

Battery charging systems

Motorized battery charging unit with contactless tracking capability (MBO)

Sickert & Hafner GmbH

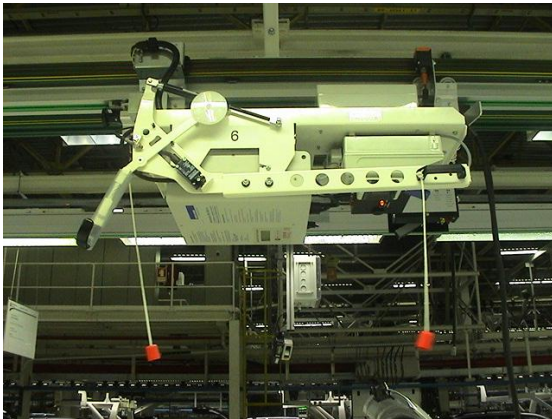
Automotive systems

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Motorized battery charging unit with contactless tracking capability (MBO)

The *motorized battery charging unit with contactless tracking capability (MBO)* is an extremely versatile battery level maintenance solution for auto production lines.



Operating principle

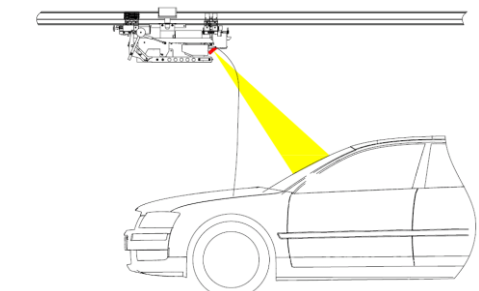
Unlike competing systems, the MBO does not have to be synchronized with the floor conveyor, and the only mechanical connection to the vehicle is the jumper cable.

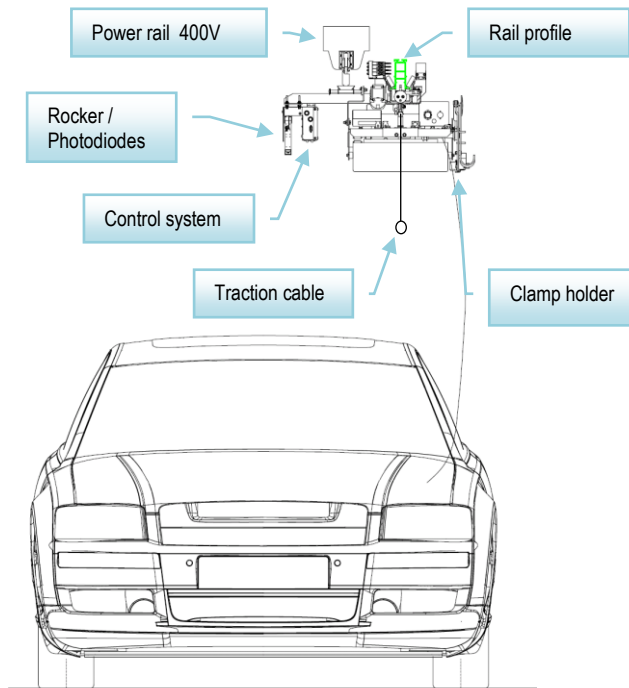
The MBO's sensors recognize the vehicle and track it at a fixed distance. In so doing, the MBO automatically adjusts its speed to that of the assembly line, and stops when the assembly line stops.

The device's sensors are so versatile that it can track multiple types of vehicles on the same assembly line.

The technology

The MBO's control system tracks vehicle panels via photodiodes, and in so doing automatically adjusts the battery charging unit's speed to that of the assembly line, and stops the unit when the assembly line stops.





The device's photodiodes are mounted on a mobile rocker that a control system servo motor moves into a position that is calibrated to that of the vehicle panel.

The motor is connected to the drive wheels via a coupling mechanism similar to that used on a cogwheel railway, thus allowing the MBO to be moved manually by pulling on the traction cable attached to the device. When the cable is released, the coupling automatically snaps back into position on the device.

