WASSER- UND SCHIFFAHRTSVERWALTUNG DES BUNDES

Wasser- und Schifffahrtsamt Uelzen

INFORMATIONEN ZUM ELBE-SEITENKANAL

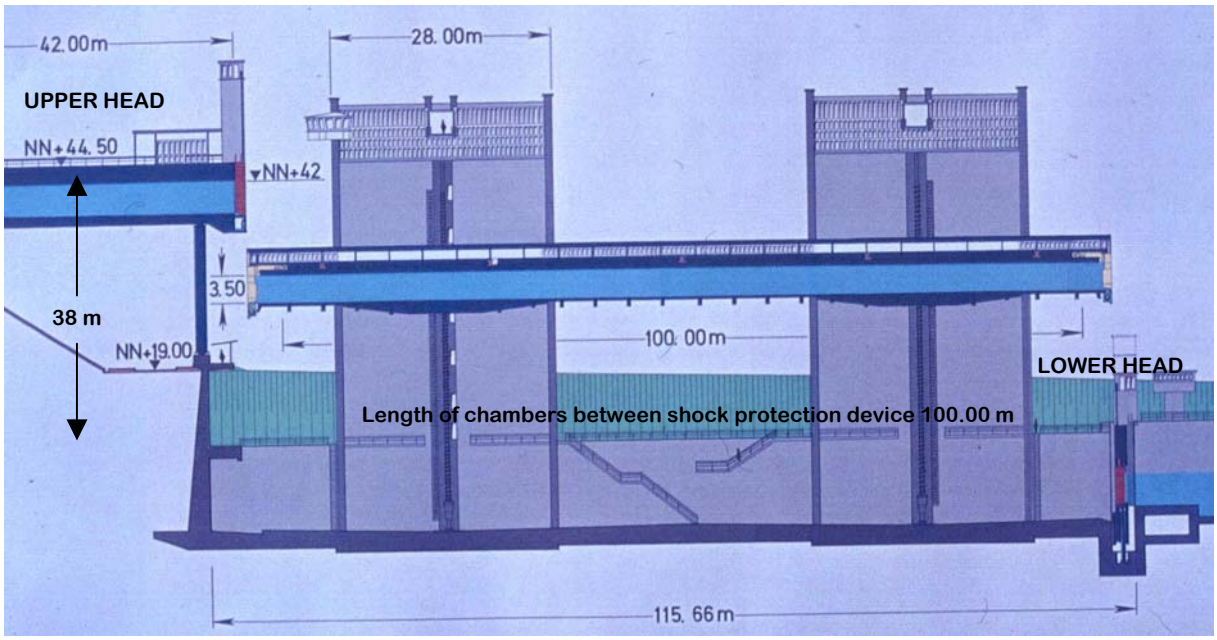
Twin Ship Elevator

Lüneburg

The Twin Ship Elevator Lüneburg has been built in the years 1969 to 1975 as a part of the new Elbe Lateral Canal Federal Waterway. The Elbe Lateral Canal connects Hamburg, the biggest sea harbour of the Federal Republic of Germany, to the inland waterway network and partially shortens considerably the communications to Berlin, and Czechoslovakia through the Elbe as well as to the industrial area around Salzgitter and the Ruhr District. All year round the European Barge can run fully laden on this new Federal Waterway.
Between the Elbe and the Mittelland Canal a total difference of levels of 61 m has to be negotiated by means of two hydraulic structures, a twin ship elevator with 38 m height of lift near Lüneburg and a lock near Uelzen with 23 m height of lift.

In the elevator near Lüneburg the ships are transported in two steel chambers filled with water, which can be moved independently from each other.
The weight of the steel chambers including contents is compensated by counterweights in each of the four guide towers.
The chambers move up and down on toothed racks. In case of failure of balance between chamber and counterweights the load sets on the stationary spindles provided in the four towers. The upper and lower heads form the transition between canal and elevator. They contain the reach gates which allow together with the chamber gates to separate canal and chamber without water losses worth mentioning.
A canal bridge has been built between canal dam and elevator for crossing a road.

Longitudinal Section of Elevator



All movements of the twin ship elevator run off fully automatically. Operation of the entire construction and traffic control are made from a central control stand. Upper and lower lay-by ports offer sufficient berthing and overnight-ing facilities. Of all engineering works of the Elbe Lateral Canal the Twin Ship Elevator is the most interesting one, and as a vertical elevator it is presently the worlds; biggest twin ship elevator.

Technical Features

Normal height of lift			38 m
Useful length of chambers			100 m
Chamber width between fenders			12 m
Water depth in chamber			3,4 m
Total weight of chamber filled with water	*approx.*	*rd.*	5.800 t
Total weight of moving parts incl. water each chamber	*approc.*	*rd.*	11.800 t
Weight of each of the 224 counterweight plates	*approx.*	*rd.*	26,5 t

Drive Unit

4 electric motors each of		160 KW
Total chamber travel time	*approx.*	3 min
Average path velocity		0,21 m/s
	or	12,6 m/min
Maximum lifting and lowering speed		0,23 m/s
	or	14,4 m/min
Acceleration and deceleration		0,012 m/s²

Performance of Ship Elevator

Duration of lift incl. entrance and exit	20 min
Annual capacity in one direction with 16 hours of operation on 310 days/year based on the actual dimensions and utilization of ships	12-14 million tons tonnage

Dimensions of Canal Bridge in Upper Head

Length	42,5 m
Width between fenders	12,0 m

Dimensions of Lay-By Ports

Length of berth in each lay-by port	1.050 m
Width of lay-by ports	90 m