

Festo AX Smartenance software improves maintenance on HS2 tunnelling machines

Festo's AX Smartenance software is improving the maintenance of seven Herrenknecht tunnel boring machines, which are being used to construct the High Speed Two (HS2) rail link between London and the Midlands.

With lengths of up to 150 meters and diameters of up to 17 meters, these tunnel boring machines are true giants and consist of numerous hydraulic and electrical components. During the drilling process, they are exposed to extreme forces and wear, which means timely maintenance is critical to keep projects on schedule.

Until now, Herrenknecht has found that maintenance work often resulted in excessively long and expensive downtimes, and paper documentation was slow, laborious, and complex. "We could not be satisfied with this and therefore looked for digital solutions that would optimally support our customers in maintenance and repair management," explains Maximilian Vollmer, System Engineer IOT at Herrenknecht.

During their market research, the IT specialists at Herrenknecht came across AX Smartenance from Festo. This digital maintenance software for production managers and plant operators enables digital, paperless maintenance management. Maintenance tasks and plans can be flexibly created, duplicated, and then evaluated.

Integrated solution

Crucially, Festo was able to integrate its AX Smartenance software into Herrenknecht's existing digital portal. Herrenknecht.Connected allows customers to receive insights and data into almost all systems on the construction site, from tunnel boring machines to water treatment plants. It also delivers digital performance reports and insights into the cockpit monitors of the machine operators through web-based visualisations and analysis tools. These digital tools allow construction site and project management to monitor all data relevant to tunnelling from any location and at any time.

The successful integration of Festo's AX Smartenance has improved rapid collaboration within the team and increased the efficiency of maintenance management. Only minor adjustments to the special features of the tunnel boring machines and the design of the Herrenknecht.Connected platforms were necessary. The AX Smartenance CMMS is now responsible for the maintenance management of the tunnel boring machines and all other maintenance-relevant machines on a large construction site.

The Herrenknecht.Connected platform offers location- and time-independent monitoring of all data relevant to tunnel construction and includes automated analysis functions, clear dashboards, and detailed evaluations of sensor data. Thanks to the integrated AX Smartenance digital maintenance manager from Festo, transparent monitoring and rapid responses to problems relating to maintenance and servicing are now also possible. This reduces downtime, minimises the time required for maintenance, and thus significantly reduces costs - increasing efficiency.

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Satisfied customers

For Herrenknecht itself, AX Smartenance provides deep insights into the condition of the tunnel boring machines and facilitates service and remote maintenance. Thanks to AX Smartenance, it is now also possible to keep maintenance tasks up to date quickly and easily. Furthermore, this digital platform opens up the integration of new software-as-a-service business models.

The addition of AX Smartenance is also proving popular on site. "Maintenance technicians and mechanics on the machine also benefit from AX Smartenance," says Carlos Plata from Herrenknecht Field Service. "This is because the teams on site can now process, report, and track routine tasks and incidents directly via the CMMS software. All maintenance-relevant documents, such as circuit diagrams and drawings, are available in one central location. This makes the work of the maintenance teams much easier and increases productivity."



Herrenknecht 1

Festo AX Smartenance software is optimising the maintenance of Herrenknecht tunnel boring machines being used to construct HS2.



Herrenknecht 2

Integrating Festo AX smartenance software into the Herrenknecht.Connected customer platform allows construction site and project management to monitor all data relevant to tunnelling from any location, any time.



Herrenknecht 3

De eenvoudige en intuïtieve bediening was de reden waarom Herrenknecht besloot om Festo AX Smartenance te gebruiken om service en onderhoud aan zijn tunnelboormachines te vergemakkelijken.



Herrenknecht 4

Digitale inzichten stellen bouwplaats- en projectmanagers in staat om de productiviteit van tunnels te optimaliseren.