HYBRID ELECTRIC LOADER



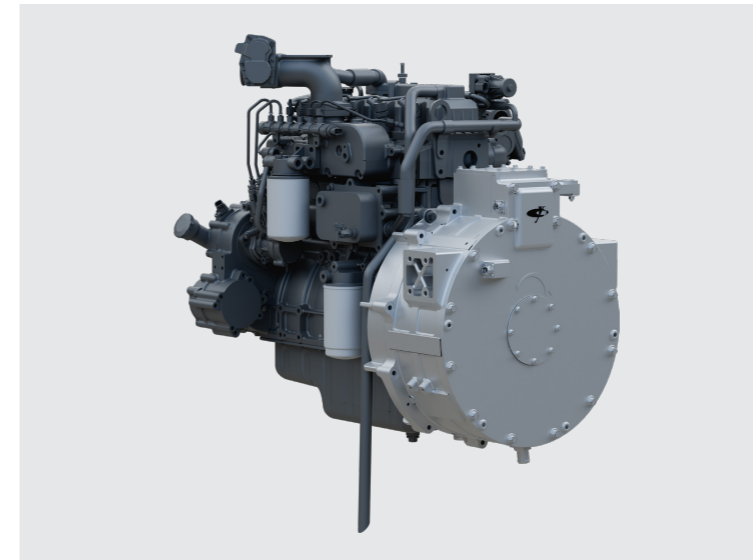
### Heavy-Duty Design

Features a wide articulation design with load balanced distribution and an extended wheelbase of 3,400 mm, ensuring stability under heavy loads. The hydraulic cylinders are reinforced and enlarged, with optimized pipeline layout, ensuring high reliability. It comes with a heavy-duty reinforced drive axle to handle demanding and heavy-duty applications.



### High-Speed Motor

The industry's first 8,000 rpm high-speed permanent magnet synchronous motor powers the machine. The hydraulic and drive systems are decoupled, enabling dual independent motor operation, quick response, high low-speed torque, and robust power with higher efficiency.



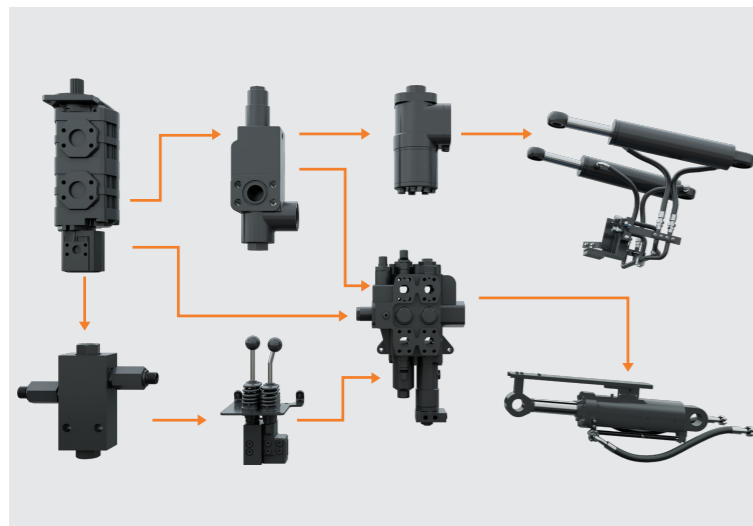
### High-Efficiency Range Extender

A high-power integrated range extender provides electric power for the vehicle, with an engine output of 118 kW solely for power generation, not for machine operation. The range extender and vehicle controllers exchange information in real time, ensuring the engine operates within its most efficient range, making the system far more efficient than conventional fuel-powered loaders.



### Pure Electric Operation Mode

Equipped with a single-port super-fast charging port and a 105 kWh lithium iron phosphate battery pack. The pure electric operation mode uses battery power to drive the machine, achieving a near full-electric mode, with enhanced energy savings and cost efficiency.



