

PIANC Workshop
13-14th September 2011



IDENTIFICATION OF THE CHALLENGES FOR TOMORROW

PIANC Panel Group
LOCKS EXPERTS

PIANC
Setting the course

IDENTIFICATION OF THE CHALLENGES FOR TOMORROW

Ph. Rigo (BE), *coordinator*,
J. Augustijn (NL),
J. Bodefied (D),
R. Daniel (NL),
C. George (ACP),
M. Newbery (USA),
R. Thomas (BE),
J. Wong (ACP)

and YOU

www.pianc.org New Orleans 2011

PIANC
Setting the course

PIANC
Setting the Course

Report n° 106 - 2009



IDENTIFICATION OF THE CHALLENGES FOR TOMORROW

Innovations in navigation lock design

WWW.PIANC.ORG

PIANC
Setting the course

IDENTIFICATION OF THE CHALLENGES FOR TOMORROW

GOAL: Identify the pending issues, which remain in 2011 key challenges for the design of navigation locks.

The PIANC experts will highlight

→ the relevant topics

- requiring more extensive researchers
- relevant for new PIANC working groups

www.pianc.org New Orleans 2011

PIANC
Setting the course

1- IDENTIFICATION OF THE CHALLENGES FOR TOMORROW

- The seismic effect, which is currently investigated by PIANC WG151,
- Ship entrance/maneuvering and ship behavior in locks, which is currently investigated by PIANC WG155,
- Ship impact on lock gates, which is currently investigated by PIANC WG151,
- Reliable design and operation of miter gates, which will be investigated by a new PIANC WG 154,

www.pianc.org New Orleans 2011

PIANC
Setting the course

1- IDENTIFICATION OF THE CHALLENGES FOR TOMORROW

- Use of composite material for the design of locks,
- Design of monolith lock (versus a structure with joints),
- High rise navigation locks (above 40 m),
- Water management (lack of or too much),
- Salt water intrusion,

www.pianc.org New Orleans 2011

PIANC
Setting the course

1- IDENTIFICATION OF THE CHALLENGES FOR TOMORROW



- Life cycle cost including maintenance,
- Durability of structures,
- Maintainability of equipment and structures,
- Environmental and social aspects,
- Stakeholders' management,
- Etc.

2- CHALLENGES FOR LOCK GATES



- Reliability under all conditions. Sometimes engineers complicate their systems too much, increasing in fact the probability of failures.
- Service life (durability and maintainability) of gate components like tracks, wheels, hinges, seals, buffers and heel posts (mitre gates); and not the main structures that usually serve long enough.

2- CHALLENGES FOR LOCK GATES



- Maintainability in the sense of: low, easy, safe, healthy and environment-friendly maintenance.
- Vessel-friendly service. How to improve the comfort and safety of the vessels and their passengers (crews)?
- Etc.