

## Electric Forklift

Used Electric Forklift Rhode Island - 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 internal batteries provide the electrical source, the batteries can be recharged by joining the battery to something electrically compatible. The rechargeable batteries are lithium-ion or lead-acid batteries. Electrical production by means of a fuel cell is similar to a battery source but cannot be recharged by connecting to an electrical source, instead requiring refueling. 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. 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 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 Another classification is the Class 3 Electric Motor Hand or Hand-Rider Trucks. These machines are hand-controlled. The operator is positioned in front of the machine and relies on a steering tiller instead of riding on the forklift.
4. Class 6: Electric and Internal Combustion Engine Tractors This classification includes forklifts that allow for a broad application use. In the electric forklift version, they are usually used for indoor use or dry outdoor use.

A list of forklift trucks that are typically powered by electricity are:

**Sources of Electricity for Electric Forklifts** Electric forklift models are mainly used on even, flat surfaces indoors. 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 main type of rechargeable battery is lead-acid batteries. 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. Lead-acid batteries require maintenance and may freeze during colder temperatures. These factors can shorten their lifespan.

**Lithium-ion Battery** A lithium-ion battery or li-ion battery is another type of rechargeable battery used in electric forklifts. 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. 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** that rely on fuel-cell power feature some benefits of both internal combustion and battery-operated forklift trucks. Fuel cell-powered forklifts provide no emissions like battery-powered forklift trucks. One of the fuel cell power disadvantages is that they are approximately half as efficient as li-ion batteries. Fuels cell power offers better energy density and provides electric forklift trucks to run longer. Fuel cell forklift trucks operate better in cooler temperatures compared to li-ion battery models. Refrigerated warehouses rely on fuel cell models due to their ability to function in cooler locations. 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. 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 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. Operating costs can be much lower for battery powered electrical forklifts because of the ongoing and often increasing cost of fuel.
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. Battery-powered electric forklift models and fuel cell electric forklifts generate no noise pollution or dangerous emissions. 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. 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 a variety of reasons, electric forklifts have become more popular in recent years over internal combustion models. There are numerous working conditions however that make electrical models less practical. Some of the disadvantages the electrical forklift has when compared to internal combustion engine forklifts are set out 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. Facilities require recharging stations to accommodate electric forklift trucks. If there are none currently installed, this will cost significantly more.
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. 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.