

Creation of a digital product passport for NDE and Industry 4.0 Systems

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EU directives on battery legislation for a digital product passport illustrate the increasing need for data acquisition along the production line. NDE and Industry 4.0 methods are well suited to meet these requirements. If done properly, networked production will not only further the sustainability of the production process, it has the potential to document the merits of sustainable measures and show potential for improvement along the production line. This study describes the conception of such a system and discusses the possibility of data ecosystems via sensor nodes, production parameters and the creation of a digital product passport. Consequently, the potential for data correlation will be explored, which can deepen the understanding of the process and may help to improve the production. Discovering potential improvements requires not only data collection, but also a structured and accessible data format. In this context, the potential of the DICONDE format is discussed. The structure of a possible digital product passport is presented in combination with sensor concepts for a manufacturing process, capable to capture valuable information and providing a baseline for a possible life cycle assessment. A holistic view on the process is presented through the lens of an Industry 4.0 application, focusing the data acquisition and the data selection process for a product passport.