ZERO EMISSIONS

WIGGINS MARINA eBULL

Wiggins has been manufacturing marina forklifts for over 40 years. That's 25 years longer than anyone else in the industry.

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
- Significantly lower operating and maintenance costs compared to diesel
- 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 IV engines are only a temporary step on the way to Zero Emissions.

CLEAN AND QUIET POWERTRAIN

All energy is from unique high voltage Lithium Ion battery packs. 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 without fumes, soot, or noise.

SAFETY IS ESSENTIAL

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. Battery technology is unique with a tested cell configuration that eliminates the potential for cascade failures. Steel protects 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.

- 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.

PROTECTIONS

Wiring, circuit protections, connectors, and overall design protect the batteries and all electrical components from damage. Certifications of compliance with UL-583 and ITSDF B56.1 safety standards are expected early 2019. Batteries 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. Radiator Protection includes expanded metal screen.

RANGE OF MODELS

Wiggins offers our standard Marina Bull models in most wheelbases. The most common wheelbases are designed for full day operations when combined with intermittent charging strategies devised by Wiggins engineers and dealers. Wiggins is working closely with charging technology vendors to optimize use of opportunity charging to allow full day operations even with less battery available space.

CONVENIENCE

High Capacity Charge ports are located on both sides of machine for ease of parking when at the charge station. Level 2 A/C charging with 1 or 2 on-board chargers and CCS1 DC Fast Charging up to 100 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.

MINIMAL MAINTENANCE

Change the air filters on the battery cooling system once a year. 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 last far longer. On-Board Diagnostics assist with maintenance and repairs.

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.

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.

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!

WIGGINS MARINA eBull ELECTRIC

AND: IT'S A WIGGINS!

Designed and built for long life and strong like a bull. Many Wiggins forklifts delivered in the last 60 years are still working for their owners or are commanding high resale value. We know, because we provide parts and repair support for units that started service decades ago. Join our customer family with confidence of a fair and comprehensive warranty coupled with on-going support.

DEALER INFORMATION:

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