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BASF in motion

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Digitalization in production

Footage material

Higher efficiency through digitally connected manufacturing processes

Digital applications including augmented and mixed reality are helping BASF to make maintenance and production processes more efficient. Interactive 3D projections of objects such as system parts and plant components provide location-independent access to key information, facilitating better decision-making and optimizing knowledge transfer.

(01) Report

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Digitalization is changing almost all areas of life.

At BASF too, transformation to a digital future is in full swing. An example is the ZwiPro plant in Ludwigshafen.

For further information:

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TC: 00:10:00

Speaker

Digitalisation is changing almost all areas of life. At BASF too, transformation to a digital future is in full swing. An example is the ZwiPro Plant in Ludwigshafen.

TC: 00:24:00

Dr. Alfred Krause, Plant Manager Intermediates

ZwiPro is actually a portmanteau of the German word "Zwischenprodukt" (intermediate product). Here at the plant we manufacture a large number of intermediate products. These include raw materials for the paint, automotive and pharmaceuticals industry and also for agricultural applications.

TC: 00:43:00

Felix Volkmann, Asset Manager Intermediates

During the course of digitalisation our aim is to create a fully digital twin of the actual plant. And we can, for example, use all of this data at the Collaboration Board or with any other digital medium. This is therefore the core feature – the creation of a digital twin that can be accessed by all devices.

TC: 01:05:00

Speaker

The benefit of the Collaboration Board lies in its versatility. For instance, it is utilised for specific work briefings at the ZwiPro Plant – and also for training purposes.

TC: 01:18:00

Felix Volkmann, Asset Manager Intermediates

It is up to the Collaboration Board user to decide what he wishes to display. In principle one can imagine the whole thing as a large digital display and, as a user, I can display my content there and link it in ways I consider most appropriate: I am individualising my work process to make it best suit my needs.

TC: 01:40:00

Speaker

In addition to the Collaboration Board the ZwiPro Plant integrates another future technology into daily working practice: the HoloLens.

TC: 01:51:00

Andreas Ernst, Assistant Asset Manager Intermediates

We use the HoloLens directly at the plant, among other places. We are able to transfer projected pipework and assemblies to the HoloLens, go out into the field and then view this assembly in-situ, even though it doesn't yet exist. This allows us to determine whether everything is in order on the spot, or whether we need to make modifications at a specific point in the project.

It's not as if you are placed in a virtual environment, as in a video game. I can see quite normally, like looking through sunglasses. It's just that the parts that I also want to see – those that I've

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transferred to the HoloLens – are visible at the same time.

TC: 02:31:00

Dr. Alfred Krause, Plant Manager Intermediates

Digitalisation offers an improvement in our workflows. The workflows become more efficient and the failure rate is reduced, thereby achieving cost savings. Another really important point is that if this transition to digitalisation takes place, considerable time savings will be achieved for individual tasks.

TC: 02:55:00

Speaker

The HoloLens and Collaboration Board are just two examples that highlight the potential of digitalised processes at BASF.

A further application of modern digital technology is the use of automated guided vehicles – or AGVs for short – as seen every day at the BASF plant in Ludwigshafen. These autonomous vehicles form part of an integrated warehousing and transportation concept that is delivering significant logistics cost savings at the site. The volume of goods transported here in Ludwigshafen amounts to some 20 million tonnes per annum. To ensure the AGVs are able to operate safely among the other plant traffic, it is necessary for traffic data from the sensors and cameras to be sent and processed in real time.

And this is precisely where a bottleneck, common to all of the digitalisation projects that we have seen here, becomes apparent: Regardless of whether it's the AGVs, HoloLens or Collaboration Board, having a fast 5G data connection that is capable of transmitting large volumes of information simultaneously is the key to future industrial production

TC: 04:14:00

Martin Schwibach, Director Connectivity

5G stands for the fifth generation of mobile broadband technology. 5G will be a hundred times faster than 4G and offer a transmission rate of up to 20 gigabits per second. This will also facilitate the use of real-time digitalised applications in the industrial sector.

At large-scale production sites such as Ludwigshafen, BASF must be capable of operating its own 5G networks. It is therefore essential that we have our own networks under our own control, independently of the large mobile network operators. Because this is the only way we can ensure the confidentiality, availability and integrity of our data.

TC: 04:50:00

Felix Volkmann, Asset Manager Intermediates

We want to be able to transfer increasingly large volumes of data in real time, securely and cost effectively, and our own 5G network will give us a degree of sovereignty over all of the channels and data volumes that flow through this network at varying levels of priority. This is something I consider extremely important, because we will then be able to securely transfer our data at an even faster rate.

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