K-Sim® Fishery meets the STCW training requirements for fishery (STCW-F) and DNV GL’s (ST-0033 Section 14 Fishery Operation) certification standards. It is a state-of-the-art new training simulator solution made specifically to build competence for students and crew working on fishing vessels. Training on K-Sim Fishery can increase performance in navigation, fish-finding and catching in a wide range of fishing scenarios, contributing to significant safety and sustainability improvements for the fishing industry.

Increased global focus on fishery education and training

Over 50 million people depend directly on fisheries and aquaculture for their livelihoods and over 1 billion people are reliant on fish to sustain a balanced, healthy diet. To conserve and sustainably use the oceans, seas and marine resources, the United Nations has established Sustainability Goals, with goal number 14 applying to this challenge directly.

Likewise, an increased global focus on the safety and productivity of fishing has raised the bar for improved training methods. This is addressed by the IMO through the implementation of STCW-F requirements for training of crew of seagoing fishing vessels of 24 meters in length and above. Further, DNV GL has introduced certification standards for simulators used in fishery training to ensure high standards in training.

Meeting the industry’s training requirements

Through development of the new K-Sim Fishery Simulator, KONGSBERG is helping the industry to introduce safer and more sustainable practices for the future.

K-Sim Fishery integrates all key operations on board. It simulates the bridge of a fishing vessel manoeuvring and operating in diverse environments and weather conditions.

With full integration to state-of-the-art Simrad fish-finding and fish-catching instruments, K-Sim Fishery facilitates the exact type of training fishermen need to build competence according to STCW-F and DNV GL’s certification standards.
K-Sim Fishery benefits:

- Enables competence building to improve safety and economy in fishing
- Meets STCW-F requirements for training
- Meets DNV GL’s standards for certification of maritime simulator systems: DNV GL ST-0033 Section 14 Fishery Operations
- Realistic training scenarios through advanced simulation of vessel- and equipment behaviour in a realistic hydrodynamic, physical and visual environment
- Realistic fish-finding training by integration of marketleading Simrad fishing gear, including: Split Beam Echo Sounder, Omni Directional Sonar and Trawl Monitoring Systems
- Training efficiency in purse seine, trawl and long line operation
- Familiarization and training on Catch Monitoring System
- Full instructor control of simulated exercise incl. replay and assessment
- Possibilities to expand and re-configure the system to adapt to changing training needs

Students learning objectives:

- Utilizing the vessel’s navigational equipment
- Selection and set-up of the fishing gear, (e.g. adjustment of trawl door angle)
- Utilizing the sonar to locate fish in the vicinity of the vessel
- Utilizing the equipment in locating and classifying potential fish targets
- Observing and classification of sonar target, to determine the species present, the total biomass, the size distribution and the probability of by-catch
- Manoeuvring the fishing vessel so that the line is deployed in the correct position
- Monitoring the performance of fishing gear
- Using the winches to maximize the performance of fish gear
- Analyzing weight distribution and stowage of fish on board

“The investment in the new K-Sim Fishery simulator is a very important contribution for us in the northern part of Norway. It enables us to build on the future of fishing. In addition to education in safe and efficient navigation and ship handling for fishing, practice on the simulator’s search and catch instrumentation will help both new and veteran fishermen perform better. The simulator will also enable increased competence and career progression for crew who wish to further develop skills in navigation and in new and different fishing methods to meet today’s higher standards of fish quality.”

- Finn Axel Hartvigsen, Manager Maritime Department, Lofoten Vocational School
Simulator system configuration flexibility

K-Sim Fishery is designed as a fishing vessel bridge with all necessary bridge and navigation instruments and a high-fidelity external visual scene. It is fully integrated with Simrad’s market-leading fish-finding and catching equipment. It also includes winches for handling fishing equipment such as purse seine, trawl and long line.

Both the vessel and equipment behave as in real-life due to the simulator’s advanced physical engine. Integrated with Simrad real fishery echo sounders, sonars and catch monitoring systems, K-Sim Fishery forms a complete system for education and competence development of fishing vessel crew.

The flexibility in K-Sim Fishery enables a wide range of simulator configurations; from desktop DNV GL Class S to a full mission DNV GL Class A bridge configuration.

K-Sim Fishery enables expansion at any time, either with new instruments, workstations and complete integrated bridge systems, or even with other types of simulators for complete vessel and crew resource training.

A complete system to build competence

K-Sim Fishery can be delivered either as a stand-alone system, or as an additional integrated module to other KONGSBERG bridge simulators like K-Sim Navigation and K-Sim Offshore.

The illustration below shows an overview of the standard equipment of a DNV GL Class A simulator configuration, whereas the * indicates the additional instruments and equipment needed to accommodate fishery exercises on a typical Class A bridge simulator.
Integrated Simrad fish-finding and catching instruments

Fish-finding training possibilities

K-Sim Fishery is integrated with Simrad’s fish-finding instruments; the SC90 - omni directional sonar and ES80 - wideband echo sounder. The simulator system enables full familiarization in how to handle these advanced instruments in order to optimize operations. Fish-finding training possibilities are:

- Locate fish in the vicinity of the vessel
- Adjust sonar parameter settings for
  - type of fish: pelagic and flatfish,
  - environmental conditions: weather, hydro-acoustic profile, bottom, depth
  - classification of fish to determine: species present, total biomass, size distribution and probability of by-catch
  - Selection of suitable sonar and echo sounder settings

Fish-catching training possibilities

K-Sim Fishery simulates various catching methods like trawl, purse seine and long line.

Both weather- and seabed conditions as well as sea current conditions can be set for realistic behavior and manoeuvring of the simulated fishing vessel. The behavior of the fishing gear will be according to the set-up.

Students will be able to use a combination of winch handling and vessel manoeuvring to catch fish. The real equipment for catch monitoring, the Simrad TV80 is a part of the simulator.

Trawling

- Deploy (shoot) the trawl
  - Demersal trawl, pelagic trawl
- Operate trawl winch system:
  - Trawl warp winch and net winch
  - Spooling device
- Trawl behavior
  - Warps, doors, headline, foot rope, ground gear, top and bottom panel, cod end
  - Monitor position and opening of the trawl using the TV80 catch monitoring system
  - Observe fish entering the trawl using the ‘trawl eye’ echogram
  - Sensors indicate 1/3, 2/3 and 3/3 trawl capacity. Commence hoisting the trawl at the correct time

Purse seine

- Deploy (shoot) the purse seine
  - Pay out on the purse net
  - Maneouvre the vessel at the same time so that the purse seine net surrounds the fish school
  - Operate the purse seine winch, haul in the purse line to prevent the fish from escaping underneath the net
  - Catch the initial buoy of the purse seine net and haul in the purse seine so that the fish school is caught quite close to the vessel.
  - Taking fish onboard
    - Filling the storage tanks
    - Monitor the vessel stability during the loading process

Long line

- Deploy (shoot) the purse seine
- Manoeuvre and deploy (shoot) the lines
- Relocate and pick up line
- Anchored or drifted lines
- Demersal longlines
  - cod, haddock, cusk, ling, redfish
- Pelagic longlines
  - tuna, billfish, swordfish, haddock, greyfish