

DP WORLD ANTWERP GATEWAY: FROM 2.5 TO 3.4 MILLION TEU PER YEAR

DP WORLD AND ARCADIS INCREASE THEIR
CAPACITY THROUGH INNOVATION





Investing in innovation to make trade flows smarter: that's how DP World wants to make its terminals more competitive. The container company active all over the world knows that the upgrading of its terminals is key to continue to operate successfully in the highly competitive container shipping market.

International container transport is growing year after year. That's why DP World is investing in the restructuring and modernisation of its existing container terminals. Under the management of sultan Ahmed bin Sulayem, DP World has become the 5th-biggest port operator in the world.

DP World Antwerp Gateway is one of DP World's many container terminals, providing access to the biggest container carriers in the world via the Scheldt estuary. This terminal is extremely well connected to all the big European production and consumption centres. With an operational capacity of 2.5 million TEU per year, it is also one of the biggest container terminals in the Port of Antwerp-Bruges.

Antwerp

The Antwerp Gateway, is located on a broad branch of the river Scheldt and uses the biggest tidal basin dock in the world. On the land side, the area is surrounded by a dense freight transit area and a railway, limiting its extension options. That's why DP World decided to seek new solutions with Arcadis to bring the terminal's current transshipment capacity from 2.5 TEU up to 3.4 TEU by 2025. TEU stands for Twenty feet Equivalent Unit, a unit that measures volume in relation to the standard dimensions of a container with a length of 20 feet, a width of 8 feet and a height of 8.6 feet. To do this DP World has invested 197 million euros in a fully enhanced and automated yard, with automated gantry cranes and four additional port cranes. DP World Antwerp assigned Arcadis the management of the entire conversion project.

Small space, big challenges

DP World Antwerp Gateway's desire to reach a transshipment capacity of 3.4 TEU by 2025 is based on DP World's market development forecasts. To achieve it, the space available must be exploited to the full.

Mathieu Roels, Manager of Civil Projects at DP World Antwerp Gateway: "The replacement of the conventional straddle carriers with robot-operated container-handling gantry cranes (ASC – Automatic Stacking Crane) enables more containers to be stacked on top of each other. Furthermore, there is less space between the stacked containers. This enables more efficient stacking, with more containers per square metre. The automation means that containers can be loaded onto the trucks must faster."

To measure is to know

On loading and unloading containers in a logistics hub like DP World Antwerp, everything depends on maximizing the efficiency and exploitation of the space. The profit margins per container are very small and the competition very big. Therefore, every handling operation, every movement at DP World Antwerp is carefully recorded. This way the company knows how much time and energy are needed to transship a container from a vessel onto the dock, from the dock onto the truck, rail car or barge.

Even the maximum speed at which each crane arm can move before slowing down to place a container safely, is precisely calculated.

Based on this data, DP World Antwerp decided to move over to robot-operated container-handling gantry cranes. To achieve its aim of considerably increasing the total transshipment capacity in a few years, a specific restructuring of the entire land area was also necessary, and for this, the transshipment company turned to Arcadis.

Mathieu Roels: "The Arcadis team is helping us obtain the permit, taking care of the logistics and traffic flow studies, fine-tuning the terminal's planning and management and executing the technical design of the civil infrastructures and the gantry frames. The control, contract management, value engineering and set-up the Building Information Model (BIM) have also been executed by Arcadis. After discussions with them, we decided to assign them the technical design of the electricity supply and the lighting. We understood that, for the best results, everything has to work in perfect harmony, and the help of Arcadis' experts is invaluable in this respect."



Existing business

One of the key reasons DP World chose Arcadis to partner with, was because they have the knowledge and experience to successfully execute all the adaptations to the container terminal without disrupting the loading and unloading processes of the containers in progress. Mathieu Roels: “In our sector, everything depends on the efficacy and availability of the facilities. From the outset, we clearly established that the processes in progress could not be disrupted in any circumstances.”

Jos van Kerckhoven, Head of Department Ports & Hydraulic Engineering at Arcadis: “We draw benefit from our BIM experience in the management of information and interfaces, so that the client can base its decisions on reliable information during each different development phase. We use the models developed to tackle sophisticated analyses of the logistics processes and use cutting-edge 3D techniques and the best design practices.”

An interdisciplinary approach

Even more than in similar projects, the local specificities required an extremely in-depth inventory phase, carried out within the context of a comprehensive interdisciplinary approach, according to Jan Campforts, Project Leader of Arcadis Belgium: “This terminal includes several transport modes. Redeveloping a logistics hub with an intensive turnover is a complex job, as the smallest change in the space or a process has big consequences. We have faced each operation up to different scenarios, in order to promote the logistics flows, and answered questions like “What will happen when a truck stops in the tunnel under the railway?”, or “What effect will adapting the railway works have on the gantry cranes and on the rolling stock?”. In an active business, things can always go wrong. It is therefore vital to know exactly how to react in such cases and what the time constraint is. All these considerations are taken into account in order to end up with the best space exploitation solution.”

