ZERO EMISSIONS

WIGGINS YARD eBULL & H2 eBULL

Wiggins has been manufacturing forklifts for over 60 years. Engineered for the owner, designed for the operator.

WIGGINS LIFT CO. INC.

» Zero Emissions

» Motion Alerts – visual and audible

» Radar and Back Up camera

» Unique Battery Management System for extended service life and safety

» Unique battery design keeps battery packs safe

» Vibration and Shock component mounting

» Battery Electric Vehicles (BEVs) offer significantly lower operating and maintenance costs compared to diesel vehicles. Similarly, the hydrogen fuel cell version (H2) has been optimized to minimize hydrogen fuel costs (Patent Pending).

» Bundling with Charge Stations available – Level II or DC Fast Charge

» SAFE - ANSI/ITSDF B56.1 and UL-583 Conformance

ALL ENERGY IS FROM UNIQUE HIGH VOLTAGE LITHIUM ION BATTERY PACKS.

ZERO EMISSIONS

Wiggins eBull Series is Zero Emission. Stay ahead of the approaching regulations that will eliminate diesel engines in all Off-Highway equipment. With a 10 year equipment replacement cycle, for example, the time to start electrification at your facility is now. Tier V engines are only a temporary step on the way to Zero Emissions.

CLEAN AND QUIET POWERTRAIN

Energy is from unique high voltage Lithium Ion battery packs, with optional hydrogen fuel cells to extend work times and equipment availability. Safe High Voltage 720 VDC keeps power delivery strong and efficient while helping to keep weight and costs down. High Torque, direct drive, AC electric motor feeds power to our proven drive axles for high pulling power and gradability. Zero Emissions for clean operations inside buildings and ships, without fumes, soot, or noise.

SAFETY IS ESSENTIAL

Battery technology is unique with a tested cell configuration that reduces the potential for cascade failures. Steel enclosures protect batteries to prevent damage from falling objects or side collisions. Park Brake automatically applies if there is a loss of hydraulic power. Hydraulic wet disc brakes in the main drive axle are fully capable of stopping the fully loaded machine in the distance required by the ITSDF B56.1 Safety Standard, even without the help normally provided by the electric drive motor. Regeneration charges the battery when the brakes are applied.

» Reverse Backup Camera
» Daylight Strobes when moving
» Optional rear facing radar with audible and visual warnings to operator
» Optional noise makers include conventional backup alarm and modern White Noise Generator to alert nearby pedestrians.
» Pedestrian boundary lights

PROTECTIONS

Wiring, High Voltage Interrupt Loop, circuit protections, connectors, and overall design protect the batteries, optional fuel cells, and all electrical components from damage. This unit meets the intent of the design and performance criteria of Part III of ANSI/ITSDF B56.1-2016 and UL-583 10th Edition for Electric Battery Powered Industrial Trucks. Batteries and optional fuel cells are protected by steel enclosures, high capacity cooling systems for each pack, vibration and shock isolation mounting. The Battery Management System balances charging and discharging rates, controls temperatures throughout the battery packs, prolongs battery lifetime. The Vehicle Control Unit controls power and temperatures in the liquid cooled electric motors and inverters, and optional fuel cells. Radiator Protection includes expanded metal screen. In the event of a partial battery system failure, work can still continue. Similarly, if the hydrogen fuel runs out, work can continue for a limited period of time.