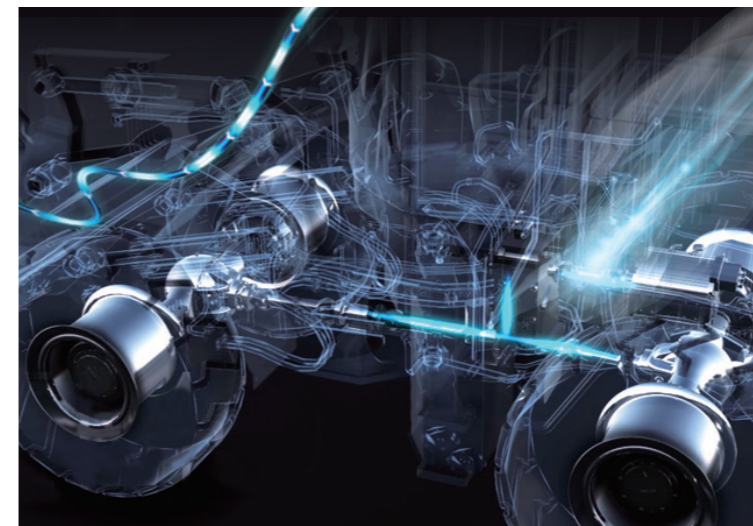
### Hydraulic Technology

Utilizes ENSIGN's proprietary positive-flow hydraulic system, achieving intelligent dual-stage power distribution between the electronic and hydraulic systems. This reduces energy loss, enhances micro-control, shortens cycle time, and increases working speed by 17%, providing an optimal operating experience.



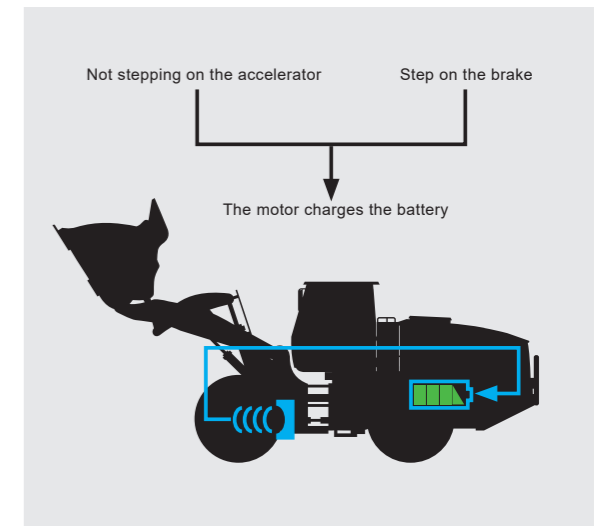
### Electronic Transmission

Equipped with an AMT automatic transmission specifically tuned for new energy loaders, featuring quick and smooth shifting. With electronic control strategies, operators can select between light and heavy-duty modes for higher efficiency based on the working conditions.



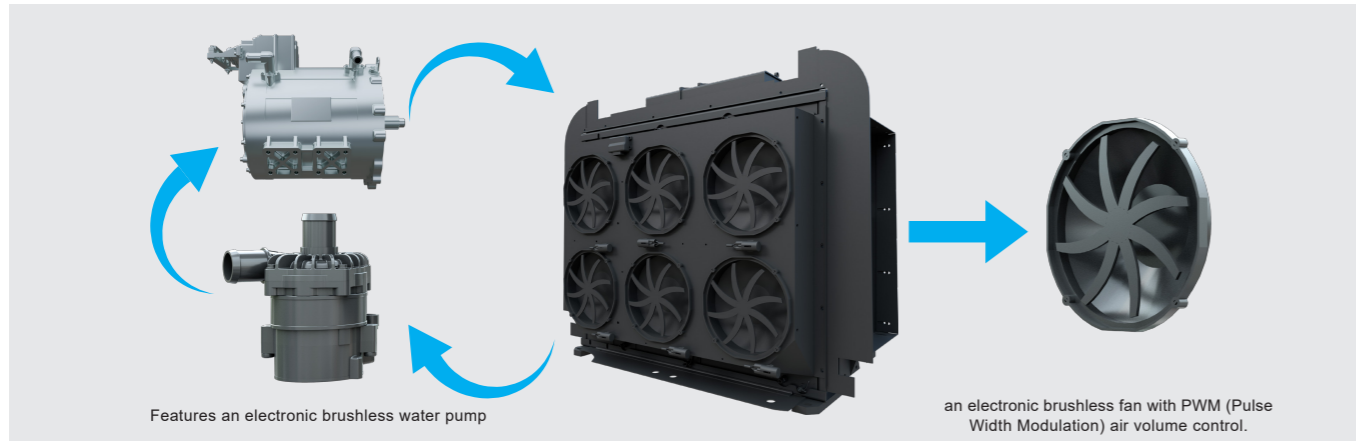
### Electric Transmission Technology

Adopts efficient electric transmission technology with a direct motor-to-transmission connection, eliminating energy loss from torque converters, achieving over 30% greater energy utilization compared to hydromechanical transmission. Intelligent electronic control enables functions such as continuously variable transmission and power cut-off.



### Energy Regeneration System

During deceleration or braking, mechanical energy is converted into electrical energy, extending range, reducing energy consumption, and improving environmental friendliness. This system also extends the lifespan of friction plates.



