



## SUCCESS STORY

# Toughest conditions for frontline workers – augmented reality & remote assist in the cement industry



Cement industry



Remote maintenance & service  
Remote troubleshooting  
Digital business models



Reduction of downtimes  
Optimisation of customer processes  
Optimal provision of spare parts

## Augmented reality and remote service in the cement industry

As the leading full-service provider for the cement industry, the cement technologies business unit of thyssenkrupp Industrial Solutions offers its customers worldwide seamless, fast and holistic support for their plants. **Remote service is an important component of this fully comprehensive customer service.**

Digital service has been boosted in particular by the Corona pandemic and has demonstrated that **maintenance, servicing and short-term troubleshooting can be successfully carried out remotely.** With the polysius® connect solution based on oculavis SHARE, about **120 experts** provide efficient

remote assistance and ensure that machine and plant downtimes are minimized. In addition, **thyssenkrupp is building digital business models on this foundation and using the solution for the optimal provision of spare parts.**

## Mechanical stress on machine and plant parts

The cement industry is a raw material-, energy- and emission-intensive sector. Production takes place where natural limestone deposits can be found. Construction sites are noisy, dusty and, depending on the production site, very hot or frosty. In a complex production process, the base material is crushed, ground, homogenized, calcined, and fired at 1,500 °C.

The resulting intermediate product, known as clinker, is then ground with further additives to the desired cement quality until the cement can be packed and loaded. **Despite careful design, the mechanical stress on machine and plant components is high. At the same time, increasing outputs of up to 20,000 tons of cement per day require an efficient service management.**

## More efficiency in service with remote processes

For the cement technologies business unit of thyssenkrupp Industrial Solutions, visual assistance is basically not a new discipline. The offering already existed before the Corona pandemic, **but travel restrictions and distance regulations as well as the integration of oculavis as the software provider enabled a mindset change and decisively triggered the change process.**

The fact that machine-related challenges can be mastered remotely with a professional Augmented Reality platform like oculavis SHARE was quickly recognized by skilled workers and managers.



“ Thanks to our remote service, we are able to let our customers see through the eyes of our experts, so we are close to them - even if they are far away.”

Jennifer Richardt, Product Manager Remote Service, department Service - Technology at thyssenkrupp Industrial Solutions, Cement Technologies

Instead of blocking an expert with a business trip of one week for a job of three hours, the expert supports the customer in the execution of the task comfortably from the office or home office. This saves time and allows him to make his know-how available to other customers or colleagues in regional offices, which would have been unimaginable in this way before. **A huge advantage, because after all, professionals with many years of experience and corresponding knowledge in this field are rare.**

In addition, end customers benefit from the fast service by reducing valuable downtimes of machinery and equipment and minimizing costs (e.g. travel expenses for flight, hotel, etc.).

## Confidence in the system leads to more complex use cases

Based on the experience gained from repairs and short-term troubleshooting, polysius® connect was **rolled out for further use cases in the life cycle of complex plants.** The machine-related processes assisted with remote service today extend to

- support for commissioning with regional offices,
- preparation of inspections for upcoming repair and maintenance work,
- guidance in preventive maintenance activities to ensure the availability of the production plant or to maintain the manufacturing process,

- consulting and realization of plant optimizations to alternative fuels and combustion processes in order to reduce CO2 emissions,
- as well as the identification of spare parts in order to be able to supply customers optimally at short notice.

## Rollout in the global service organization

thyssenkrupp Industrial Solutions succeeded in transforming itself from analog, paper-based processes and corresponding organizational structures to digital processes in a very short time thanks to two key leverage effects.





Service technician equipped with RealWear HMT-1 smart glasses and connected with experts worldwide via oculavis SHARE - ©thyssenkrupp Industrial Solutions

### Scalable remote service platform as the first leverage effect

thyssenkrupp was not satisfied with the software solution used before the implementation of oculavis SHARE for several reasons. A **solution has been found** with the multiple award-winning Augmented Reality platform from the Aachen-based scale-up oculavis, **that covers all required service processes**. To protect sensitive information, **all connections should be encrypted** and it should still be possible to transmit a stable video even if the available bandwidth at the operation sites is low.

**Augmented Reality annotations** are used for visual interaction between participants and help the expert to provide correct instructions. **Screenshots and video recordings** enable technical documentation of the service case and can be provided to the customer as a report if required. It was also important to **install the software on a European cloud infrastructure** (Microsoft Azure Europe or Open Telekom Cloud) for thyssenkrupp, so that the data protection requirements of the General Data Protection Regulation (GDPR) are secured.

The solution is intuitive, easy to understand and offers a straightforward onboarding of new users, which is an important **advantage in terms of user acceptance and reduces the training period for end customers and thyssenkrupp employees**. The low cost of floating licenses relative to the potential to provide unlimited customer access to the platform **creates a scalable business model**.

### Freedom in the selection of hardware as the second leverage effect

thyssenkrupp Industrial Solutions primarily, but not exclusively, uses smart glasses for live support with customers. If the customer does not have one at hand, he simply takes a smartphone or tablet to use oculavis SHARE. **The purely voice-controlled RealWear HMT-1 smart glasses are utilized. Around 40 devices are already successfully putting into operation on construction sites**. The HMT-1 is IP66 waterproof, shockproof, dustproof and temperature-resistant.

The high-resolution camera, active noise cancelling and long battery life are **optimally supported by the smart glasses' app optimized by oculavis**. The biggest benefits are the hands-free working and the free field of vision, so that the contact to the environment is not affected.

