Introduction

brochure

Invention

New device and method for fast charging of all kinds of industrial batteries with 95% charging efficiency :

It is a new generation pulse charger battery device, which, in order to improve and develop and complete the field of electricity and industrial batteries, with 95% power saving capability, which can be charged with 6-hour fast charging mode (according to the international battery standard) and using From a special and new pulse technique, any type of industrial battery such as: sealed acid - lead acid - calcium acid - industrial nickel cadmium - industrial lithium ion and industrial acid gel without any thermal and electrical losses and without causing any sulfation effect to the stage Complete full charge.

Key advantages of the device :

- 95% power saving mode: (that is, up to 95% reduction in electricity consumption compared to other chargers).

- Increasing battery life in any type of industrial battery, between 10 and 20 years, as a result of frequent charging with this new charger device (due to the special technology pulse technique used in the device).

- Complete elimination of electrical and thermal losses in the battery during charging with this new device.

- Due to the special technology of this device and the special pulse technique used in it, and its compatibility for charging all types of industrial batteries, there is no longer a need to design a charger device specific to each type of battery, and only this new charging unit with power Obviously, it will respond to all types of batteries.

- Due to equipping the device with a special pulse technique method, there is no need to take special care of the battery such as: wet and AGM and frequent adjustment of the charging current during the battery charging process. This advantage reduces the volume of the charger unit and also reduces The cost of producing a charger is in each power range.

- The amper-hour range of rechargeable batteries with this device on an

industrial scale is from 100 amp-hours to 5000 amp-hours in all types of industrial batteries.

- Reducing the resistance of the battery electrolyte, against full charge, as a result of frequent charging with this new device, and as a result, reducing the time to fully charge the battery in a period of even less than 6 hours, according to the type of battery construction, in a process of 3 to 6 months after We will witness the use of this charger device.

Other industrial applications of the device :
Another industrial application of this new charger is in the UPS device of industrial factories. Also in other industries that use batteries: refinery - electronics industry - electric vehicle industry - packaging industry - chemical industry - automotive industry - telecommunication industry - oil and gas industry - power plant industry (electrical panel making) - steel industry - company precision. instruments and . . And in any sector of the industry that needs a special industrial battery charger device with the mentioned special features and advantages, this device can be the best suitable option for this purpose.

Note : One of the most important applications of this new device, due to the significant growth of the electric vehicle and electric motorcycle industry, is in the electric vehicle and electric motorcycle industry, which, because this device has a power saving of 95%, can be used in the station car and motorcycle chargers can reduce the input power of these stations up to 22 times in each power range, which can reduce the network power pressure, on the power station distribution station up to 22 times. which can reduce up to 95% of supply costs, to reduce the fuel of power plants, and the cost of electricity production. and in addition, to reduce the environmental pollutants of power plants, by 95%.

One of the other applications of this new device is in off-grade solar power systems, which can be combined with the off-grade controller charge device and due to the 95% power saving mode feature, it can reduce the volume of off-grade solar panels by 95% along with increasing The life of the battery bank is up to 20 years, and as a result, the cost of installation and operation of the off-grade system is reduced by 66%.

Note: Due to the special pulse technique used in this new generation charger, during the battery charging time, we do not have any temperature increase that will lead to the battery explosion, so when charging the battery, a cooling fan is needed for We do not keep the battery cool.

The method of increasing charging efficiency above 95% :
In this way, in this new charging technology, it is used. By using a special pulse technique, we put the battery in a special electrochemical state, which, in common batteries such as acid or lithium-ion, causes the battery charging efficiency (absorbing electrical energy) of the battery, with Paying attention to the charging efficiency of any type of battery can increase to more than 95%. Using the method of this pulse technique in the battery charging unit causes the amount of electricity required to charge all types of industrial batteries, including lithium-ion - Dry acid - and..., to the extent of 22.6 times compared to the normal state. because in this technique, the penetration power of the electric current in the electrolyte of the battery has been increased, which has increased the absorption of higher energy, compared to the charging mode with normal chargers.

Now, for a better understanding of the problem, we will give a practical :
- In this case, assume that we want to calculate the DC power required to Fast charge a 60 ampere-hour 12 volt lead-acid battery :
Battery charging efficiency : 50%
Dc input power = 60/0.50=120 A.H/6 Hour = 20 Amperes × 15 Vdc = 300 watts-hours.
Now, according to the electrical efficiency of the charger, which is 90% and PFC active type, we will calculate the AC input power of the charger :
Ac input power = 300 watts-Hour / 0.90 = 334 watts-seconds.
- The calculations in the example above were for a typical fast charger that would charge a 60 ampere-hour battery in 6 hours, now let’s calculate the power required for a new charger that uses a special pulse technique and increases The charging efficiency can be up to 95%. We pay :
Charging coefficient : 22.6
Dc input power = 300 watts-hours/22.6=13.3 watts-second.