Features an electronic brushless water pump

an electronic brushless fan with PWM (Pulse Width Modulation) air volume control.

### Intelligent Temperature Control System

Features a single-layer cooling structure that reduces wind resistance and simplifies maintenance. It uses an air-suction cooling method to prevent blockages. The generator, motor, controller, engine, intercooler, and hydraulic radiator are integrated, with distributed electronic fans for zoned control and intelligent temperature regulation, providing efficient cooling as needed.

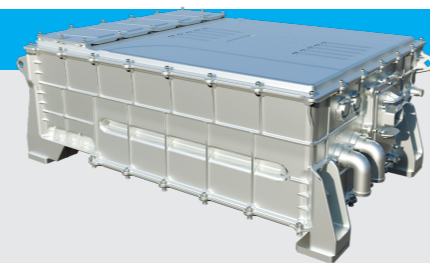


### New Body Design

Features a family-style body with a sleek, fastback design. The new-generation micro-pressurized luxury cabin offers 20% more space. The curved front windshield increases depth, providing a panoramic driving view. The rounded rear hood design, combined with a reversing camera, enhances operational safety.

### Electronic Control System

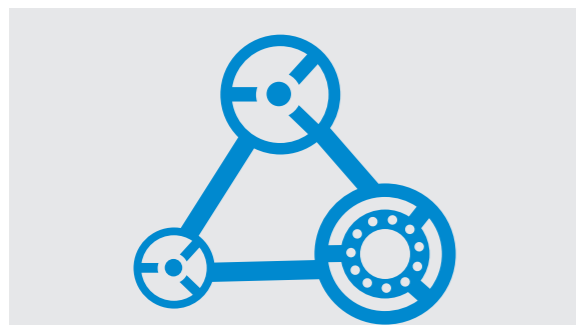
Independently developed VCU control program that is highly adaptable to various work conditions, ensuring optimal machine performance under demanding environments. The system utilizes an integrated multi-function controller with layered high and low voltage harnesses, reducing fault rates and making maintenance more convenient.



### SMART MANAGER

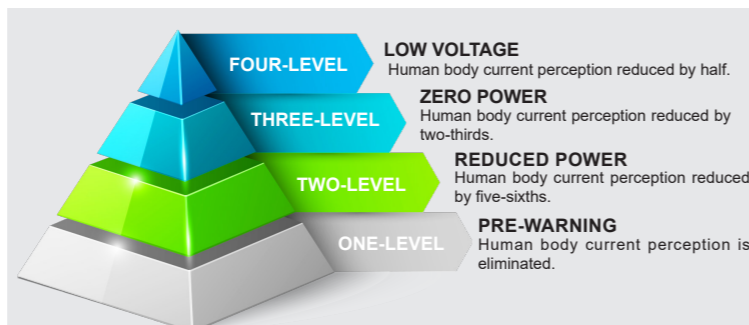


Intelligent Manager Equipped with a next-generation large-screen management system, providing real-time health monitoring of the machine's dynamic data. Integrated fault alarm system intelligently displays fault information. The machine status can be directly viewed via a mobile app.



### Intelligent Monitoring

The smart monitoring system continuously assesses the operating mode. It alerts the operator when the operation deviates from the optimal fuel economy range, and if it remains outside the range for an extended period, the system will automatically intervene to control the vehicle speed, helping users optimize operating habits and reduce costs.



### Four-Level Safety Alarm System

The high-voltage system features leakage protection, where the electronic control system immediately responds and activates safety measures upon detecting abnormal current fluctuations. High-voltage components meet IP67 standards for dust and water resistance, ensuring reliable operation in harsh environments.



### Enhanced Experience

Standard adjustable steering column and dual rail air suspension seat with automatic inflation and deflation function to accommodate different driver needs, ensuring comfortable, fatigue-free driving.



### Upgraded Controls

Standard thumb pilot dual-handle controls for precise operation and enhanced micro-control. The "left-hand shifter + F-N-R button" shift mode allows seamless manual and automatic shifting, making operation more comfortable and efficient. Industry-leading steering technology provides light and stable steering.

The YX660HEV plug-in extended-range hybrid electric loader has a rated load capacity of 5,800 kg and is designed with an extra-long wheelbase of 3,400 mm. Positioned as a high-end model, it is efficient, energy-saving, intelligent, and comfortable, making it suitable for most work conditions, including earthmoving, aggregates, coal, port, and mining operations.



