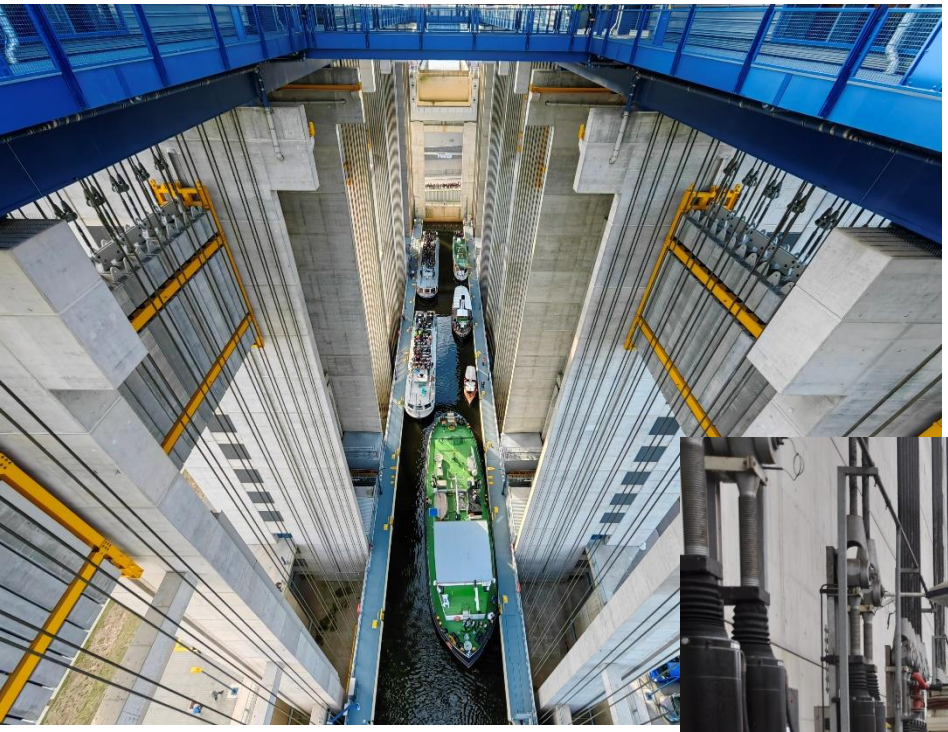
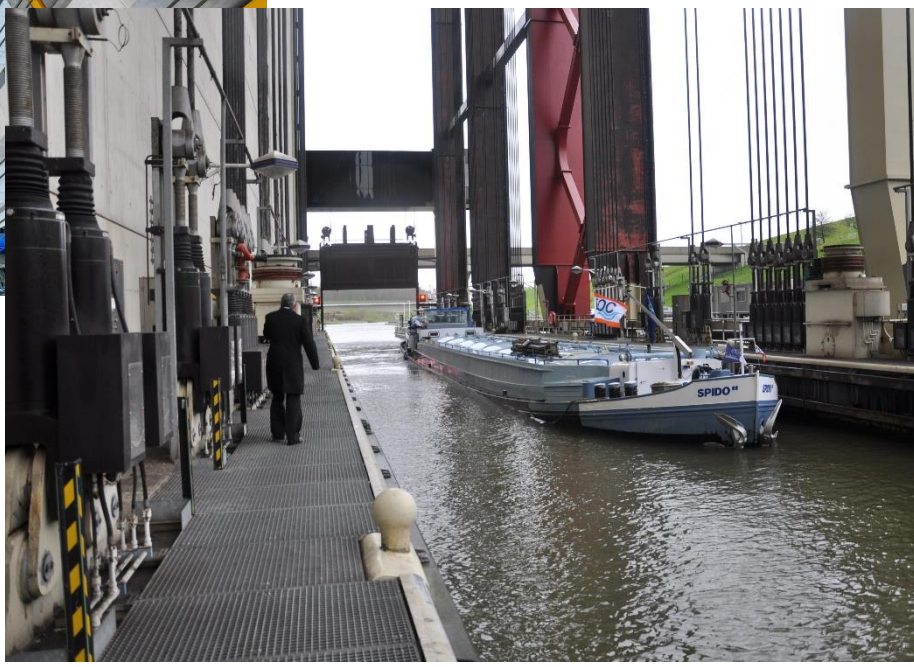
PIANC

The World Association for Waterborne Transport Infrastructure

INNOVATIONS IN SHIPLIFT NAVIGATION CONCEPTS





InCom Working Group Report N° 207 – 2023

PIANC REPORT N° 207

INLAND NAVIGATION COMMISSION

INNOVATIONS IN SHIPLIFT NAVIGATION CONCEPTS

November 2023

PIANC has Technical Commissions concerned with inland waterways and ports (InCom),coastal and ocean waterways (including ports and harbours) (MarCom), environmental aspects (EnviCom) and sport and pleasure navigation (RecCom).

This report has been produced by an international Working Group convened by the Inland Navigation Commission (InCom). Members of the Working Group represent severalcountries and are acknowledged experts in their profession.

The objective of this report is to provide information and recommendations on good practice. Conformity is not obligatory and engineering judgement should be used in its application, especially in special circumstances. This report should be seen as an expert guidance and state-of-the-art on this particular subject. PIANC disclaims all responsibility in the event that this report should be presented as an official standard.

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ISBN 978-2-87223-035-8

EXECUTIVE SUMMARY

Shiplifts are one of the main types of major navigational structures found in canals and at high dams in navigable rivers. During the 21st PIANC International Navigation Congress, the development of shiplifts was emphasised, recognising that shiplifts have several advantages over ship locks when the lift height is over 40 metres.

Since the 1990's, shiplift technology has been developing rapidly, particularly in China, UK, Germany and Belgium. Many different types of shiplift have been built or are being designed, e.g. the Strepy-Thieu Shiplift in Belgium, the Three Gorges Shiplift and the Jinghong Shiplift in China, the new Niederfinow Shiplift in Germany, as well as the Falkirk Wheel in UK. Many advanced and innovative construction techniques and design concepts have been used in these projects. PIANC's Inland Navigation Commission (InCom) set up WG 207 to examine and report on Innovations in Shiplift Navigation Concepts.

The WG 207 report provides guidelines and recommendations to persons involved in shiplift research, design, construction, management, and maintenance, including a special focus on historical shiplifts. The report also provides a database of shiplifts, including brief lists of types, with the dimensions and technical parameters of representative shiplifts in the world.

The work of the Working Group covered the evaluation of research, design, construction, management and maintenance, and approaches used for operational, engineering, financial and policy decision making. The WG 207 report includes information on conceptual design, design research, analytical models, numerical models, desktop and physical models, prototype surveying and testing, all of which have been used to address issues arising while developing new shiplifts internationally.

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