

Lock model



Flanders
State of
the Art

The nautical lock model allows us to study a vessel both entering and leaving a lock chamber. The ship model sails along a guide rail which forces a straight trajectory while the lateral forces at the front and rear of the ship model are measured. The guide rail can impose a well-defined drift angle or eccentricity on the vessel in relation to the axis of the lock chamber. The ship model enters or leaves the lock chamber under its own power and is controlled by the ship's propeller. We can also simulate longitudinal tugboat assistance by using aeroplane propellers mounted on the deck.

The lock chamber is fitted with a lock gate which can be opened at a specified speed. This allows the lock chamber to be filled with water of a different density compared to the approach zone (e.g. salt water-fresh water) to study the density exchanges during the tests. When the water in the lock chamber is dyed, an advanced camera system can visualise the currents.

Characteristics (basic configuration)

Approach channel:

- length: 38.00 m;
- width: 3.50 m;
- maximum water level: 0.32 m.

Lock chamber:

- length: 6.10 m;
- width: 0.69 m;
- removable bottom to create a threshold.

In addition to the basic configuration, the following changes are possible:

- shorten and narrow the lock chamber;
- install a second lock chamber for lock-lock tests;
- apply a bank profile in the approach zone and guide walls for the lock chamber;
- schedule lock culvert outlets, with accompanying filling and emptying laws.

