

coilDNA OPTIMIZES PROCESSING OF ALUMINIUM PRODUCTS:

Connecting the physical and the digital world

We first reported on coilDNA technology, developed and patented by AMAG for marking and tracking rolled aluminium products, in Alureport 3/2019. The heart of the technology is a unique alphanumeric code, essentially consisting of 14 non-repeating characters, which is applied along the entire length of a rolled product. This yields numerous advantages that can be achieved in practice for the treatment and processing of our coils as well as for document and data tracking. The vision of coilDNA is to achieve total data transparency in the lifecycle of aluminium products (Figure 1). It is not limited to AMAG products, however, but is suitable for all materials and types of products manufactured in a continuous process (rolling and roll forming, extrusion, etc.). This allows the material to be tracked from production through processing to use and subsequent recycling.

Specifically, this generates the following advantages, particularly in view of the fact that aluminium coils are subjected to deformation steps during further processing and the resulting parts normally lose all identifying features. Below are some practical examples of the advantages of using coilDNA technology.

Optimization of workflow processes

Products tagged with coilDNA allow processing of factory test certificates, which are available in an electronic format, to be automated. The transmitted data also opens up new possibilities for the automatic analysis of material and production data down to the component level.

Automation in quality management

coilDNA creates a quality-secure and tamper-proof link between physical products and delivery documents. In principle, products can be checked to verify that they conform to the relevant specification at every stage of processing.

Another advantage is the automatic transfer of data to the quality assurance system of the downstream processor.

Optimizing processing

coilDNA can be used to assign position-related data to the starting product. Processors can then use this position reference to optimize their own production.

For example, parameters can be adapted to the local product properties

(speeds, cycle rates, forces) during downstream processing. Analyzing correlations between process, quality, and material data from several value-added steps provides deep insights into relationships that may not have been previously apparent.

Improving material efficiency and sustainability

Under normal circumstances, coils with defective areas are recycled in their entirety, even if only individual areas fail to meet the requirements. coilDNA identifies precisely these areas on the starting material.

This means that coils with defective areas can be processed as well. If the exact location of the defective length segments is known, the parts produced from them can be rejected inline or at the end of processing, while the rest of the coil can be put to the intended use. The overall yield is increased, and there is no need to interrupt the production process in these areas.

Tracking sustainability information

Using coilDNA, sustainability-related information can of course also be linked to the material in both the manufacturing and processing phases. Total transparency regarding sustainability from the raw material to the final product can be made a reality. This also provides a basis for implementing the digital product passport, which is an important building block of the European Green Deal. The goal is to promote closed-loop capability in the domestic EU market.

Reducing measuring requirements for the processor

The data that the processor receives from the manufacturer via coilDNA, such as the coil thickness, does not need to be measured again for each individual case during further processing. coilDNA eliminates these additional measuring requirements, and thus also the need to equip the further processing plant with appropriate measuring sensors.

Quality feedback loop

Close cooperation between producers of starting materials and downstream processors in terms of quality and efficiency offers enormous potential for optimization. The basis for this is provided by a simple and accurate exchange of data. For instance, processors can quality classify a produced part and add the classification to the coilDNA data. AMAG, in turn, can perform the corresponding analyses in its own data universe to identify correlations and patterns. This enables us to find the causes for the quality classification assigned to the processor and to optimize production processes on both sides.

Efficient communication between manufacturer and processor

The coilDNA code provides an unambiguous product reference for all communication between the partners, without having to spend hours searching for data such as order numbers in the company's own systems. There are coilDNA apps available that can help with this.

AMAG offers interested customers the coilDNA basic functionality free of charge as part of a freemium model to give them the opportunity to evaluate the benefits for their own processes.■

Why not try out the basic functionality today? It's very simple:

Go to <https://qr.amag.at/LEPF> on your smartphone (or scan the QR code). Select "Capture Code from Camera" and take a picture of the coil featured in this article. Select the code area of the image marked with a yellow border, then press "Submit Code Fragment" followed by "Lookup Code", and you should be able to see data of the coil displayed above.

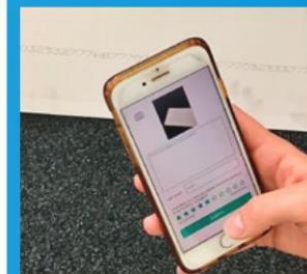


Figure 1: Dated certificates in the lifecycle of aluminium products

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