



Bidirectional radio systems
provide safety

Technical contribution: Securing large
areas with UH 6900

Driverless transport systems (DTS) are getting more and more popular in the industry. Due to their flexibility they are particularly suitable for large factory halls. In order for humans and machines to work next to one another without any risks, stable and reliable safety systems are necessary. Radio controlled safety modules help to avoid work accidents.

Reliable safety concepts are necessary to protect machines and humans in factory environments that are difficult to access. The radio controlled safety systems UH 6900 of the SAFEMASTER W series from Dold provide a remedy. With a transmission range of up to 800 metres the modules can interact wirelessly and, for example, trigger an emergency stop in a dangerous situation. Beyond that, the group operation function allows to control up to 255 receiver modules by one control unit. This function can be used if several driverless transport systems need to be secured.

An aircraft body weighs up to 18 tons. During production large parts need to be moved through the factory halls. While air cushion transportation systems take over this task, wings are transported to their destinations by driverless transport systems (DTS) that are controlled independent of each other. When two DTSs transport a wing and want to dock it on to the body every millimetre counts and any deviation may entail high financial damage. In the production process it is important to permanently ensure the communication between the two DTSs. If a DTS stops, e.g. because an emergency stop has been actuated, the second transporter also needs to be switched off to avoid a collision. This is implemented by bidirectional radio controlled safety systems such as the UH 6900 from Dold. Each driverless transport system contains a radio controlled safety module.



When aircrafts are assembled, so-called driverless transport systems (DTS) are used. If a DTS fails, the UH 6900 switches off the second DTS concerned via radio frequencies in a bidirectional way.



The use of radio modules offers itself in particular if mobile transport systems such as fork-lift trucks or automated guided vehicles (AGVs) are involved.

The radio technology allows the wireless securing of areas where conventional safety systems reach their limits. These include large factory halls but also high-bay warehouses or secured zones with conveyor belts and potentially hazardous machines. The UH 6900 uses the safety-oriented transmission of signals. This provides the user with greater flexibility in the securing of danger zones. The technology is certified by the Technical Inspection Authority (TÜV) for use in safety applications up to cat. 4 / PL e and SIL 3.

Large overhead cranes in the heavy industry as used in ports are a further field of application of the safety system. When two cranes lift a load together they have to work synchronously to prevent irregularities during the transport. These may especially occur if the load is lifted or lowered with different wire rope speeds or wire rope hoist times. If a travelling crane is suddenly stopped by an emergency stop due to these incidents the second crane also needs to stop. The radio controlled safety module UH 6900 then makes sure that both cranes properly come to a stop. Existing facilities can be easily retrofitted or extended.



No mistakes may happen if goods are transported by cranes. If a crane is switched off due to its tilt the UH 6900 makes sure that the second crane also switches off.

High safety in factory environment

The wireless safety technology with frequencies of 433 or 869 Mhz provides flexibility in facilities that are difficult to access. With a transmission range of up to 800 metres, long distances in a factory environment can also be covered. Apart from the safety-oriented inputs and the safety output with three redundant contact paths eight function inputs and outputs for control tasks are available. With a width of just 45 mm the modules can be used in applications with limited installation space. LEDs show the respective operating state.

With a configuration software especially developed for SAFEMASTER W status and diagnostic data can be displayed during operation via a user-friendly graphical user interface. The software supports the user and operator during the start-up and with the perfect adaptation to the ambient conditions.



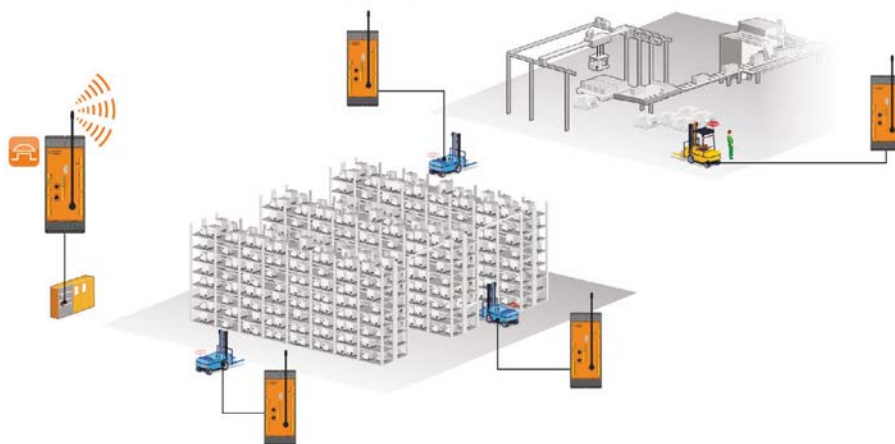
Large factory halls can be secured by radio with the safety module UH 6900 from Dold.

Flexibility in group operation

If in practice not only two devices need to communicate safely with each other but several fork-lift trucks have to be manoeuvred through the production plant a safety system for several recipients needs to be designed. In group operation the UH 6900 allows a group control device to connect to several group receivers. In case of an incident, all coupled receivers can be switched off by the control unit in a safety-oriented way, thus providing safety for both humans and machine. Up to 255 recipients can be managed by one control device. The group operation is applied in particular if the production process involves many mobile participants, e.g. if driverless transport systems (DTS) are used. In connection with the configuration software a feedback of the receiver devices can be activated. If a receiver is locally switched off, all devices involved in the process can also be switched off.

Application example

If a safety function (e.g. emergency stop, etc.) is triggered on the group controller, all group receivers are switched off in a safety-related manner.



The UH 6900 modules in group operation. In case of an incident a control unit can switch off up to 255 group receivers.

Wide field of application thanks to radio technology

Due to its wireless transmission of signals, the radio controlled safety system UH 6900 opens up a wide field of applications. This goes from machinery and plant engineering to the recycling and paper industry, intralogistics and the automotive industry. Where humans and machines get close to each other, in particular in the transportation and conveyor technology as well as in large logistics and port installations, the safety of the operating personnel enjoys top priority. The bidirectional radio operation and the safe communication make sure that safety-relevant processes in production and logistics always remain under control and that a safe work environment for employees is provided. Due to their easy integration into existing control concepts the radio modules UH 6900 are particularly suitable for the retrofitting of existing plants.