- Adopts an energy conversion route from "fuel" to "electric", resulting in higher energy efficiency, reduced emissions, and a more environmentally friendly operation.
- Utilizes an integrated high-efficiency range extender that meets China Stage IV emissions standards without requiring urea, further reducing operating costs.
- Compared to fuel-powered loaders of the same capacity, hybrid technology provides significant fuel savings, with an overall fuel-saving rate of  $\geq 35\%$ .
- Hybrid technology enables power generation through the range extender, completely eliminating range anxiety and dependency on charging infrastructure.
- Features efficient electric drive technology with a dual-motor architecture, delivering powerful performance, rapid response, and high operational efficiency.
- The hybrid model covers a broad range of applications, including earthmoving, municipal services, aggregates, coal, and port operations, and is suitable for special conditions like high-altitude and tunnel environments.

## TECHNICAL PARAMETERS

Bucket Capacity(m <sup>3</sup> )	2.5-5.6 (3.6)	Dump Angle(°)	45
Rated Load(kg)	5800	Dump Height(mm)	3370
Overall Operating Weight(kg)	18010	Dump Distance(mm)	1230
Max. Breakout Force(kN)	165	Min.ground Clearance(mm)	462
Gradeability(°)	28	Wheel Base(mm)	3400
Min. Turning Radius(outer side of the bucket)(mm)	7200	Wheel Tread(mm)	2250
Min. Turning Radius(outer side of the tire)(mm)	6400	Max.lift Height(mm)	5930
Width(outer side of the tire)(mm)	2845	Steering Angle(°)	38
Total Cycle Time(s)	$\leq 10$	Overall Dimension L*W*H(mm)	9060*3115*3485

## BRAKE SYSTEM

Service brake type	Air-over-oil caliper disc
Parking brake(emergency brake)	Electric control caliper disc

## ENGINE

Model	YCF36160-T480
Rated Power(kW)	118
Rated Speed(r/min)	2400

## DRIVE SYSTEM

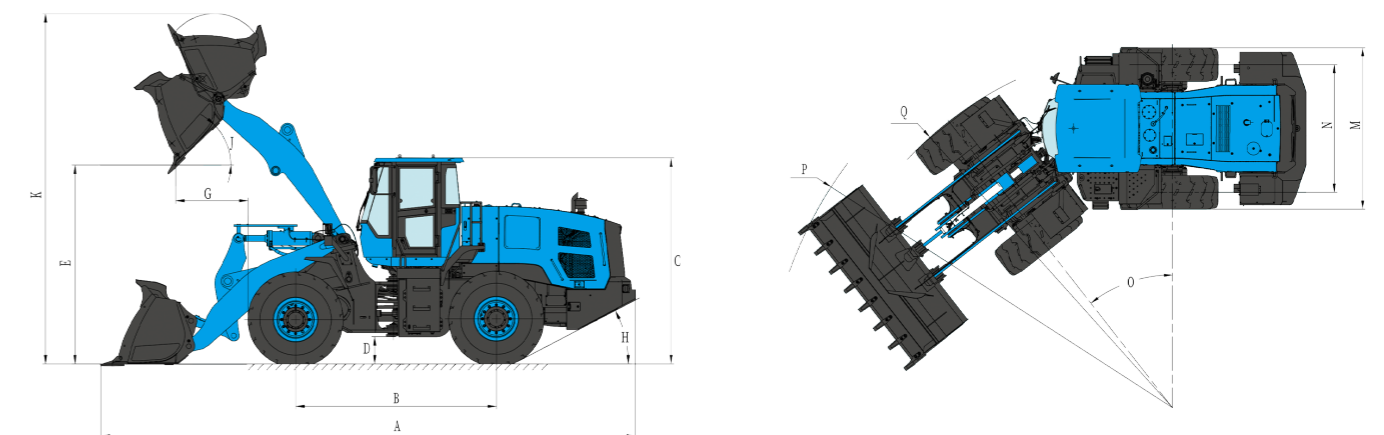
Transmission Type	Electric control fixed shaft
Gears	2 Forward, 1 Reverse
Main Drive Type	Spiral bevel gear, first reduction
Hub Reduction Type	Planetary, first reduction

## HYDRAULIC SYSTEM

Steering System	Load sensing hydraulic
Working Device Hydraulic System	Dual pump merging

## ELECTRIC CONTROL SYSTEM

Power Battery Type	Lithium Iron Phosphate
Power Battery Capacity(kW·h)	105
Rated voltage of power battery(V)	608
Peak Power of Walking Motor(kW)	200
Peak Torque of Walking Motor(N·m)	1200
Peak Power of Hydraulic Motor(kW)	130
Peak Torque of Hydraulic Motor(N·m)	350



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