



Data radio with DATAEAGLE as a problem solver in process industry



## APPLICATION

Operational safety and high availability in systems engineering rank first in process industry. Applying radio data links in applications with moving plant components in which permanently installed cables are ruled out and exposed cables or sliding contacts in view of harsh operating conditions are prone to disturbance and represent a security risk is particularly attractive. Plant extensions is often given priority over new installations. However, integrating additional plant parts in an existing control network by cable is only possible with a great deal of effort, which years ago resulted in applying radio links as a problem solver on trial. Meanwhile, skepticism with regard to their operational safety in the harsh environment of process technological plants – for example power plants, open cast mining plants, steel and cement plants, gravel plants and the like – has given way to conviction that using data radio enables coping with many requirements in a reliable and even cost-saving manner.



## CHALLENGES

A data radio link in plants of process industry requires operationally reliable and interference-free availability at any time. Since many plants such as mobile charging stations of conveyors are subject to unattended operation and interruption of charging would endanger the subsequent process (e.g. fuel supply of a power plant), high availability of radio links is of great importance. With regard to its construction (radio frequency, antenna technology, mounting points) the radio system must be adaptable to the local circumstances such as distance, dust loading, reflection and many more. In modern plants instrumented by fieldbus, e.g. cement and mining industry, radio links are required to speak the “language” of the communication protocol such as PROFIBUS or CAN for being able to bridge a certain distance within this network by wireless radio using [Wireless PROFIBUS](#) or [Wireless CAN](#). And finally radio systems with regard to their constructive execution (such as suitability for top hat rail mounting) should also be capable of being integrated in the existing control technology.



## SOLUTION

Applying data radio as a problem solver in process industry requires a functional and constructive diversity of radio systems for being able to integrate the solutions required in existing plants and their radio conditions as well as possible. To that end, the versatile device series DATAEAGLE with its radio systems of [Schildknecht AG](#) provides the best prerequisites. As an example, we would like to mention the [DATAEAGLE 3000 series for Wireless PROFIBUS](#), which was specifically designed for transparent transmission of PROFIBUS DP data using various radio technologies. This enables all devices featuring a PROFIBUS DP interface being connected via radio. Accordingly, the DATAEAGLE 4000 respectively DATAEAGLE 6000 series support [Wireless PROFINET/Ethernet/Modbus TCP](#) and accordingly [Wireless CAN](#) transmissions. The devices of the [DATAEAGLE 2000](#) series serve for transmitting I/O signals. Depending on the radio technology, the range of radio links amounts to 100 m up to some kilometers. The radio technology preferred is Bluetooth with frequency hopping, but we also implemented solutions by 869-MHz band, e.g. during transporting construction material for the construction of the Three Gorges Dam in China via a cable car with a distance of 3 km.



## RESULT

More and more companies in process industry nowadays rely on data radio (wireless) communication links as problem solvers for their plants, because this technology and its associated devices have proved reliable, are capable of adapting flexibly to individual processes and local conditions and require only minor investment. The radio system series DATAEAGLE of [Schildknecht AG](#) is characterized by particular variant diversity and high application orientation. This variety – together with the comprehensive application knowledge of the manufacturer [Schildknecht AG](#) – has already considerably contributed to acceptance of radio engineering in process technology.

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