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AC500-S with high-volume safety data exchange for faster safety PLC reaction time

- ABB's PROFIsafe long-frame feature can transmit nine times more data per safety telegram, even over wireless communication
- Collaboration between machines becomes more efficient and increases plant productivity

OEMs in the material handling industry such as crane builders, manufacturers of large machines with three-dimensional movement, and producers of Autonomous Guided Vehicles (AGVs) require safety PLCs not only for simple safety functions such as emergency stop but also for complex ones like collision prevention or safety-zone monitoring. Continuously monitoring data like safe position or speed creates a need for much bigger processing capability. The more safety data a PLC can process, the quicker it can react to changes in a machine's surroundings. This is essential for avoiding collisions in a high-mobility environment. The benefit for airports, mines, constructions sites, harbors or distribution warehouses operating AGVs, stacker cranes, or tower cranes is evident: Safety for people, assets and goods increases while productivity gets a boost.

ABB delivers the technology customers ask for

ABB has reacted to the industries' demand for bigger safety data exchange capability: The Center of Expertise PLC Products has implemented a unique long-frame feature in the context of an update to PROFIsafe V2.6 on its AC500-S safety CPUs. This feature enables the PLC to send nine times more safety data per telegram, resulting in a five times faster safety CPU cycle time. Using AC500-S as a controller, an AGV, crane or machine will thus be able to activate SLS (safely-limited speed), SLP (safely-limited position), SLT (safely-limited torque) and SLA (safely-limited acceleration) quicker than before.

Foreseeing dangers earlier is a benefit for the whole configuration. "Further reducing the risk of damages and increasing productivity, will automatically boost customers' cost-efficiency", says Yauheni Veryha, Product Manager for Safety PLCs at ABB AG. "High-volume safety data exchange is a next step on the way to fully automated environments, and it works both when the CPU is used as a PROFIsafe F-Host or an F-Device. This is essential when several wireless controllers have to safely communicate with each other over 6-GHz wi-fi or, in future, 5G networks. Only with speedy wireless communication into

both directions can you avoid collisions, optimize paths and exercise flexible restricted area control."

Machine collaboration and programming becomes more efficient

Taking AGVs as an example, laser scanners attached to the vehicles scan the environment and send the data via PROFIsafe V2.6 to the safety PLC. It can then analyze the data itself and trigger appropriate actions, or it can hand it on to other controllers as well as to a distributed control system (DCS). This is a prerequisite for complex automation setups where different machines collaborate and must therefore be safely interconnected. Customers' AGVs can now transport goods faster, thus increasing handling capacity.

Last but not least, in addition to boosting operating speed, also system developers will save time. The new PROFIsafe V2.6 allows data exchange to be standardized on PROFINET/PROFIsafe rather than having to find proprietary communication solutions based on e.g. UDP (User Datagram Protocol) or Modbus TCP. Together with simplified safety application programming, this considerably increases user-friendliness for system developers.

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