

Electric Forklift

Used Electric Forklift Canada - Electric forklift models do not rely on combustion engines but use an electric motor instead. The electricity source is derived from either a fuel cell or internal industrial batteries. Internal batteries often provide the electrical source. They are capable of being recharged by connecting the battery to a source that is electrically compatible. The rechargeable batteries are lithium-ion or lead-acid batteries. Electrical production with a fuel cell is close to a battery source but requires refueling to be recharged instead of connecting to an electrical source. Electrical forklifts perform the same types of jobs as internal combustion engine forklifts. That is, they usually use two power-operated horizontal forks to load, transport for short distances and unload materials. The main difference between these different forklift models is their source of power. Typically, electric forklift models are used indoors in warehouses and similar facilities that cannot rely on internal combustion engines due to interior air quality.

Electric Forklift Classifications The electric forklift truck can fall into one or more forklift truck classifications. They are:

1. **Class 1: Electric Motor Rider Trucks** These forklifts can have pneumatic or cushion tires. Pneumatic tires are used on forklifts primarily operated outdoors in dry areas and on uneven surfaces whereas cushion tires are better on forklifts used primarily indoors, on smooth surfaces.
2. **Class 2: Electric Motor Narrow Aisle Trucks** These types of forklifts operate in very narrow aisles, where space is limited. This allows for maximum use of storage space. Class 2 forklifts have a modified design to minimize the amount of space taken up by the forklift.
3. **Class 3: Electric Motor Hand or Hand-Rider Trucks** These forklifts are hand-controlled, which means they do not ride on the forklift but rather is positioned in front of the forklift. The operator controls the forklift using a steering tiller.
4. **Class 6: Electric and Internal Combustion Engine Tractors** The Class 6 Electric and Internal Combustion Engine Tractors are another classification. This includes models that can be used for broad application. The electric versions can be used outdoors in dry applications or used indoors. The types of forklift trucks that are usually electrically powered include: electric counterbalanced trucks, pallet jacks, scissor lifts, rider low lift trucks, order pickers, cushion tire forklifts, rider low stacker, reach truck, walkie low lift trucks, towing tractor trucks and walkie low stackers.

Sources of Electricity for Electric Forklifts Electric forklift models are mainly used on even, flat surfaces indoors. Battery-powered forklifts are better suited for interior jobs as they do not emit poisonous gases; making them ideal for food-processing and healthcare applications. Forklifts that rely on fuel cells produce zero emissions, making them popular in refrigerated warehouses since their performance is not affected by lower temperatures the way batteries are.

Lead-acid battery The most popular type of rechargeable battery is lead-acid models. The battery's ability to produce high surge currents ensures a large power-to-weight ratio. This, coupled with its affordability, make lead-acid batteries a popular option for use in electric forklift trucks. Lead-acid batteries require maintenance and may freeze during colder temperatures. These factors can shorten their lifespan.

Lithium-ion Battery Another type of rechargeable battery used in electric forklift trucks is lithium-ion or li-ion batteries. The main drawback of lithium-ion batteries is that they can be a safety hazard since they contain a flammable electrolyte that, if incorrectly charged or damaged can cause explosions and fires. Additionally, Li-ion batteries cost more compared to lead-acid batteries initially; although they need zero maintenance and provide better efficiency compared to lead-acid batteries. Another benefit is that the lithium-ion batteries can operate with a wider temperature range and better energy densities compared to lead-acid varieties.

Fuel Cell Forklifts that rely on fuel-cell power feature some benefits of both internal combustion and battery-operated forklift trucks. Similar to battery-powered forklifts, there are no local emissions delivered from fuel cell models. One disadvantage is that fuel cell power efficiency is 40 to 50 percent which is about half the efficiency of lithium-ion batteries. Fuel cell power offers better energy density and provides electric forklift trucks to run longer. Fuel cell powered forklifts also have the advantage of performing better in lower temperatures as lithium-ion batteries. The fuel

cell models are preferred for colder applications such as warehouses that are refrigerated. Fuel cells need a fuel source in order to create an electrical current and need refueling. While rechargeable batteries take a long time to recharge, fuel cells can be refilled in roughly three minutes. It is beneficial for businesses that rely on many forklifts that operate numerous shifts to use fuel cell models since they don't have the same downtime for charging batteries.

Pros and Cons of Electrically Powered Forklifts

Advantages of Electric Forklifts

Electric forklift trucks can often be a better option than internal combustion engine forklifts where a lift capacity does not exceed 12,000 pounds. There are many factors to consider in each specific application in order to determine whether an electric forklift is the best option. It is essential to discover the pros and cons of one forklift type to another prior to choosing a model. Specific advantages of electric powered forklift models vs. internal combustion engine models are listed below.

1. The operating costs of battery-powered electric forklifts are significantly lower compared to internal combustion models since fuel costs continue to increase.
2. The cost of electricity is more predictable and more stable compared to combustible fuel; making electric forklifts a better choice when taking budgets and operating expenses into account.
3. Battery powered electric forklifts also allow for recharging at charging stations. This eliminates the necessity for fuel transportation and fuel storage, both at the worksite and onboard the forklift itself.
4. Electrical forklifts, both battery and fuel cell powered, produce no emissions or noise pollution. Both internal combustion engine forklifts and electric models have a back-up alarm that is noisy but necessary.
5. Operator equipment and fatigue is reduced in electric forklift models thanks to the automatic braking technology.
6. Electrical forklifts have longer intervals between maintenance than do internal combustion engine forklifts. This is largely due to the fewer moving parts required in a battery or fuel cell powered forklift.

Disadvantages of Electric Forklifts

For many of the reasons listed above, forklifts powered by electrical means have been more popular than power by internal combustion engines in recent years. However, there are still several applications that make electrical forklifts a less practical option. Certain electric forklift models disadvantages as compared to combustion models are listed below.

1. Electric forklifts feature a lifting capacity of around 12k lbs. or less, limiting them from heavier jobs. This translates to using an internal combustion forklift on jobs where there is limited heavy lifting required.
2. Facilities require recharging stations to accommodate electric forklift trucks. If there are none currently installed, this will cost significantly more.
3. Batteries also require that attention be given to the timing and length of a charge. This is because the life of batteries can be reduced if charged too frequently or not enough.
4. Electric forklift trucks cost more than internal combustion engine units.
5. Older facilities may require electrical upgrades for increased voltage systems to power battery forklifts.
6. Battery-powered units may rely on machinery to lower and lift the heavy replacement batteries during replacement.

All in all, electric forklifts have many advantages over internal combustion engine forklifts but still are not appropriate in many outdoor applications, mostly due to weather and weight restrictions.