

## Electric Forklift

Used Electric Forklift San Bernardino - Electric forklift models do not rely on combustion engines but use an electric motor instead. The electricity is sourced from either internal industrial batteries or fuel cell. If internal batteries provide the electrical source, the batteries can be recharged by joining the battery to something electrically compatible. Rechargeable battery options include lithium-ion or lead-acid. 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. They both rely on two horizontal forks that are power supplied to transport and unload and load items for short distances. The only substantial difference between an electrical forklift and an internal combustion engine forklift is the source of power. Most electric forklift models are used for internal applications including warehouses and similar locations that cannot function with comprised 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 The Class 1 Electric Motor Rider Trucks are one of the classifications. These models have cushion or pneumatic tires. Cushion tires are generally used on smooth indoor surfaces and pneumatic tires are mostly used for exterior applications.
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 forklifts are predominantly used indoors on flat, even surfaces. 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. Refrigerated jobs prefer to use fuel cell forklifts. They make no emissions and are capable of working in colder locations without a power reduction, unlike battery-operated models.

**Lead-acid battery** Lead-acid batteries are the most commonly used type of rechargeable battery. The lead-acid battery's ability to supply high surge currents means that it has a relatively large power-to-weight ratio. This, coupled with its affordability, make lead-acid batteries a popular option for use in electric forklift trucks. However, lead-acid batteries are susceptible to freezing in colder temperatures. They also require maintenance which, if ignored, can shorten the life of the battery.

**Lithium-ion Battery** Another type of rechargeable battery used in electric forklift trucks is lithium-ion or li-ion batteries. Explosions or fires may result in these batteries if they are improperly charged or damaged due to the flammable electrolyte they contain. 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. Like forklifts powered by battery, fuel cell power produces no local emissions. Fuel cell power efficiency is only forty to fifty percent which is roughly half as much as lithium-ion batteries. However, fuel cell power has a higher energy density which can allow electrical forklifts to run longer. Fuel cell forklift trucks operate better in cooler temperatures compared to li-ion battery models. For this reason, fuel cell powered forklifts are often

preferred for use in colder temperatures, such as refrigerated warehouses. Fuel cells are different from batteries in that they require a source of fuel to produce electrical current and so require refueling. Fuel cells only require approximately 3 minutes to refuel instead of the much longer recharging time for rechargeable batteries. 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 forklifts are often a popular choice compared to internal combustion models if the lifting capacity doesn't exceed 12,000 pounds. Of course, there are many considerations to decide if the electric forklift model is the best choice for a particular application. Taking a look at the pros and cons of electric forklifts versus internal combustion engine forklifts is necessary. Specific advantages of electric powered forklift models vs. internal combustion engine models are listed below.

1. Operating costs can be much lower for battery powered electrical forklifts because of the ongoing and often increasing cost of fuel.
2. The price of electricity is usually more stable and predictable than combustible fuel. This makes electrical forklifts a benefit when considering budget needs for projected operating expenses.
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. Both fuel cell and battery-powered electric forklifts produce zero noise pollution or emissions. The only exception to this is the noise associated with the necessary back-up alarm. However, that is characteristic of internal combustion engine forklifts as well.
5. Operator fatigue and equipment wear and tear are reduced in electric forklift models with the automatic braking system.
6. There are longer intervals between maintenance requirements for electric forklifts compared to internal combustion models due to less moving parts used by a battery-powered or a fuel cell unit.

#### 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. Numerous circumstances however still prefer internal combustion forklifts. Certain electric forklift models disadvantages as compared to combustion models are listed below.

1. Electric forklifts typically have a limited lifting capacity of approximately 12,000 pounds or less which eliminates them as an option from larger jobs. Sometimes this means an internal combustion engine forklift is chosen even for jobsites where heavy jobs are few and far between but still a requirement.
2. Battery powered electrical forklifts must be recharged and therefore require sufficient recharging stations to be installed at facilities where none are already present. This could amount to a significantly increased initial expense to the buyer.
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 are also initially more expensive than internal combustion engine forklifts.
5. Certain older buildings may need to undergo electrical upgrades to accommodate increased voltage systems.
6. Battery-powered units may rely on machinery to lower and lift the heavy replacement batteries during replacement.

Electric forklift trucks have a wide range of benefits. They may not be adequate in certain working environments due to their weather and weight restrictions so check your job list accordingly.