

MOBILE CHARGING STATIONS FOR INDUSTRIAL BATTERIES



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ELMAS COMPANY



Established in 1990 with 100% private Romanian capital, ELMAS company operates in the field of material handling equipment. Currently, we are an important player on the lifting equipment market, with our own national sales and service network and with representation offices outside Romanian borders.

In Brasov-Romania, we produce industrial cranes, jib cranes, platforms for goods, load handling devices. At the same time, we offer and produce elevators and metal structures/components and subassemblies for machinery construction and as area dealer of LINDE MATERIAL HANDLING GERMANY, we re-manufacture LINDE forklift trucks. The company is primarily focused on finding the best technical solutions for customer applications in the lifting and handling field.

Based on these principles, ELMAS designed and developed the MOBILE CHARGING STATIONS FOR INDUSTRIAL BATTERIES.



THE ELECTRICITY, A CLEAN ENERGY



- 100% EFFICIENT
- 100% ENVIRONMENT FRIENDLY
- 100% SAFETY
- 100% ENERGY STORAGE

It is a well known and debated fact for many years that emissions generated by internal combustion engines are a very damaging factor for the environment and health. Many solutions have been attempted to reduce emissions produced by the use of traditional fuels, but the results were not convincing. Replacing the internal combustion engines becomes a mandatory requirement to protect the environment. Nowadays, renewable energy and particularly electricity seems to be one of the eco-friendly sources for propulsion engines, but also for driving the equipment used in the transport and handling of goods. The trend of replacing pollutant engines / equipment is significantly increasing.

In many countries, authorities began to impose stricter targets on polluting emissions and government incentive policies to promote demand for electric cars are addressed. Replacing the fleet of forklifts powered by classical engines with exclusively electric forklifts trucks generates the obligation to build / set up an industrial battery charging station. Eliminating the difficulties of obtaining the necessary building permits, ELMAS comes to your demand with customized and dimensioned installations, according to your requirements, producing and offering for rent the MOBILE CHARGING STATIONS FOR INDUSTRIAL BATTERIES.

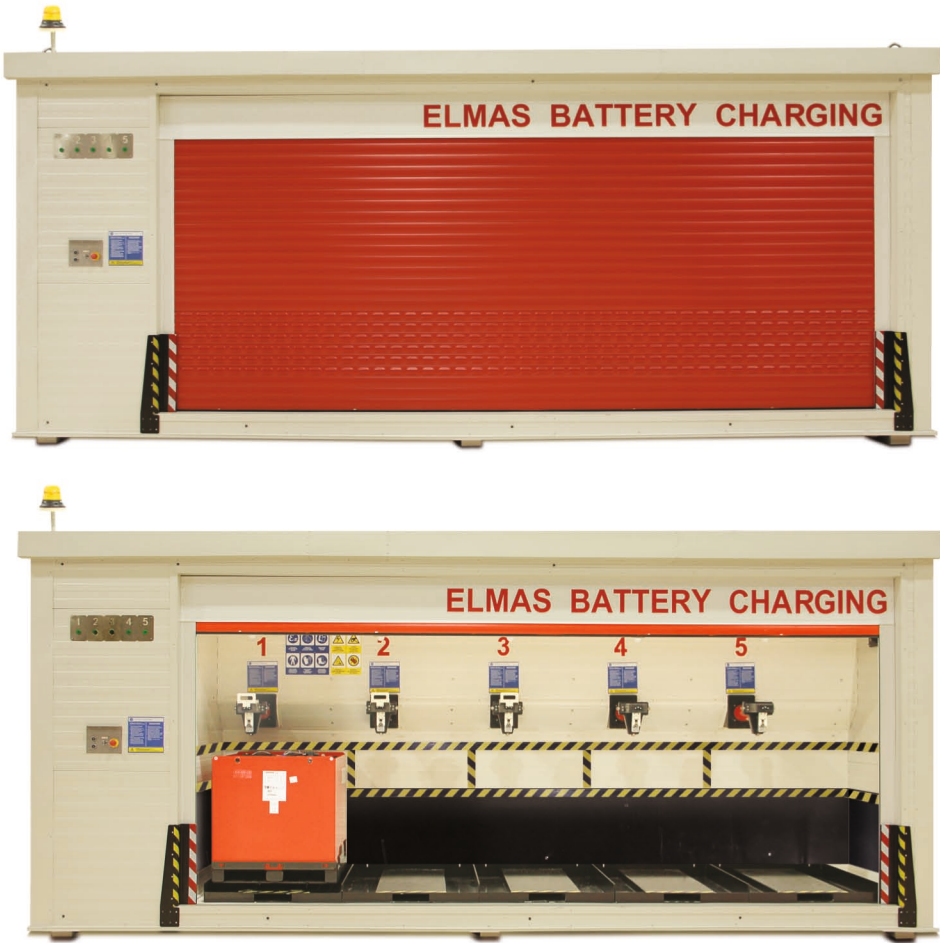
DESCRIPTION

The MOBILE CHARGING STATIONS FOR INDUSTRIAL BATTERIES are enclosed in metal structure and PIR type sandwich panel walls containers. The stations are easy to be transported. Every unit is divided into two distinct compartments: EQUIPMENT AREA and BATTERY CHARGING AREA.

The access to the EQUIPMENT AREA is possible through a pedestrian door with lock, positioned on the narrow side of construction, exclusively intended for the specialized personnel of station monitoring.