## Driving the digital transformation and exploiting innovation potentials

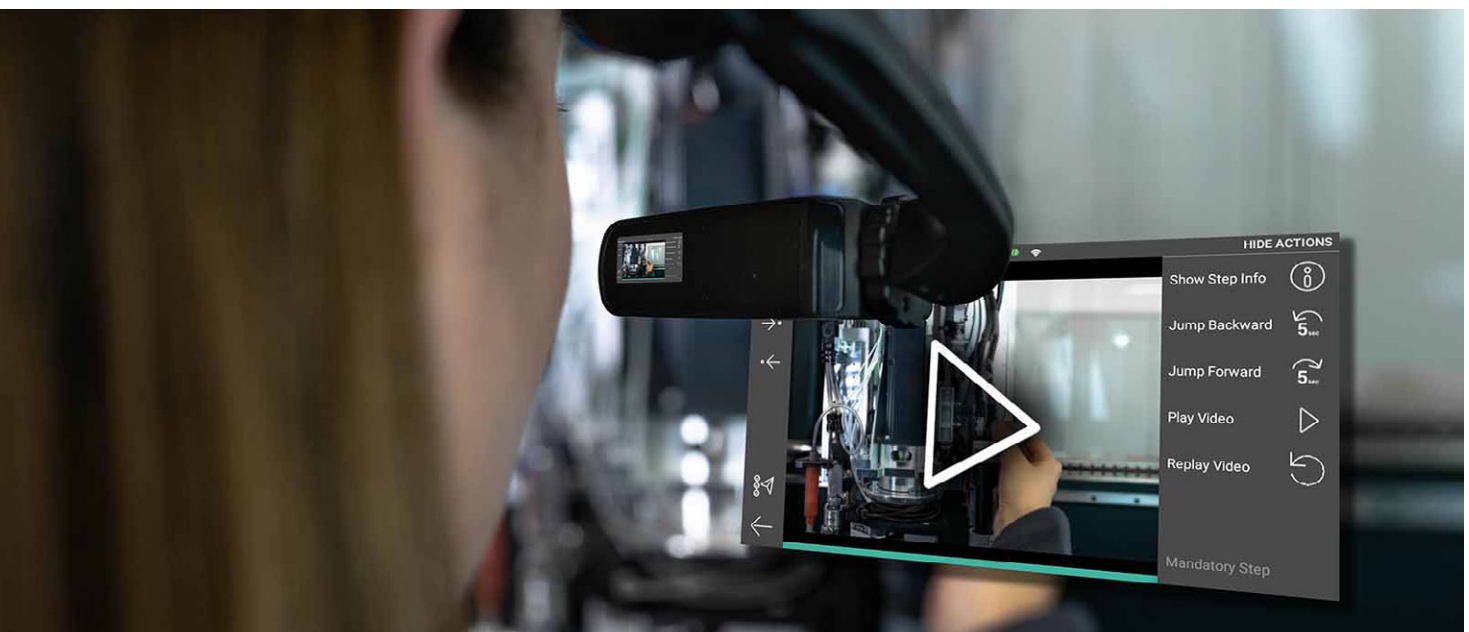
All recorded operating data are transmitted to a control center to monitor the cement production process. thyssenkrupp Industrial Solutions, Cement Technologies will establish a virtual control center that will allow experts to access the data of a cement plant in real time in the future.

**In combination with remote service, customer processes can be optimized, maintenance and repair work can be planned in advance, and spare parts can be identified and ordered in accordance with the customer.** Furthermore, malfunctions on machinery and equipment can be better evaluated and solved. polysius® connect is used especially in external use cases, so that thyssenkrupp Industrial Solutions is

**considering the option of a white label app of oculavis SHARE** to reach end customers with an application that shows their corporate identity and allows them to become the full provider of their own Augmented Reality solution.

Another goal is to increase awareness of the remote service platform among colleagues and in the global branches as well as among end customers, so that the platform grows steadily. Not only on the basis of new users, but also by building up a knowledge database to secure valuable know-how. **Screenshots and videos are systematically stored in so-called cases as the technical documentation of service cases.**

**They offer the possibility of preparing knowledge in a structured manner through digital workflows or step-by-step instructions** and making it available to future employees for training purposes. Likewise, customers can access these workflows to perform standardized tasks such as repairs or assembly operations independently, without always having to speak to an expert.



Provide knowledge in a structured way in digital workflows or step-by-step instructions on the HMT-1.

Workflows can also be used to prequalify service requests, enabling asynchronous communication between the end customer and the service manager with the help of checklists, pictures and other feedback options.

### **Breaking new ground in service and showing attitude towards customers**

thyssenkrupp Industrial Solutions demonstrated its attitude and ability to act with the outbreak of the Corona pandemic. Processes and structures that existed before the crisis were questioned, redesigned, and an innovative path was taken in service through the implementation of oculavis SHARE.

Professionals and managers pushed the digital solution internally, consistently expanded the platform by onboarding colleagues and customers, identified more complex use cases, and developed accompanying digital business models.

The cement technologies business unit gains a competitive advantage **by having not only a quick helper with remote service in times of need, but also a solution that reduces plant downtimes, increases the first-time-fix rate and generates new revenues in sales** in the long term. And less travelling also contributes to climate-neutral cement production by 2050.

### **Leading full-range supplier for the cement industry**

thyssenkrupp's cement technologies business unit specializes in the design and construction of turnkey cement plants. thyssenkrupp Industrial Solutions supports cement producers around the world with an extensive portfolio of products and services as well as sustainable solutions based on more than 150 years of expertise and experience.

Plants and machines use state-of-the-art production processes to treat resources with care, minimize environmental impact and deliver maximum performance and efficiency.

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