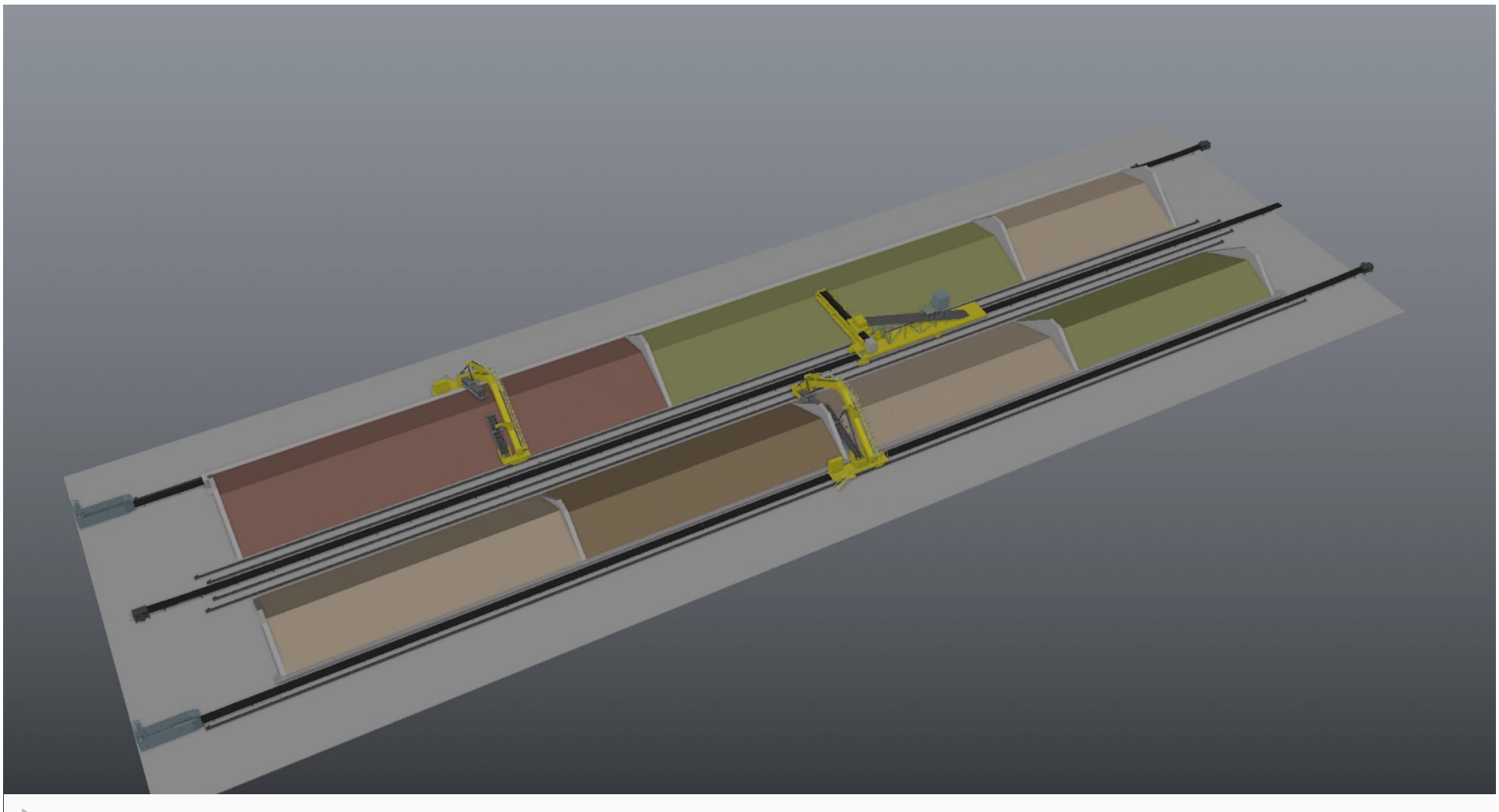
# Automation improves health & safety at turkish cement plant.

Occupational health and safety is an increasingly important issue in bulk storage systems for cement production. The fully automated polysius® storage system installed at a plant in Turkey by thyssenkrupp Industrial Solutions reduces the occupational health and safety risks for operators and improves operational efficiency in bulk storage.

Besides being one of the world's leading full-line suppliers to the cement industry, thyssenkrupp also has vast experience and

expertise in the automation of machines and systems. Ideal preconditions for tackling the challenge of finding the best possible automated storage solution for the cement industry – with occupational health and safety requirements a top priority. As a company certified to OHSAS 18001, the international standard for assessing occupational health and safety management systems, thyssenkrupp Industrial Solutions applied the same high internal occupational health and safety standards to the fully automated bulk storage system developed for the cement plant in Halimoru, Turkey.



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## Industry first

The first-ever fully automated tailor-made longitudinal storage system was a technical breakthrough. Designed and developed by thyssenkrupp, it has been operational since June 2017. Correctives for raw meal grinding are stored on one side of the facility and additives for cement grinding on the other. A 180° slewing belt stacker installed in the middle runs up and down on rails to stack the additives and correctives into piles. This high-tech solution is now bringing the operator the benefits of more precise, efficient and health-friendly stockyard management.

## Healthier and safer

The dust-filled environment of a conventional storage facility for cement raw materials can be a health risk for operators. This fully automated polysius® bulk storage system, in contrast, ensures operators no longer need to breathe in dusty air, while also reducing labor costs as significantly less manpower is required. Tasks carried out automatically are also safer than manual operations. This state-of-the-art system enables four key tasks to be carried out automatically: moving the stacker from pile to pile; moving the reclaimer from pile to pile and precisely undertaking the first cut; avoiding any collisions between the stacker and the two reclaimers; and determining the respective pile volume. With conventional systems the first cut is always tricky because the pile surfaces are anything but even after stacking. But as thyssenkrupp software knows the precise height and shape of each pile, it automatically directs the reclaimer to the right position.

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## More efficient

Smart software is at the heart of this thyssenkrupp storage solution. An anti-collision module (ACM) ensures no collisions occur between the stacker and reclaimer, while offering a preference for crossing and passing. The challenge posed by the parallel storage design was solved by protecting the belt stacker on both sides during rotation and taking the intermediate walls into account. Another intelligent feature, the integrated wall cleaning system, ensures no

‘dead’ material sticks to the walls and is wasted. The intelligent radar sensor technology is converted into 3-D models of the piles of raw material by the stockpile management software to make material management more efficient than ever.

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The bottom line: This high-tech polysius® storage system is the first-ever fully automated solution designed for storing the bulk materials required in cement production lines. Besides enhancing the operational efficiency of the cement plant in Halimoru, it has also achieved manpower savings and reduced the occupational health and safety risks to the remaining operating personnel.

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