The MOBILE CHARGING STATIONS FOR INDUSTRIAL BATTERIES can operate NON-STOP, being remotely monitored.

The station operators must be trained before commissioning. All devices and installations located in the equipment area are controlled by a PC.



The access to the BATTERY CHARGING AREA is through the opening of the rolling door located along the length of the station and represents the space for inserting / extracting the industrial batteries for the operation of electric charging (end-user area).

The MOBILE CHARGING STATIONS FOR INDUSTRIAL BATTERIES are designed to operate in the outdoor environment (regardless the season). The station will be ready for use after the necessary utilities will be provided and connected: power supply, running water and earthing belt.

It communicates via BLUETOOTH with the batteries monitoring systems and continuously analyzes the station's safety circuits. Using the battery charging area is easy. By respecting the instructions for use, the charging operation of the batteries with energy and distilled

water is carried out correctly. Completing the charging process is visually signaled outside of the station, but also optionally via SMS sent to a mobile phone set by the user.

MAIN FEATURES

OVERALL DIMENSIONS

- 2.6 m x 6.0 m x 2.4 m (w x L x h)
- Total weight (without batteries) ~ 5000 kg
- Installed power ~80 kW (depending on the batteries charging capacity)
- Running water connection 1"



SAFETY AND PROTECTION SYSTEMS

- Equipment preventing voltaic arc occurrence when battery is coupled and uncoupled
- Material and technologies preventing static electricity and antistatic protection
- Hydrogen sulfide detection systems and ANTIEX devices located in the battery charging area
- Systems for the detection of hydrogen sulfide in the equipment area
- Ventilation system that creates overpressure in the equipment area to provide a controlled environment within the charging station
- Natural and forced ventilation system in the battery area to remove hydrogen sulfide released from batteries during the charging process
- Overvoltage protection system
- AC and humidity control systems in the equipment area
- Distilled water pipe de-icing systems
- Collision protection systems in battery placement operations
- Standalone remote monitoring system for all main operating parameters
- BLUETOOTH communication system with battery-mounted devices
- Specific signaling of the battery charging status
- Yellow-light signaling of the charging station decommissioning, either due to a lack of power supply or due to system failures
- EMERGENCY STOP button located outside the station
- Temperature, smoke, hydrogen sulfide, pressure, humidity sensors
- Twilight sensor to illuminate the battery charging area

- Electrical insulation mat in the equipment area
- Collection trays with absorbent material for potential electrolyte leakage
- Earthing and protection against electric shock
- UPS that allows signaling and data communication when the power supply of the station is shutdown
- Forbidden, mandatory, warning signaling
- Container for the waste contaminated with electrolyte.



STATION OPERATION IN FIVE STEPS

- 1 Opening the roller door of the battery charging area
- 2 Placing the battery on the collecting tray of the potential electrolyte leaking
- 3 Coupling the battery by inserting the electrical plug in the electric console above the battery
- 4 Coupling the water pipe
- 5 Closing the roller door of the battery charging area.

From this point the system recognizes the battery and automatically starts the operations scheduled for each battery.

Proper training of operators and compliance with the operating instructions is the main condition to ensure perfect and long term operation of MOBILE CHARGING STATIONS FOR INDUSTRIAL BATTERIES.

THE MOBILE CHARGING STATIONS FOR INDUSTRIAL BATTERIES A MODERN AND EFFICIENT SOLUTION



Renewable energy and especially electricity is increasingly used for many applications.

It is more and more necessary to meet the needs of the clients and of the market through modern, efficient, easy-to-use, reliable and safe solutions for power storage.

The MOBILE CHARGING STATIONS FOR INDUSTRIAL BATTERIES are manufacture in Romania, by ELMAS and provide the batteries recharging process with energy and electrolyte, which equips the electric forklift trucks fleet.

The mobile station provide space saving and exclude expensive costs to be located.

Only a power supply (400 V), running water and earthing belt are required to install them outside buildings.

THE MOBILE CHARGING STATIONS BENEFITS

- The possibility to adapt to the technical characteristics and parameters of your forklift trucks batteries
- Low manufacturing costs of the station compared to a fixed station version built it on the premises
- Saving productive space – MOBILE CHARGING STATIONS FOR INDUSTRIAL BATTERIES are located outside of the buildings
- Repositioning and using the station in other locations, as required
- Reduced service costs due to remote surveillance and preventive maintenance
- Power consumption meter and costs setting as accurately as possible
- Monitoring the charging/discharging batteries cycles during service life
- Optimizing battery operations and regenerate/desulphurate in time to extend the service life
- The charging process fully automatically
- Own capacity to produce distilled water from the running water
- High efficiency in operation
- Protecting the environment
- Limiting injuries by removing operators' access to electrolyte / distilled water addition process

SAFETY OPERATING CONDITIONS



For safety reasons, we recommend to install the charging station in a dedicated area.

This area must be clearly signaled, must have a current water supply, a three phase power source and proper space for batteries handling.

The operators of battery charging station must be trained to know all the specific procedures, in order to avoid any potentially life-threatening events.

- **Smoking is prohibited near the designated battery charging area**
- **Avoid wearing metal jewelry while charging batteries**
- **Always use the appropriate work equipment**
- **The forklift trucks shall be positioned properly to the loading point**
- **OBSERVE THE OPERATING INSTRUCTIONS**

The mobile charging stations are manufacture according to the national legislation, European directives and technical regulations.