

Annex 5 Technical requirements ref 4.1.2

1.1 Legal requirements

- European Committee for drawing up Standards in the field of Inland Navigation (CESNI)
- European Standard for Qualifications in Inland Navigation (ES-QIN) EDITION 2019 Especially: Part III: Standards for the approval of a simulator
- European Standard laying down Technical Requirements for Inland Navigation vessels (ES TRIN 2021)

1.2 Lay out of the simulator

Bridges.

Number: 4

Bridge layout: according ES TRIN 2021 including wheelhouses designed for radar navigation by one person.

Ergonomic design according European norm CEN/TC 15

Dimensions of bridge cubicals: 3.48m X 3.46m (See floor layout)

There must be room left for an examiner for observation and a small table to make notes.

Steering and engine systems:

- way depending, time depending (emergency steering), automatic steering (river pilot), double azimuth (thruster drive) steering with a control from -100% to +100% and a gearbox detent
- rotating bow thruster control with a control from at least 0% to 100%, tunnel bow thruster control
- Engine control with indicator light for forward and backward and a forward, neutral and astern detent and at least 2 handles for double engine control
- Anchor winch control including stern anchor

Nautical instruments according to ES-TRIN:

- (D)GPS, AIS
- inland radar
- Inland ECDIS with radar overlay, AIS overlay, gyro/satellite -compass connection. It must be possible to block the navigation mode, so that the candidate can only use the information mode. ENC's of all available area's as up to date as possible to match the simulator area
- Echosounder with two transducers (under bow and under stern) on large models
- magnetic compass, gyro- or satellite compass
- speed log (water track and ground track)

Other controls:

- Navigation lights,
 - daymarks and
 - sound signal control
- for inland vessels including blue sign, dangerous cargo signs push barge signs, etc.
- Height adjustable wheelhouse control.

Communication:

- 2 VHFsets suitable for ship/ship and ship/shore communication

- Intercom system for intra ship communication
- Alarm panel with engine alarms, fire alarm, bilge alarm, general alarm, steering alarm, etc.

Further:

- Soundsystem to produce sound signals from other vessels, engines sound, groundings, collisions and environment sounds
- Simulated Ships CCTV-system on foreship and aft ship adjustable with a separate monitor

Instructor station.

- At least 2 instructor stations that both can be connected to an exercise
- Real CCTV from bridges
- Radar view of all bridges preferably on separate dedicated monitors must be simultaneously visible.
- Information about the operational parameters of the simulation of all bridges simultaneously (rudder angle, in which mode the steering system is in (way depending, time depending or automatic), bow thruster, rate of turn, navigation lights including the blue sign, and flashing lights, state of the propulsion, whistle light.)
- Ability to simulate equipment breakdowns (like steering system, engines, bow thruster, navigation instruments etc.)
- Handling of the Communication (VHF and intercom), handling of targets and handling of own ship requirement during an exercise, so user friendly that this can be handled by one instructor in an easy way. The instructor must be able not only to monitor the VHF-communication, but it must also be visible on which channels the communication of the different bridges take place.

Debriefing possibilities that replays the exercise including communication, radar images.

It must be possible to save the playback run including VHF communication

password protect exam scenarios for external exam commissions (eg Examenbureau CBR)

The replay image must be projected on a large monitor or beamer

Fast forward possibility during replay

Exercises.

It must be possible that candidates run in the same exercise without seeing or interfering with each other.

1.3 Software environment

Areas.

High fidelity visuals, depth data and navigation signs of at least the area's:

- River Waal near Nijmegen including Maas-Waalkanaal near Weurt
- River Lek near Vreeswijk
- Europort area, nieuwe Waterweg, Nieuwe Maas including Port of Rotterdam and the crossing River Lek and Noord
- River Oude Maas from Nieuwe Maas including Dordrecht and part Beneden Merwede
- Dortse Kil and Hollands Diep including the locks at Willemstad
- River Schelde from Vlissingen and Breskens to and including Antwerp Harbour

All ships Models

- The possibility to tow vessels, to push vessels/barges, and couple vessels side to side(assembly) , for own ship models and target models.
- navigation lights and daymarks for inland vessels including blue sign, dangerous cargo signs, push barge signs, etc.

Own ship models

At least see ES-QIN and

- Possibility to moor and unmoor including rope control and ropes with breaking tension.
- Possibility to couple vessels including rope control.
- Height adjustable wheelhouse if appropriate.
- Propulsion types: single screw, double screw, thruster drive, fixed pitch
- Rudder types: balance rudder, Becker rudder(stabilo)
- Bow thruster: rotating thruster, tunnel thruster

Required models (at least):

- Fast craft (faster than 40 km/h).
- A push boat that is able to be connected to at least 4 push barges
- Passenger ship with thruster drive.
- A large Rhine Ship 110m (CEMT Va)
- A small craft (< 250T deadweight. CEMT0)

Target ships models:

sufficient different models to ensure a realistic inland navigation environment of the Dutch area.

At least

CEMT 0, small vessels: f.i. tugboats, working vessel with crane

CEMT II Kempenaar, CEMT III, CEMT IV Rhine Ship, CEMT V: tankers, dry cargo ships, open bulk ships (beunschepen), passenger vessels, container vessels

CEMT VIb, VIc, VIIa push convoy (at least with 4 barges and with 6 barges)

Pleasure craft (motor yacht, sailing yacht)

River ferries (for river crossing)

Targets larger than 20m must be equipped with inland AIS, which must be able to be shut off

Available sizes: approximately 20m, 50m, 80m, 110m,

Sea going vessel approximately 175mx35m

Requirements of the maintenance contract include:

- 1 Simulation System Software Updates
- 2 Simulated area's and models updates
- 3 PC Hardware Updates to accommodate the software updates and to stay "state of the art"
- 4 Replacement of Defective hardware
- 5 If existing Nova equipment is reused it will be part of the maintenance contract