Optimise maintenance of railway vehicles: Fault recording and maintenance documentation in real-time thanks to mobile assistance systems

More and more companies are relying on clever assistance systems and mobile apps to facilitate and optimise data collection, processing and documentation of maintenance measures. ZEDAS GmbH also offers such a solution with its standard product zedas®asset - the software solution for the asset management of railway vehicles and railway infrastructure.

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Example: A train attendant works in the public passenger transport and is responsible for monitoring and controlling train journeys. During his shift, he discovers several faults on the train, such as graffiti on the walls, a defective toilet and a door that does not close properly. To ensure that the defects are rectified, the train attendant has to record them on paper and forward them to the responsible department. To do this, he fills out a form on which he specifies the type of malfunction, the location and a short

description is noted down. This information is then passed on to the companys maintenance department to carry out the necessary repairs or adjustments.

So far, the faults in rail vehicles were often recorded by hand on recorded on paper forms and later manually into the maintenance management system. entered manually. This led to a high need for coordination between the departments.

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This is where the zedas®asset Smart app comes in and makes it possible to record faults directly on the vehicle. The app offers an intuitive fault catalogue and also supports mobile service teams.

In addition, the app offers GPS positioning and the option of storing photos of damage to ensure fast and precise maintenance. Repairs that can be carried out directly on site can be processed and documented without an additional maintenance order. In addition, defect-related checklists and repair instructions are available on the smartphone to facilitate the completion of maintenance orders.

The app offers online/offline functionality and is fully functional even with insufficient internet connection. Digital recording eliminates media breaks and the data is available in real time in the central maintenance management system

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for maintenance planning, condition assessment and and prognosis in real time. This increases the transparency about current disruptions and and their effects on the availability of the vehicles. Maintenance and repair orders can be documented directly and promptly on site. Subsequent entries are thus superfluous, which significantly improves the documentation quality. All responsible persons get an overview of the current status of the orders - open, started, completed.

Advantages of the zedas®asset Smart app for maintenance

- Structured and simple fault and error detection based on assemblies
- Standardised work steps and flexible adaptation to the company's own workflows
- Clear display of recorded faults avoids duplicate entries
- Defect-related checklists and maintenance instructions
- No media discontinuity due to complete integration into the entire maintenance process
- On- and offline functionality ensures self-sufficient work even without a stable network connection
- Photo documentation

Digital assistant especially for the railway workshop

When a railway vehicle comes into the workshop, the workshop employee often receives the maintenance order in paper form. In order to process the work orders, he must know exactly which steps he has to complete and when. Once the maintenance tasks have been completed, the workshop employee also documents them on paper again and then has to manually enter them into the maintenance management system. manually into the maintenance management system. The lack of digitalisation creates a high coordination effort between the individual departments and additional work due to duplicate documentation. Manual recording also leads to media disruptions.

The digital assistant zedas®asset Touch, which was specially developed for railway workshops, completely digitalises the previous paper-based maintenance
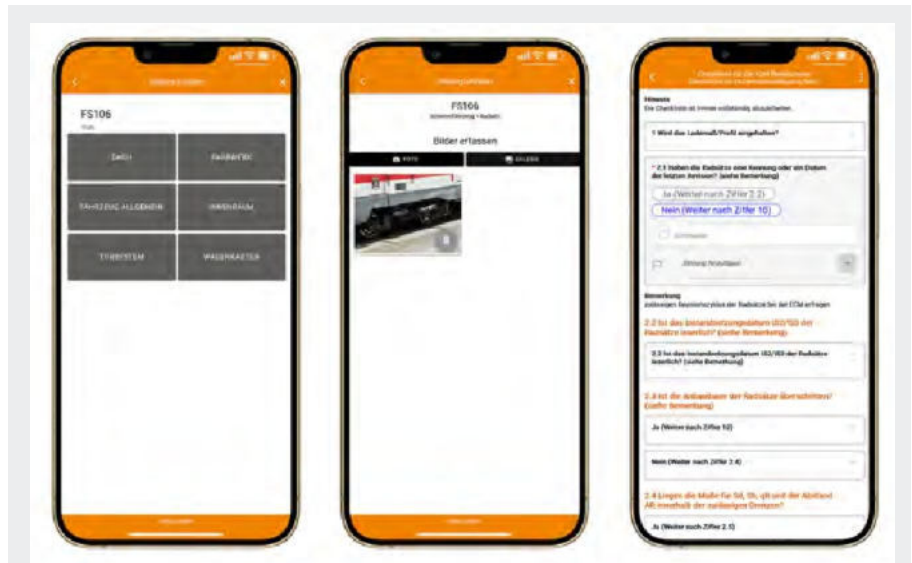
2: Fault detection via the zedas®asset Smart app

documentation and takes into account the special working conditions in workshops. Orders are processed directly on the tablet, material costs, working hours and resources used can be documented in an uncomplicated manner, meter readings and subsequent faults can be recorded, and the vehicle can be released again after maintenance has been carried out in an ECM-compliant manner. Assistance-based workflows and checklists guide the workshop employee step by step through the maintenance measures. This enables even inexperienced workshop employees to document all necessary steps, material consumption and component changes easily, completely and without errors.