ABOVE

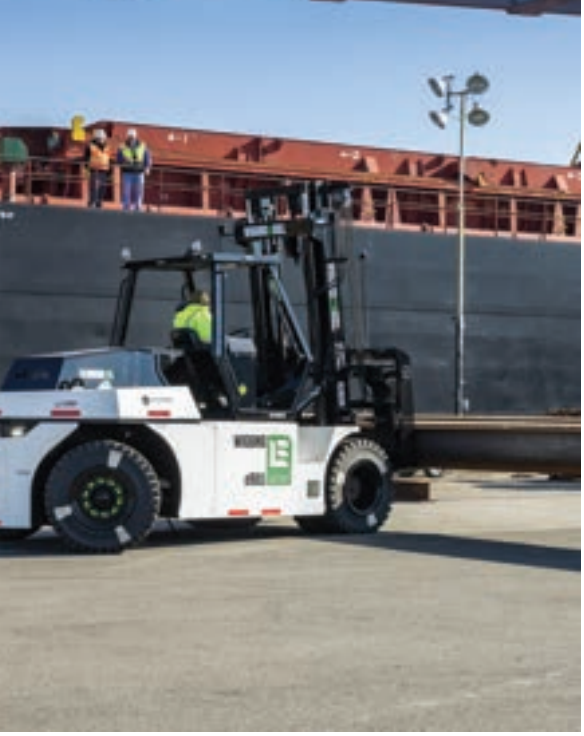
Level 2 A/C charging with 1 or 2 on-board chargers and CCS1 DC Fast Charging up to 150 kW provide additional charging convenience.

RANGE OF MODELS

Wiggins' first unit is 36,000 lbs at 24 inch load center (16 Tonne at 600 mm). With well over 100 kWh of on-board energy storage, the Wiggins Yard eBull can support 8-hour shifts, or double shifts with the DC Fast Charge opportunity charging. With the hydrogen fuel cell option, this run time can be increased even further. Wiggins' Patent Pending control software helps to extend battery lifetime and minimize hydrogen fuel costs. Our lifts can handle up to 88,000 lbs at a 48-inch load center (or 40 tonnes at 1200 mm). For other models or purpose-built applications, please feel free to contact Wiggins.

CONVENIENCE

High Capacity Charge ports and Hydrogen Fuel Fill are located on the same side of the machine as the operator access for ease of parking when at the charge station or refueling. Level 2 A/C charging with 1 or



2 on-board chargers and CCS1 DC Fast Charging up to 150 kW provide additional charging convenience. Hydraulic system is separate from drive motor, eliminating the need for an inching pedal. A full speed lift can happen while stationary. No transmission means no shifting gears, operator only selects direction of travel. The Brake Pedal communicates with the drive motor and hydraulic brake systems to provide smooth and reliable braking. Display shows power usage and energy remaining. External, high-mounted, flashing blue LED lights alert supervisors when the vehicle needs to be recharged or refueled.

MINIMAL MAINTENANCE

Wiggins uses 5 year life, non-toxic Polypropylene Coolant, and long life All-Weather hydraulic fluid. Optional Automatic Greasing is available for mast and steer axle. Since the electrical drive motor does most of the braking, hydraulic axle brakes may last the life of the machine. On-Board Diagnostics assist with maintenance and repairs

THE WIGGINS DIFFERENCE

With a 60-year legacy of delivering high-value forklifts, we provide long-term support and a comprehensive warranty, ensuring your investment is protected. Our dedication to customer satisfaction is exemplified by our supplying parts and repairs for units that have served for decades. Experience the power, durability, and unmatched customer care of the Wiggins eBull, the ultimate choice for heavy forklift needs.

SAVES OPERATING DOLLARS

No engine oil or filter changes, no DEF, no diesel fuel spills, no transmission oil or filter changes. Electricity has higher energy efficiency than diesel and costs less per shift to operate. Check with your utility for further cost reductions through programmed Time-Of-Use charging. Wiggins Battery-Hydrogen Patent Pending Integration and Optimization reduces operating costs from conventional Fuel Cell approaches.

OPPORTUNITIES FOR GRANT SUPPORT

Wiggins has partners with knowledge of government incentives for Zero Emissions programs. Contact us to explore your options in your state, and to perform a site visit. Help us help you feel great about saving money, contributing to cleaner air and water, and staying ahead of regulations. Clean, Quiet, Strong are all well-known features associated with Electric Vehicles.

WIGGINS YARD eBULL +H2 ELECTRIC

FLEXIBILITY FOR THE FUTURE

The latest Battery Chemistry, Fuel Cells, Super Capacitors, Solid State Batteries, Mega-Fast Chargers. These make the news every few weeks, it seems. Wiggins has designed flexibility into the eBull to reduce costs of upgrades and conversions going into the future. Wiggins balances innovation with practicality to achieve the best combination of performance and longevity!

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