

# Timber with antennas

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In the future, wood-based radio tags will optimize logistics processes in the forestry. These RFID transponders consist of paper and lignin, an integral part of plants. Thus, they do not disrupt the processing of logs and still make it possible to capture entire truckloads of timber

Forest hikers are most familiar with the colorful markings on tree trunks waiting along trails to be hauled away. Only insiders know how to interpret them though. "In principle, each forester or forest owner has his or her own marking system," observes Mike Wäsche from the Fraunhofer Institute for Factory Operation and Automation IFF in Magdeburg. Together with colleagues from the Fraunhofer Institute for Reliability and Microintegration IZM, the Thuringian State Forestry, Hunting and Fishing Agency and other forestry partners the business information specialist intends to replace these markings with standardized transponders, i.e. radio tags. At the same time, they intend to establish a logistics standard based on RFIOD for the exchange of data between forest owners, logging and hauling operations and commercial end users.

While the ELDAT standard for ELectronic DATa exchange of sales information has been employed in [forestry](#) since, it incorporates logistics processes only rudimentarily. In addition, there are gaps in the IT infrastructure: "So far only the major players have implemented information technologies,« regrets Wäsche. However, everyone involved could profit from integrated electronic data exchange in conjunction with RFID - even small and medium-sized operations that are primarily responsible for logging and transport: Data such as the origin, quality,

quantity and destination of logs would only have to be recorded once. Moreover timber can be allocated rapidly and reliably, which expedites invoicing and facilitates transportation control.

High-grade logs for furniture or parquetry is already frequently marked with numbered tags or radio tags. However, the partners in the project "Intelligent Wood - RFID in Timber [Logistics](#)" desire a more practicable solution that is suited for marking all types of wood - even the over 13 million cubic meters of industrial timber produced in Germany each year. Industrial wood is debarked and processed into pulp, paper or composite wood panels. "Since the profit margins in this sector are slight, the RFID transponders used may not cost much nor disrupt further processing of the wood," the project manager Wäsche points out. Hence, the team at IZM has developed a new wood-based transponder: With the exception of its antenna, the tag consists of paper and lignin. Large quantities of the resin-like polymer are yielded when cellulose is extracted from wood. "The transponder's fraction of metal is far below the typical levels of impurities in and around wood," explains Christine Kallmayer, group manager at IZM. To keep costs down, only a numeric code is stored on the radio tag. All other information is stored in the individual actors' management and accounting systems. Tags are read when a vehicle drives by: When making a delivery to a mill, the truck and its cargo pass through a reader gate. All delivered logs are captured in bulk while still on the vehicle. Theoretically, one to two [RFID](#) transponders per truckload suffice to uniquely identify everything. If a load of timber originates from multiple suppliers, at least every twentieth or thirtieth log must be marked - depending on the size of the individual loads - to allocate it reliably. Although the project will run until early 2011, the IFF is already giving thought to inquiries from the chemical industry. The same principle could be applied to capture and track metal drums filled with hazardous liquids.

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