

## Electric Forklift

Used Electric Forklift Long Beach - By definition, an electric forklift is a forklift truck which derives its power from an electric motor rather than an internal combustion engine. Electricity comes from a fuel cell or internal industrial batteries. If the electrical source is by means of internal batteries, the batteries are rechargeable by connecting the battery to a compatible electrical source. The rechargeable batteries are lithium-ion or lead-acid batteries. Producing electricity with a fuel cell is similar to using a battery source; however, the fuel cell needs refueling and will not be recharged from connecting to anything electrical. 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. Electrically powered forklifts are typically used in warehouses and other indoor facilities where an internal combustion engine would cause poor air quality for workers.

**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** The Class 2 Electric Motor Narrow Aisle Trucks are another classification. These units function within very narrow aisle locations with limited space. This design enables maximum storage space. Class 2 models feature a modified design to limit the amount of space the forklift takes up.
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 Internal Combustion Engine and Electric Tractors are another lineup. This category includes forklifts that can be utilized for many jobs. The electric units may be used in exterior applications in dry situations and also function well 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 prevent the emission of harmful gases and are suggested for indoor facilities, such as healthcare and food-processing facilities. 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** 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. Electric forklift trucks rely on lead-acid batteries that are affordable and durable. It's important to know that lead-acid batteries can possibly freeze during frigid temperatures and this type of battery requires on-going maintenance.

**Lithium-ion Battery** A Li-ion or lithium-ion battery is a different kind of rechargeable battery commonly used in electric forklift models. Explosions or fires may result in these batteries if they are improperly charged or damaged due to the flammable electrolyte they contain. Lithium-ion batteries initially cost more than lead-acid varieties, but they provide better efficiency and require no maintenance compared to lead-acid models. Lithium-ion batteries are also able to operate over a greater temperature range with higher energy densities than lead-acid batteries.

**Fuel Cell Forklifts** with fuel-cell power showcase the benefits of both battery-operated forklift trucks and internal combustion models. Like forklifts powered by battery, fuel cell power produces no local emissions. One of the fuel cell power disadvantages is that they are approximately half as efficient as li-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. The fuel cell models are preferred for colder

applications such as warehouses that are refrigerated. Different from batteries, fuel cells rely on refueling with a fuel source to create an electrical current. While rechargeable batteries take a long time to recharge, fuel cells can be refilled in roughly three minutes. Because of this, large operations which run several shifts and larger fleets of forklifts tend to benefit from the ability to keep the forklift operating without having to account for lengthy charging times.

### Pros and Cons of Electrically Powered Forklifts

#### Advantages of Electric Forklifts

When a lift capacity doesn't have to be greater than 12,000 lbs. electric forklift trucks are often a better option compared to combustion engine forklift trucks. There are many factors to consider in each specific application in order to determine whether an electric forklift is the best option. It is necessary to discover the pros and cons of internal combustion engine forklift models versus electric forklift models prior to making a decision. Certain advantages of the different types of forklift models are discussed 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. There are recharging stations for battery-powered electric forklift. This system eliminates the necessity for fuel storage and transportation for both the machine and the worksite.
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. The automatic braking systems on electrical forklifts helps to reduce wear and operator fatigue.
6. Electric forklifts boast greater intervals between maintenance compared to internal combustion engine models. This is mainly because there are less moving parts required by a fuel cell or battery-powered forklift model.

#### Disadvantages of Electric Forklifts

For a variety of reasons, electric forklifts have become more popular in recent years over internal combustion models. Numerous circumstances however still prefer internal combustion forklifts. Some of the disadvantages the electrical forklift has when compared to internal combustion engine forklifts are set out below.

1. Since electric forklifts have a lift capacity of approximately 12,000 lbs. many jobs still choose to use an internal combustion model where there are heavy lifting requirements, even when they are only occasionally needed.
2. Electric forklifts rely on battery power and require recharging stations to be installed. If there are none at the facility, this could greatly increase the overall cost.
3. Batteries need to be monitored to ensure adequate timing regarding how long they are charged. This is important since battery life can be reduced if they are charged too frequently or infrequently.
4. Internal combustion engine forklifts are also less expensive compared to electric forklift models.
5. Certain older buildings may need to undergo electrical upgrades to accommodate increased voltage systems.
6. Battery powered forklifts sometimes require machinery to lift or lower the heavy batteries when replacement of batteries is necessary.

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.