



Success Story

Tracking and Tracing

Benchmark in the railway sector:

HFG provides transparency through **serialized direct marking** of refurbished components.

The way to success

The Challenge | Until now, safety relevant components of railway vehicles could not be traced clearly. | Even new purchased components are not always marked uniquely per piece. | An additional marking has to be applied within the maintenance processes.

The Solution | Worldwide unique identification based on the Global Article Numbers (GTIN) supplemented by a serial number. | Direct component marking by laser. | Automated registration at the user's side with the GS1 DataMatrix code.

The Success | A global tracking and tracing of all safety relevant components is enabled by a serialized direct marking within the current maintenance processes. | Operation data such as mileage or distance profile can be linked. | Sustainable improvement of the maintenance management.

The Client

HFG Transport-Technik GmbH is Europe's leading specialist for the reconditioning of wheelset bearings for railway vehicles. The life cycle of wheelset bearings can be extended considerably through a reliable and certified reconditioning process. Based on an experience of more than 60 years, the company is also an OEM of bearing components and newly manufactured bearing series. The international clientele includes the German Railway (DB), the Swiss Railway (SBB), the Polish PKP Cargo and others.

Direct marking with GS1 DataMatrix by HFG

The Challenge | For railway vehicles, the wheelset bearings have an important function – they are highly responsible for a safe mobility. HFG inspects and overhauls these components for several European railway operators and wagon owners. That means: The HFG staff disassembles the bearings and collects various information concerning the condition and damages.

The Problem | Several components within the rolling stock had not been marked uniquely by their OEM's. In case of a damage or callback occasion, a doubtless retraceability of the single components is not possible. Neither the link and interpretation of collected condition information with the operation data of the railway vehicle, e.g. mileage, rail track profile or wagon load. An integrated optimization of the system can only be reached by the individual, serialized marking of all components – whatever new or used – within the maintenance process.

The Solution | On the basis of the GS1 standards safety relevant parts – already in use – such as wheelset components can be serialized parallel to the maintenance of the railway vehicles. This is possible through the Global Article Number (GTIN), which contains a randomized generated serial number in addition to the OEM and article identifying information. Therefore, each single component is distinctively identifiable, biuniquely trackable and traceable at any time – worldwide.

Besides the serialized GTIN – as identification number in plain writing – the machine-readable two-dimensional code GS1 DataMatrix is marked onto the component. Within this DataMatrix code, also further relevant operating data can be encrypted, such as information about the OEM and the primary manufacturing date of the component.

With a scanner, the code can be readout faultless by the user: The staff from HFG, railway operator or any safety responsible body. This procedure provides the opportunity also to link the data with internal or external production and safety (IT-)systems, free from any breakage in the data transmission. As a result, there is an anytime transparency concerning the parts mounted at the railway vehicle.

The marking is processed directly onto the component by a laser device – with the advantage of a highly robust coding in terms of handling and operational impacts. The marking will usually be readable for the lifetime of the parts. The marking of bigger and heavy weight parts can be marked by HFG with a mobile laser device on-site.

The Success | With the concept of a component serialization parallel to the maintenance processes, HFG sets a standard within the railway sector. The company found a way to apply a serialized marking to new or used components within the ongoing maintenance work for railway vehicles. This process enables railway operators and safety responsables to track and trace components effectively that are running in the rolling stock up to 60 years and more.

For the HFG partners this provides fundamental benefits:

In case of any damage or guarantee aspect they can react quickly and hereby improve their professional safety management systems. Further, via linking real operation data of railway vehicles with data about the bearings' or other components' conditions, a precise and comprehensive analysis of different cause-and-effect chains is possible for the first time. These insights can be used by railway operators and wagon owners to monitor the quality of the used components for their real operation activities on the track, to enhance the transparency within the supply chain as well as to improve the maintenance management combined with the safety performance.