Therefore, according to the previous calculations, we find that the DC power required to charge the desired battery in the previous example has been reduced by 22.6 times. Also, in this charging method, the input power source

of the new charger is 12-volt dry acid rechargeable batteries, which can be charged with a mini-off grid system or a smart mini-UPS, and after the full stage Full charge is used as the input power source of this charger device.
One of the biggest advantages of using this type of input power supply for the charger device is to eliminate the reactive power of the source when charging the batteries under charge. Because as we know, all normal chargers as well as fast chargers use a switching power supply that has an electrical efficiency between 85 and 90%, and these switching power supplies have electrical losses between 10 and 16%, and the same amount of power loss can be between Apply 31 to 72 percent of reactive power to the local power distribution network, which is due to having a power factor between 0.6 and 0.8, which can put a lot of pressure on the power plant in high-power chargers.

Economic Justification :

The cost of electricity consumption is one of the most important parts of the economic costs of each electric motorcycle or electric car charging station, which has an important impact on the amount of total profit from each charging station.
Because every charging station charges the batteries with the power of the network and with the help of special fast chargers, so according to this important issue, because this new charger device, which uses a special pulse technique, It causes higher electrical energy absorption (over 95% charging efficiency) by the battery, which this field technique requires up to 22.6 times less watt-hours for the charging process than any type of battery under charge. Therefore, this outstanding advantage causes the electric power required by each station to be reduced by 22.6 times. In other words, this advantage can economically reduce the cost of electricity consumption of all charging stations by 95%.
In addition, according to the special power source of this charger, which is a mini battery bank, and according to the power saving capability of over 95% of the device, it is possible to cut off the network power from any charging station, using a mini off-grid system. Or use a smart mini-UPS system so that, in general, we can eliminate all the electricity consumption costs of each charging station, in total, in order to increase the economic efficiency of charging stations.
Now, for a deeper understanding of the problem, pay attention to the economic tables 1-1 and 1-2, which are calculated for 1000 charging stations :

Note: In Table 1-1, first we have calculated the costs in normal mode, according to the current charging stations that use normal fast chargers. And in Table 1-2, for a better comparison with Table 1-1, we have calculated the cost table with the assumption of equipping each charging station with this new charger.

Total cost of electricity consumption, at 1000 charging stations	Annual electricity consumption + annual electricity cost	Monthly electricity consumption + monthly electricity cost	The amount of electricity consumed per day + the cost of electricity consumed	Electric power consumption, each charging station, with 100 batteries and 30 daily charging times in 24 hours
$133,200,000	1,062,720kwh $133200	88560kwh $11100	2952kwh $370	123KW

Table 1-1

Total cost of electricity consumption, at 1000 charging stations	Annual electricity consumption + annual electricity cost	Monthly electricity consumption + monthly electricity cost	The amount of electricity consumed per day + the cost of electricity consumed	Electric power consumption, each charging station, with 100 batteries and 30 daily charging times in 24 hours
$5,880,000	47019kwh $5880	3918.24kwh $490	130.608kwh $16.326	5.442KW

Table 2-2

Note: The price of each kilowatt hour of electricity in tables 1-1 and 1-2 is calculated according to the price of a kilowatt hour of electricity in Taiwan, which is 12.5 cents.

Note: According to tables 1-1 and 1-2, we find that by equipping each electric motorcycle or electric scooter charging station with this new technology, the cost of this technology equipment is one third of the cost of replacing current fast chargers. Is. We can fully witness economic savings of up to 100 million dollars per year in the annual cost of paying for the consumed electricity in all charging stations. In other words, this economic saving in the cost of electricity can add up to 141% to the total annual income from charging stations.

Note : Our proposed solution to replace this new technology in the current charging stations is that this new charger can be equipped with this new charging technology at the time of changing the chargers of each charging station or one charging station each time.

Conclusion

Considering that, this new technology of ours has the ability to reduce the power consumption of electricity up to 22.6 times, in this way, it can branch the required electricity for each charging station of electric motorcycles or electric scooters and car charging stations. reduce electricity, for example: the charging station calculated in table 1-1, which required 123kw of input power, in the operating space, needs a 150kW power branch, which, if equipped with this charging station, The new charging technology will only require a 6 kW power branch. That is, up to 25 times, it reduces the branching of electricity required for each charging station.

Now note that if you have 1000 charging stations, you will need a 150 MW substation at the power station, and if you have 10,000 charging stations, you will need a 1500 MW substation at the power station. You will need to be able to supply the electricity needed by all the charging stations.

But if all charging stations for electric motorcycles and electric scooters and electric cars are equipped with this new charging technology, we can reduce the pressure of the grid electricity on the power distribution station of the power plant in any country by 22.6 times. This reduction in electricity pressure can reduce the fuel supply costs of power plants, and in addition, it can significantly reduce production, environmental pollution, and reduce greenhouse gases.

This field technique can eliminate all the technical-economic limitations of electric charging stations, electric motorcycles and electric scooters, as well as

electric cars, and to the development and improvement and replacement of electric vehicles instead of fuel vehicles، Help a lot in the world.