INDUSTRIAL INTERNET OF THINGS (INDUSTRY 4.0) IMPLEMENTED PRAGMATICALLY

DATAEAGLE sends via mobile radio

APPLICATION

Industrial Internet of Things (Industry 4.0 a government initiative to promote the computerization of manufacturing) has arrived in the manufacturing and process industry. This is demonstrated by innovative business models working with modern, flexible solution strategies. Companies have long been aware already: Sensor data, its pre-processing and global transmission via suitable communication channels are indispensable for implementing Industrial Internet of Things (Industry 4.0). It is also obvious that without cloud applications the added value from this data remains limited. By implication, this means: A powerful data communication between sensors, actuators as well as a cloud is of major importance. A similar pattern is also demonstrated by the VDMA ("Verband Deutscher Maschinen und Anlagenbau – association of German machine and tool manufacturers ") guidelines "Industry 4.0" in the form of a descriptive graph called "Tool Box", helping to lead smaller and medium-sized manufacturing companies to "Industry 4.0 Projects". In these guidelines, "tools" such as Fieldbus, Industrial Ethernet, Internet Access, Gateway and connectivity play a central part. Schildknecht AG, amongst others concentrating on the development, production and intensive application of the DATAEAGLE radio gateway series, has also been focusing on many of these subjects for more than 20 years; some of the applications having been implemented thereby already years ago may be definitely understood as preliminary stages of Industrial Internet of Things (Industry 4.0) solutions; however, they had emerged even prior to this term having been formulated for the first time.

CHALLENGES

The basis for each Industrial Internet of Things (Industry 4.0) solution is the permanent availability of all data and information relevant for the user, wherever they are generated. In view of the global presence of Industrial Internet of Things (Industry 4.0) projects flexible and stable "end-to-end" connections via different mobile radio networks and network operators are in the center of interest. For connecting data sources and data accepters to the network, gateways such as DATAEAGLE 7050 are important components: They must be capable of connecting classic automation systems (e.g. Fieldbus and Industrial Ethernet networks such as PROFIBUS or PROFINET) and their control units with the Industrial Internet of Things network while at the same time providing additional services such as data compression and the like. A further challenge finally is the complexity of solutions strived for by some companies and their placement in the entire structure of the Industrial Internet of Things.

SOLUTION

Schildknecht AG with its decade-long experience in utilizing radio technologies in classic automation technology features best prerequisites for consulting and support in the development of Industrial Internet of Things (Industry 4.0) solutions for e.g. remote maintenance or remote monitoring of machinery and equipment. As far as communication technology is concerned, Schildknecht relies on globally available mobile radio, enabling to incorporate machinery and equipment into the communication network also in distant regions. The IoT Edge Gateway DATAEAGLE 7050 which has been developed for remote monitoring features a universal e-SIM card for the cost-effective utilization of about 400 mobile radio providers in all over the world and their networks together with easy and central billing of costs. Consequently, machinery connected at the input of a DATAEAGLE 7050 and its control unit automatically obtains access to the locally strongest mobile radio network which transmits data to a public or private cloud of the customer via the device cloud where data is evaluated and significantly presented in a portal. For building up a VPN tunnel for safe remote maintenance, TOSIBOX may be applied as well. As far as consultancy with regard to incorporating the solution into entire project Industrial Internet of Things (Industry 4.0) is concerned, Schildknecht AG has good experience with the "Reference architecture model Industry (RAMI) 4.0"; with its three-dimensional presentation of automation levels, technologies and lifecycles, this generic model provides meaningful support in elaborating an Industrial Internet of Things (Industry 4.0) solution.

RESULT

The close cooperation between user and a "senior expert and hardware supplier" is an important factor of success when developing Industrial Internet of Things (Industry 4.0) solutions. Schildknecht AG with its DATAEAGLE device series and comprehensive application experience complies with these requirements to a great extent, which becomes evident from numerous successfully completed projects. Its clear emphasis is on connecting classic automation systems to a cloud via the DATAEAGLE 7050 mobile radio gateway.

"Already more than ten years ago, the first M2M ("Machine-to-Machine") – communication solution was implemented at the soap plant of SmartFactory KL . Since then, Schildknecht AG has been continuously developing new solutions for the vertical data networking between machinery and equipment, even beyond individual production facilities. In 2013, the DATAEAGLE 7000 was awarded for the TOP 5 of the Hermes Award. Many projects have already been implemented by products of Schildknecht extremely successfully and with great enthusiasm of customers." Thomas Schildknecht, CEO Schildknecht AG.

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