When developing the digital assistance system, special attention was paid to the working conditions prevailing in the workshop. The workshop assistant's intuitive interface offers a quick overview of all user-specific activities. Keyboard entries by the workshop employee are avoided as far as possible and replaced by touch or alternative functionalities - such as scanning a QR code to document material consumption or voice input to describe technical problems. With zedas®asset Touch, the workshop staff works directly in the asset management system. That means there are no media breaks, double entries and no traffic jams in order confirmations or operational approvals. hanks to the central data storage in zedas®asset and the direct

access to the required information by the workshop staff, lengthy queries are reduced.

The digital assistant helps workshop personnel to:

- document material withdrawals,
- record working hours, measured values and consequential errors,
- fill out and work through checklists and release the vehicle.

Advantages for management through the use of the digital assistant:

- Establishment of an efficient, digital process chain
- Complete and consistent database as the basis for meaningful prognoses
- Increase employee satisfaction through simplification of processes
- Low training effort due to as-sistance-based workflows and intuitive operation

Overall, the use of the digital assistant zedas®asset Touch offers numerous advantages that contribute to more efficient maintenance. The assistant-based workflows and intuitive operation make the work of the workshop employees easier and the error rate is significantly reduced. In times of a shortage of skilled workers, a digital workshop assistant is a real support.
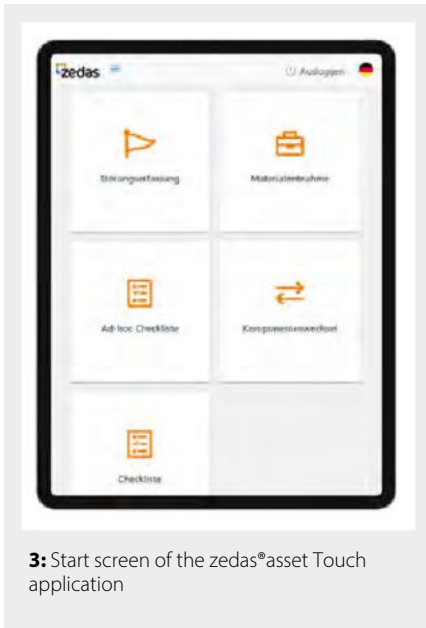
3: Start screen of the zedas®asset Touch application

Young employees are already demanding the paperless workshop.

Support for ECM-compliant documentation through digital applications

The Implementing Regulation (EU) 2019/779 - also known as the ECM Regulation - has played an important role for the majority of rail vehicle owners and workshops for rail vehicles since 2019 at the latest. The topic received new explosiveness in 2022, because certified ECM systems have been mandatory for all rail vehicles since June 2022.

The aim is to increase safety in rail traffic. zedas®asset offers modern asset management systems and mobile solutions to support the legally compliant ECM standard. The digitization of maintenance processes offers many synergies.

How does the ECM-compliant documentation work?

First of all, personnel and equipment information is first maintained. Employees receive specific time-limited certifications and qualifications, while assets such as measuring devices are assigned uniquely identifiable units (e.g. wheelset measuring device, serial number 2483) to which certificates or evidence (e.g. last calibration) can be assigned. The validity and deadlines of certificates can be monitored.

When a work order is processed by a workshop employee via the digital assistant, the equipment used and the executing personnel are entered in the confirmation in an audit-proof manner. This documents that the work order was carried out by an authorized employee and that valid equipment was used. A complete proof with all documents and logs is available, is transmitted digitally and is immediately available for operational approvals. All information is recorded in a complete digital CV file.

Overall, the ECM-compliant documentation through digital applications such as zedas®asset offers an efficient and safe way to optimize the maintenance of rail vehicles and increase safety in rail traffic.

Conclusion

Mobile assistance systems have become indispensable in maintenance today. The use of applications for smartphones and tablets, including clever assistance systems, facilitate data collection, processing and documentation of maintenance measures.

Advantages of digital assistance systems at a glance:

- Improving the reaction speed in case of disturbances
- Reduction of downtimes and failures through proactive maintenance
- Minimize paper documentation with real-time digital documentation
- Reduction of errors and avoidance of double entries
- Simplification of processing of maintenance measures thanks to checklists and Co.
- Consistent, digital maintenance process
- Reduction of time-consuming reconciliations
- Uniform formats and high quality of the data

zedas®asset offers mobile employees such as train drivers and workshop employees easy-to-use apps that significantly simplify and optimize the processing of maintenance measures. The software offers comprehensive functions that allow access to all information such as system history, documents and messages related to the order. Processes are standardized, agreements and errors are reduced and media breaks are eliminated. However, mobile solutions alone are not sufficient for efficient maintenance. Effective digital maintenance requires seamless integration between mobile applications and the maintenance management system.

Links and further information

You can find out more in the free webinar: Mobile assistance systems in maintenance.

Summary

Optimising maintenance of rail vehicles: failure detection and maintenance documentation in real time thanks to mobile assistance systems

More and more companies focus on smart assistance systems and mobile apps, to facilitate and optimize data recording, processing and documentation of maintenance measurements. Such a solution also provides ZEDAS GmbH with its standard product zedas®asset – a software solution for the facility management of rail vehicles and infrastructure.