



Maintenance management

ECM as an opportunity for vehicle owners and the European rail market

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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 role.



For the benefit of safety, the regulation should ensure regulated standards and transparency for Entities in Charge of Maintenance (ECMs). The new directive thus creates opportunities for Europe's cross-border rail transport and also for the individual ECMs.

The topic gains new explosiveness through the chain of deadlines: Since 2021, all safety-critical components (SCC) must be defined. By 16 June, certified ECM systems must be in place for all mandatory rail vehicles. Modern asset management solutions support ECM in the digital and efficient implementation of the ECM regulations.

Railway safety and interoperability

The Implementing Regulation (EU) 2019/779 pursues two major objectives with its requirements for the management and maintenance of rolling stock:

1. Safety in railway transport through compliance with standards and legal requirements
2. Interoperability through a uniform directive valid throughout the EU

Rolling stock owners and railway workshops contribute to these goals by implementing a maintenance management system for their processes that automatically fulfils the requirements of the ECM Regulation.

Challenges for actors in European rail transport

The requirements of the ECM Regulation refer to four levels in their implementation and thus apply to all levels of asset and maintenance management of rail vehicles:

1. **Management function:**
Responsible for the supervision and coordination of the other 2 to 4 stages and ensuring safe condition
2. **Maintenance development function:**
Responsible for the management of maintenance records, including configuration management based on design and operational data as well as performance and experience data.
3. **Fleet maintenance management function**
Responsible for ensuring and regulating the timely feed of vehicles of maintenance, for the preparation of work orders and operational releases, and for handover for the company.

4. Maintenance delivery function:

Responsible for the provision of vehicle maintenance, including evidence of documentation of maintenance performed.

There are many different players and constellations in the rail sector. Therefore, ensuring ECM requirements is often not only associated with a high level of documentation but also with a significantly increased communication effort - both internally and externally. Digital services and, above all, optimal communication channels in cooperation will be indispensable in the future to fulfil ECM standards efficiently. This not only applies to the exchange of data between the different ECM 3 and ECM 4 roles, i.e. between fleet management and the workshop, but also to comprehensive networking in the direction of the operational business. Holistic railway-specific software systems for logistics and maintenance or standardised interfaces for data exchange between all parties involved provide a remedy here.

Possibilities for operators and maintenance staff

For the owners and maintainers of freight wagons, locomotives and traction units, the first task is to introduce the maintenance management system required by the regulation. This obligation gives rise to a multitude of opportunities for the players concerned, because modern asset management systems for rail vehicles contain numerous functions for the maintenance organisation. Thus, not only can the evidence required for ECM certification be provided, but also higher-level maintenance objectives can be achieved. These include, for example:

- Increased reliability of the vehicles
- Higher fleet availability
- Reduction of default risks
- Transparency of the processes
- Automated, thus faster and improved communication

The digitalisation of maintenance provides the optimal basis for the implementation of corrective, preventive and predictive maintenance strategies.

Example: ECM 3 und 4 – documentation and operational release

ECM 3 managers need an overview of the condition of the vehicle fleet, including all components, at all times. Upcoming maintenance deadlines or damage/failures to vehicles must be retrievable at the push of a button, as they are decisive for the availability of the vehicles and the planning or timely delivery to the workshop.

A digital vehicle history file and detailed component tracking are only possible with the right IT system. Especially for predictive maintenance, intelligent IT solutions are indispensable. Only through them is it possible, for example, to forecast the wear of components (for example wheel sets) - and thus prevent a sudden failure of the associated vehicle. True to the motto "danger recognised, danger averted." Through the direct connection of workshops and service partners, orders can be transmitted directly digitally with all necessary documents. The data in the system is available to authorised personnel at all times - the communication effort by telephone and e-mail is greatly reduced. This increases efficiency and transparency between all parties involved in the process.

To ensure complete documentation of maintenance work in the workshop (ECM 4), information on personnel and equipment is first maintained in the system. Specific time-limited certificates and qualifications can be assigned to the personnel. For equipment (e.g. measuring equipment), uniquely identifiable units (e.g. wheelset measuring device, serial number 2483) are created, to which a certificate/proof (e.g. last calibration) can be assigned. Validity and deadlines of certificates can be monitored.

If an employee of the workshop processes a work order including checklists, the equipment used and the personnel performing the work are entered in the confirmation in an audit-proof manner. This documents that the work order was carried out by an authorised employee and that valid equipment was used. The result is a complete documentation with all documents and protocols, which is transmitted digitally and can be used immediately for operational approvals. All information is available in a seamless digital CV file.

zedas®asset: Digital maintenance documentation

zedas®asset is an integrated solution for the efficient asset management and maintenance of rail vehicle fleets. The ECM module of the software enables extended support in providing evidence for ECM-compliant workshop documentation. With the module, maintenance departments are well equipped for the planning and implementation of maintenance measures.

Conclusion

In order to comply with the ECM standard in a legally compliant manner, modern asset management systems such as zedas®asset. In addition to complete documentation, there are many synergies, for example the need for coordination between the different roles is reduced through digitalisation. Ultimately, this also leads to the promotion of knowledge transfer in order to optimise maintenance processes and maintenance strategies and, above all, to apply the right maintenance strategies. More safety across European national borders will strengthen the rail market. ■

Further information

**Get more information in the webinar:
ECM-compliant documentation and
operational release**

<https://www.zedas.com/en/webinar-ecm>

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