

Insight into the status of a mobility scooter

In many countries, thousands of people with mobility impairments use a mobility scooter to get around. Users are completely dependent on the scooter; if it breaks down or system errors occur, they may be in danger or unable to leave their homes.

In addition to reliability, the general quality of the scooter, good customer service, and interaction with the scooter are important points of attention for users.

Suppliers of medical equipment and medical personnel also experience problems with the maintenance of the scooter or responding adequately to malfunctions. Currently, there is no insight into the causes, frequency, or severity of malfunctions and defects, resulting in much more maintenance often being performed than necessary.

Both the user and the care and medical staff would benefit from more data regarding the scooter. Staff need more insight into the technical status of the scooter so that they can act faster or preventively. More data and information can help the user handle the scooter more sustainably, making it more reliable in use.

The Telemetric Intelligent Monitor (TiM) as the answer to information needs

The TiM from IVRA Electronics BV is a device that collects real-time data from the scooter. This data is sent to a personalized dashboard and signals whether and what action is required. This system not only helps save costs by taking preventive measures and locating the exact problem, but it also guarantees user safety.



The data that is measured and processed

The TiM collects various measurement values and processes them into a complete package of information about the scooter, and sends this to the server.

This data concerns:

- Error messages from the mobility scooter controller (such as freewheel, neutral position, battery charger connected, motor malfunction, etc.)
- Information about the batteries (such as deep discharge, imbalance, charger charging current, charging factor, incomplete charges, poor XLR connection, charged/discharged capacity, voltage, current, etc.)
- Information about the use of the mobility scooter (position, distance traveled, energy per km as an indication of low tire pressure, temperature, humidity, etc.)

The caregiver has access to all information via the personalized dashboard.



Use of the collected information

In principle, all information collected by the TiM is used to keep the scooter in optimal condition. This is done in two ways: firstly, by performing more targeted and efficient vehicle maintenance. Secondly, by helping the user treat and maintain the scooter in the most sustainable way.

The information in the dashboard can be used for analysis before maintenance personnel arrive on site. The server provides information regarding, for example, a poor XLR connection, battery imbalance, increased energy consumption, or any of the error signals from the controller in the scooter. This information can be used to determine whether early maintenance is required or what specific parts need to be replaced during routine maintenance.

The dashboard can send a direct message to the scooter user, for example via SMS or email. Through this message, the user can be asked to charge the battery if deep discharge is imminent. The system checks whether action will be taken in the coming days or if a reminder is needed.

Finally, the TiM also offers the option to send a warning signal if there are indications that the scooter has been involved in an accident and has overturned.

By measuring the data and forwarding it to the care provider, the TiM not only provides the information needed for efficient maintenance of the scooter but, above all, offers protection, safety, and comfort to the user.