The operator can reverse the direction of the device manually at any stage using a release button that is mounted on the jumper cable holder. When the operator

sends the device backwards along the tracking stretch, the device travels at the last recorded speed of the production line.

Safety mechanisms

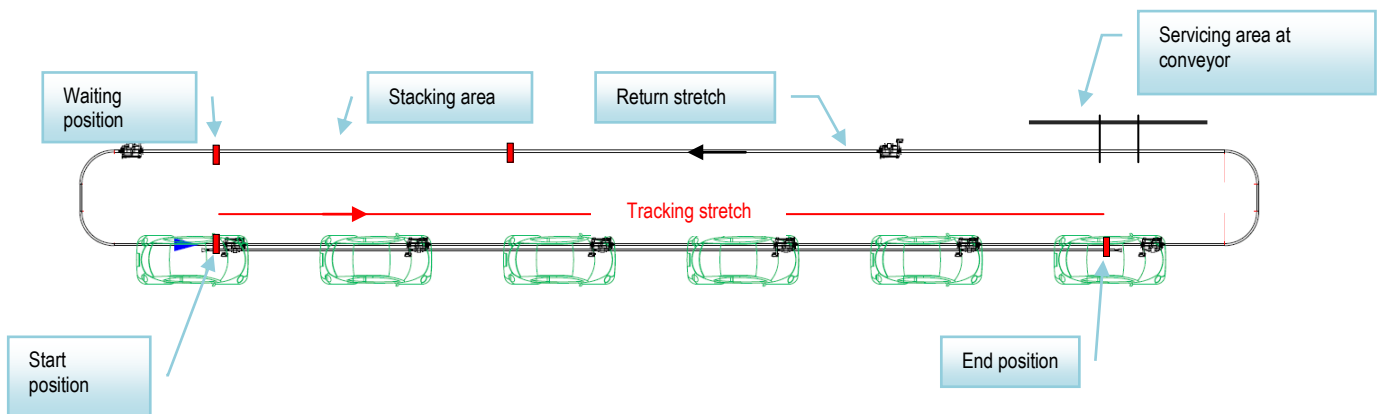
In order to prevent the jumper cable from being yanked off the battery in the event it has not been removed, prior to the return trip of the MBO the control system checks whether the jumper cable and the clamps are attached to the battery.

All jumper cables integrate a rated breaking point with a view to avoiding vehicle or MBO damage, in the event (for example) a vehicle is removed sideways from the production line with the jumper cables still attached to the battery.

The MBO is equipped with a distance sensor which ensures that the devices maintain a minimum distance from each other when the system is in automatic mode.

If the MBO is pulled via the integrated traction cable and placed against another MBO, an integrated impact attenuator prevents any damage from occurring at the MBO.

The conveyance process



When the MBO reaches its starting position, it moves the rocker containing the photodiodes into a precalibrated position and waits until the reflected light from a vehicle panel is detected by the diodes. It then begins tracking the vehicle via the panel, keeping a constant distance from it, thus enabling the MBO to adjust its speed automatically to that of the production line.

When the MBO reaches the end of the tracking stretch, it stops and waits for the jumper cable to be attached, and for the all-clear signal allowing for initiation of the automatic return trip.

An automatic return trip can also be realized at other positions of the tracking stretch – for example, if the charging process is aborted because a vehicle needs to be removed from the production line sideways.

Once the automatic return trip has gotten the all-clear signal and the switch on the jumper cable holder has been signaled that the jumper cable and the clamps are attached, the MBO begins the automatic return trip.

When the device reaches the end position of the tracking stretch, it picks up speed.

An optional removal area allows individual MBO's to be serviced right at the conveyor

Advantages

- The MBO is a latest generation battery charging system that allows different types of vehicles to be tracked and kept charged on the production line.
- No labor intensive and costly synchronization with the floor conveyor is needed.
- The number of battery charging units needed is limited to the number of conveying cycles realized, plus one or two units for the return stretch.
- The system is easy to handle and its device carrier can be adjusted to an ergonomically optimal position for the operator.
- Numerous safety mechanisms minimize the risk of personal injury, or damage to a vehicle or the MBO system itself.

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