

INDUSTRIAL RIGHTS MANAGEMENT

KNOW-HOW PROTECTION AND PRODUCTION CONTROL

Industry 4.0 can only be realized when companies are able to guard their economic interests. In this regard, the protection of know-how and the control of rights of use in industrial production are especially important to companies. Therefore, Fraunhofer SIT has developed a concept companies can use to protect their manufacturing data both in distributed and networked Industry 4.0 environments. This aids companies in the realization of new inter-organizational business models.

Protection of Manufacturing Data

Through the inter-connectedness of production facilities with office-IT and the internet, industrial components, processes and data become attractive targets for attackers. At the same time, supply chains in which production facility operators and product designers no longer need to be part of the same company are developing more and more. For example, one company provides the design for a product and another one produces it with the help of a machine. If the design company would like to prevent its production know-how or product design from falling into the wrong hands, it must protect both the production (for example CAD) and the manufacturing data (for example control paths or machine configurations). For production data various protection concepts exist in the form of commercial software. But until now the issue of manufacturing data and configurations has not really been addressed yet. At the same time, this area is becoming more and more important to protect the know-how in industrial manufacturing.

Fraunhofer SIT has implemented a security architecture that companies can use to protect manufacturing data while it is being transferred and stored on machines. The central idea has been to complete security functions so that individual machines or components could be identified via the network. This enables data to be encrypted so only a specific machine can process the protected information. With these trusted machines as a basis, the quantity of the products produced can be determined via Digital Rights Management.

To avoid impairing operating speed, reliability, and functional security, Fraunhofer SIT realized this architecture with the help of hardware and software components. The hardware module is connected to the machine within a trusted physical environment or integrated directly into the machine. In a transparent way, it decrypts manufacturing data for the machine. Additionally, the hardware component assumes control of the quantity of pieces produced. Once the designated quantity has been produced, further production is not possible. The software component is integrated into the chain of CAD and CAM tools seamlessly and ensures that only encrypted data is transferred and stored. This concept ensures the protection of intellectual property in the form of manufacturing data and makes it possible to outsource production into non-trusted environments. As a result, new flexible supply chains can be realized and market places for production and manufacturing data established.

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