In the inventory phase, the joint project team, composed of specialists and all-rounders, visited all the existing modules, putting questions to all the technical and operating staff. Jan Campforts: “At Arcadis, we have also exchanged knowledge with our senior project leaders and our Rotterdam experts. This prevents us having “tunnel vision” targeted at the final solution, while ensuring our clients benefits from our worldwide experience in this area. As project manager, I am the client’s central point of contact, but within the project team, our experts also exchange information with each other. In the team, the task distribution is very clear. One member will gather and manage the status of all the drawing material, while another will catalogue all the technical prerequisites. As project leader, I am aware of everything, but I don’t want to slow up the exchange of information under any circumstances. This way the client is always kept well informed, without this hindering the progress of the works.”

Mathieu Roels: “The communication with Arcadis is very good, because within our joint project team, we have open and honest exchanges on all matters, whether these be the budget, the technical issues or the scope of the job. If it proves that we don’t have the necessary manpower or expertise internally to solve a specific problem, Arcadis can quickly intervene. With Arcadis we have developed a reliable vision of the future, with respect to the effects of the future extensions and enhancements for example. This will give us high security of investment.”



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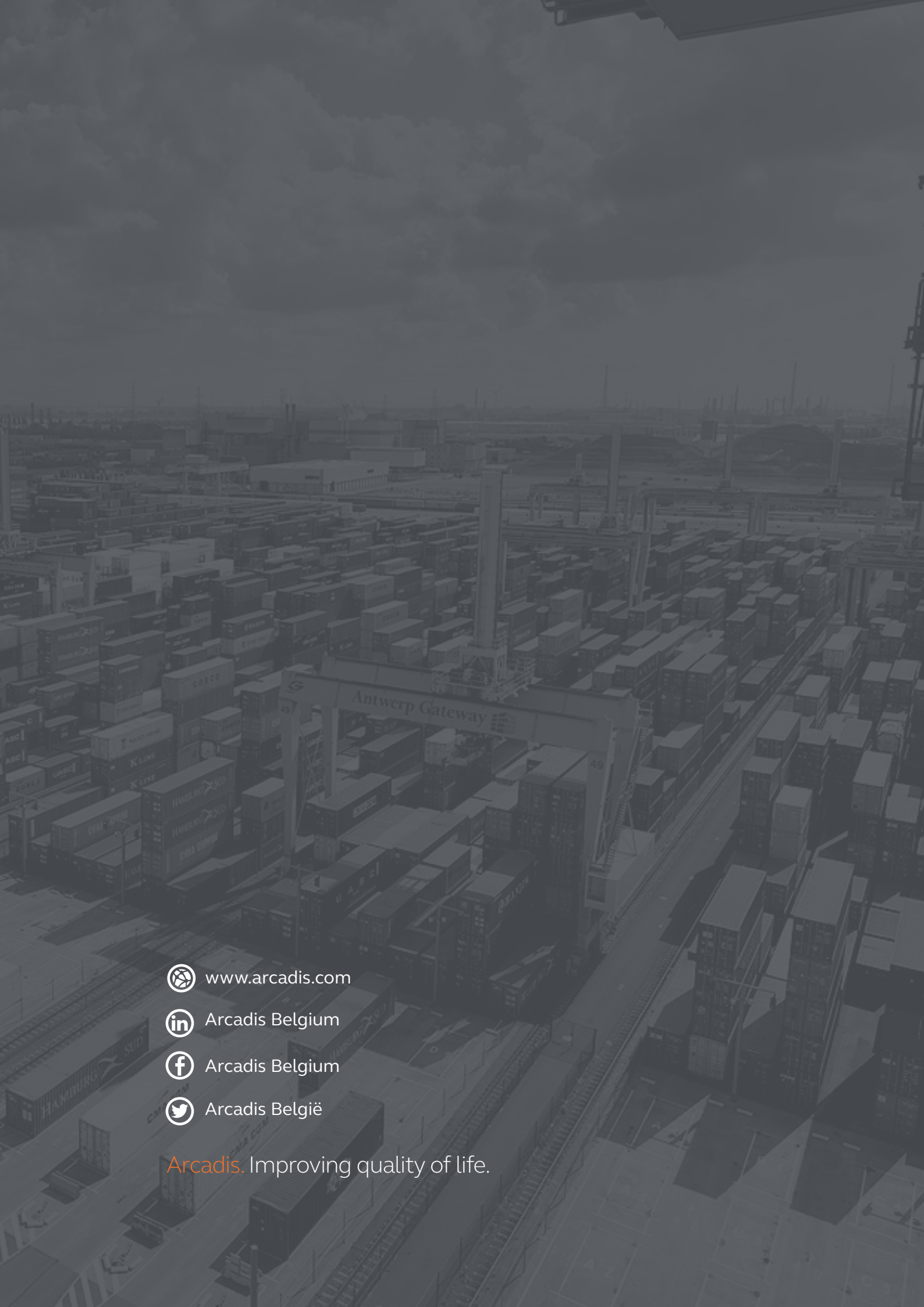
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