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Nemetschek's dTwin: Redefining Port Efficiency for UMEX

Munich, Germany, 20 February 2025 – To ensure smooth port operations, Romanian operator UMEX relies on a digital twin of its port infrastructure in Constanța. Using the [Nemetschek Group's](#) cloud-based digital twin platform [dTwin](#), a digital replica of the berths, storage areas and warehouses was created and linked with key figures on productivity, warehouse utilization, operating volume and loading efficiency as well as real-time information on building structure and energy consumption. This enables the entire ship unloading process to be comprehensively monitored. Energy efficiency and productivity are sustainably increased, which also benefits customers.

Large volumes of goods from neighboring countries are handled via Constanța on the Romanian Black Sea coast. UMEX operates five berths there for bulk and liquid goods, as well as bagged cargoes and general cargoes like steel products, timber or project cargo. Open spaces, warehouses and a specialized infrastructure ensure that UMEX can cover all of its customers' freight needs.

From BIM model to digital twin

Constantly growing freight volumes and many complex activities running in parallel required UMEX to optimize its loading and unloading operations and make them more efficient. In addition, UMEX was looking to offer innovative solutions that could not be found in a traditional port terminal.

To get a clear overview of data-driven metrics such as handling volumes, productivity, warehouse utilization and loading efficiency, as well as personnel, equipment and energy costs, the UMEX team had already been using state-of-the-art technologies such as monitoring platforms for some time and also created BIM models of its warehouses. However, some of the heterogeneous data was only available on site or via various online platforms.

dTwin as a “single source of truth”

The company was looking for a solution that would integrate all visualizations of the complex – from BIM models to panoramic images – as well as data from different platforms in a digital twin. Nemetschek partner ALLBIM.NET presented UMEX with the cloud-based SaaS platform dTwin from Nemetschek. This enabled port buildings and infrastructure such as cranes to be precisely visualized in 3D in the context of the port environment. Real-time data from IoT sensors was also integrated. This created a digital twin for visual analyses, simulations and optimizations.

Only by combining building and system information with real-time data from building operations can digital twins unfold their full potential. As a “single source of truth”, dTwin brings this information together clearly on a central platform and enables a 360-degree view of the port facility's buildings and infrastructure.

“The development of the strategy, the setup and the fine-tuning of the platform to our needs were carried out in close cooperation with the dTwin team and went smoothly,” says Daniel Nistorescu, Project and Investment Manager at UMEX, praising the support provided by the dTwin team.

The platform provides management with a clear picture of the entire operating process at all times in order to improve energy efficiency and productivity. Anomalies and deviations are visualized at-a-glance, using heat maps.

“With dTwin, we can analyze running costs almost in real time. This makes it possible to optimize solutions and tariffs for our customers so that they can optimally discharge or load their cargo,” adds Cristian Taranu, General Manager of UMEX.

UMEX Integration with the Digital Twin Ready in Short Time

Thanks to the plant's existing BIM model and IoT systems, an operational digital twin was created for UMEX in just one week. The adjustments and fine-tuning of the platform took another two months.

“Together with the UMEX team, we were able to develop tailor-made solutions in dTwin that directly address the specific challenges of our customer,” says Dr. Jimmy Abualdenien, Head of Digital Twin Product at the Nemetschek Group.

UMEX is currently working on integrating state-of-the-art port cranes and scaling up to other terminals. The platform can be easily adapted and expanded to include additional sensors and systems. Management and departments benefit from comprehensive real-time information on the productivity of depots and facilities. This increases efficiency and helps to optimize processes. This makes the dTwin a real game changer in the port.

The [project video](#) offers further insights and perspectives.

The Nemetschek Group is a globally leading provider of software for digital transformation in the AEC/O and media industries. Its intelligent software solutions cover the entire life cycle of construction and infrastructure projects and allow creatives to optimize their workflows. Customers can plan, construct, and manage buildings and infrastructure more efficiently and sustainably, and develop digital content such as visualizations, films, and computer games in a creative way. The software company drives new technologies and approaches such as artificial intelligence, digital twins, and open standards (OPEN BIM) in the AEC/O industries to increase productivity and sustainability. We are continuously expanding our portfolio, including through investments in disruptive start-ups. More than 7 million users are currently designing the world with the customer-focused solutions of our four segments. Founded by Professor Georg Nemetschek in 1963, the Nemetschek Group today employs around 4,000 experts.

The company, which has been listed in the MDAX and TecDAX since 1999, achieved a revenue of EUR 851.6 million and an EBITDA of EUR 257.7 million in 2023.

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