

**FESTO**www.festo.com**INDUSTRY**

Manufacturing

PROFILE

Festo, a leading provider of factory automation and process automation solutions, serves more than 300,000 customers across 35 sectors, offering over 30,000 products and systems.

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We moved from a siloed, on-premises approach to an approach that is better governed, better architected, and based on a data fabric that supports our entire data lifecycle.”

— Lukas Reinauer

Data Engineer for Big Data & AI,
Festo

Festo's Innovation Journey: Leveraging GenAI to Transform Industrial Automation

To enhance productivity and customer experience, Festo introduced AI-powered chat applications for intuitive data access. As part of this initiative, the team created the FestoGPT application, similar to ChatGPT, allowing consultants and other customer-facing staff to ask questions of a large language model. Additionally, the Skillground application was introduced, offering colleagues various AI tools, such as text-to-speech and image generation, aimed at simplifying and streamlining tasks.

However, early in the process, integrating Festo's internal data proved challenging due to data governance and security concerns as well as budget constraints. Despite this, employees expected that embedding Festo's internal data would be crucial to make these applications truly valuable for their day-to-day work. To meet this need, the team integrated internal data – product manuals, pricing, and technical information – using embeddings and a vector database for unstructured data, alongside structured relational data such as sales figures and product management data.

Challenges

Festo encountered several hurdles in adopting GenAI:

- Initially, converting structured data into text to embed it for LLM use proved ineffective. Integrating structured, relational data – like sales figures, pricing, and management data – was particularly challenging.
- AI-generated responses often create the perception of correctness, even when inaccurate. Festo aimed to manage user expectations while mitigating misinformation and hallucinations.
- Metadata quality became essential to improving semantic understanding and establishing uniform semantics across the data.
- Strict access controls were necessary to ensure only authorized users could retrieve sensitive information.

The Solution

Festo adopted Denodo's AI SDK and metadata-driven approach to:

- Avoid replicating and embedding entire datasets and instead connecting the LLM only to metadata, to generate queries for relevant data from original source systems through a single API
- Leverage metadata (translations, descriptions, associations) for accurate and contextual responses.
- Simplify their AI applications' data access via a single AI interface instead of building and integrating multiple connectors to multiple source systems.

Results

- Accelerated GenAI use case development:
 - FestoGPT and Skillground applications were enhanced with Festo's internal data access, empowering users to interact with both structured and unstructured data seamlessly.
 - Denodo's API capability enabled easy connectivity with enterprise applications.
- Simplified and governed data access:
 - Business users without technical backgrounds could query data in natural language, eliminating the need for SQL or programming skills
 - Built-in access management ensured sensitive data was only available to authorized users.
- Improved semantic accuracy for reliable AI-driven insights.
- Eliminated data duplication and movement, improving data privacy and reducing storage costs.

As a result of FestoGPT and Skillground leveraging Denodo for all data access, Festo could achieve the following improvements:

- Improved Sales performance and KPI reporting, by customer and project.
- Efficient searching and sharing of project management related data.
- Single interface for client-facing staff to access product, pricing and other manufacturing related data relevant to their customers' projects.

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Denodo Platform 9.1 has been a game changer for Festo, particularly in our journey to harness the potential of Generative AI within our data landscape. With Denodo's flexible and advanced data integration capabilities, we've been able to seamlessly integrate structured and unstructured data, accelerating key GenAI initiatives such as FestoGPT and Skillground.”



Lukas Reinauer

Data Engineer for Big Data & AI,
Festo

