

Krammer Locks

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Problem

Problem statement: The Krammer locks form the boundary between the saline Eastern Scheldt and the fresh water Lake Volkerak-Zoom. The locks will have a new method of limiting salt intrusion as a result of lock-operation by using bubble screens and flushing with fresh water. To optimise lock-operation and manage salt intrusion into the fresh water lake, a decision support system is setup.

Problem impact: Create a decision support system for Lake Volkerak-Zoom that manages water levels and salinity by optimising the lock operation at the Krammer locks and flushing through the lake.

Client: Rijkswaterstaat (district Zee & Delta)

Team

Project owner: Kias-Jan van Heeringen, Arno Nolte

Team members: Maarten Smoorenburg, Meinard Tiessen, Otto Weiler

Partners:

Theme(s)

SURFACE

INFRA



Content

The Krammer locks are part of the separation between the upstream fresh water lakes and rivers and the downstream tidally influenced saline waters. These came about as a result of the Delta works that compartmentalized the South-Western Delta of the Netherlands. The Krammer locks previously used the Dunkerque method to limit salt intrusion. Due to mounting maintenance cost and reduction in efficiency, it was decided to change this system to a more manageable system using bubble screens and flushing. This new system allows for more management options to control the level of salt intrusion. In order to support the management of the locks and with that the salt intrusion into Lake Volkerak-Zoom, a decision support system is developed to provide the ideal lock-management option to meet the various demands for fresh water, shipping, saline water (in the Eastern Scheldt) and energy.

Method

- Combining the knowledge lock-operation & impact of various measures (such as bubble screens and flushing) at the locks to quantify the salt intrusion into lake Volkerak-Zoom, this is done via the computational tool "Zeesluisformulering".
- Translate the salt intrusion through the locks to a lake-wide salinity distribution, taking into account inflow and outflow (flushing) into the lake as well as other conditions such as wind.

Result and Impact

- Optimisation of the lock-operation
- A fresh water lake Volkerak-Zoom and fresh water supply to the surrounding agricultural lands.

Reports and Publications

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