



OpenIJ: prestigious joint construction project of the world's largest sea lock

OpenIJ, a consortium of construction companies, is building the world's largest sea lock in IJmuiden in The Netherlands. The project has been commissioned by Rijkswaterstaat, part of the Dutch Ministry of Waterways and Public Works, and will result in a sea lock that will exceed the size of the locks in the Panama Canal and the Suez Canal. A prestigious and ambitious project, partly because the work is taking place within a relatively small area, while shipping traffic is not allowed to experience any hindrance. ICT Group is contributing to the design and the integration of all systems.

The current sea lock (Noordersluis) in IJmuiden was built in 1929 and after nearly 100 hundred years, it has reached the end of its lifespan. The ships that pass the lock, including cruise ships, are growing in size and they're transporting a steadily increasing amount of cargo. To ensure that the Port of Amsterdam can retain or even expand its market share, now and in the future,

a number of years ago it was decided to build a new, large sea lock. In addition to the passage of ships and cars (the lock is also used as a North-South road connection), the lock also serves as a water barrier that offers protection against the sea during storms, and that guarantees the safety of millions of people in the Noord-Holland region of The Netherlands.

It fits exactly:

The world's largest sea lock in figures:

- Distance, door to door (chamber): 500 metres
- Distance, quay to quay: 70 metres
- Depth: 18 metres
- Average water volume per passage: 70,000 cubic metres
- Two hydraulic sliding doors with a length of 72 metres, a height of 25 metres and wide enough for road traffic
- Opening and closing time of the doors: 3 minutes.

Continuous

OpenIJ is a consortium of construction companies that includes various parties. ICT Group is involved in the project via one of these parties, Vialis. Its main task is to integrate all systems: both road and sea traffic, everything must be able to communicate. From the hydraulic lock doors to the traffic signals, and from the climate installation to the barriers, everything has to work and communicate continuously, 24 hours a day, 7 days a week. The only exception is the 70 hours a year for planned maintenance and approx. 19 hours a year for unplanned maintenance. ICT Group contributes to the design process that is concerned with the technical facilities required to be able to perform the maintenance activities within the time intervals that have been defined.

Unknown forces

The larger the lock, the larger the volume of water that must be added or drained to maintain the right water level. During each passage, an average of 70,000 cubic metres of water is flowing in or out of the lock. Moreover, a sea lock involves both fresh water and sea water. Heavier sea water that flows into the lock too fast causes strong currents just above the floor of the lock's

chamber. This triggers an enormous force that is hard to stop. What's more, water that flows into or out of the lock too fast causes the hawsers that tie down the ships to break. However, water that flows too slowly has economic consequences because the passage through the lock takes too long. These and other factors determine how the slides in the doors of the locks need to be controlled, and this differs per situation. And it's important to have a solution for each situation, which entails programming, integrating and testing.

“OpenIJ is a magnificent, technical challenge”

René van der Pluijm, ICT Group's Project Manager at OpenIJ

Reliable

Safety has been a determining factor throughout the entire project. The economic and public interests are too large, and unsafe situations may not occur at any time. Employees of ICT Group are involved in predicting possible failures in order to prevent unwanted situations. What can possibly go wrong and how can this be prevented with emergency scenarios? Everything is analysed, recorded and tested, right down to the smallest detail. There's a considerable list of requirements and applicable legislation that must be complied with, in a demonstrable manner. And this is another area in which ICT Group is playing a role.

More information about the OpenIJ project?
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