



State of the art oil pollution
fighting at sea.

FUTURA-SOS-SYSTEM

INTRODUCTION OVERVIEW OF THE UNIQUE AND INNOVATIVE FUTURA-SOS-SYSTEM



This oil pollution fighting system has been developed by NEW-LOGISTICS GmbH and the Technical University of Berlin.

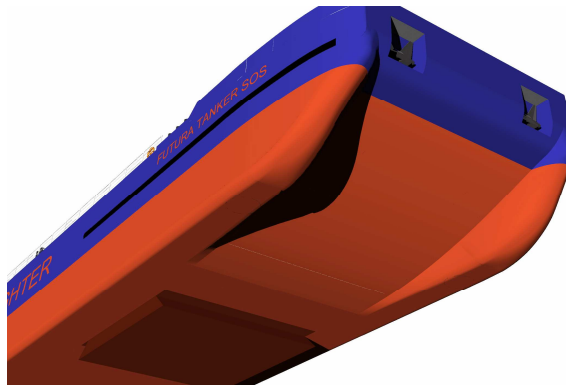
The technology is covered by various applied patents. The sole source for marketing and selling this system worldwide is FUTURA-SHIPS GmbH.

FUTURA-SOS-SYSTEM

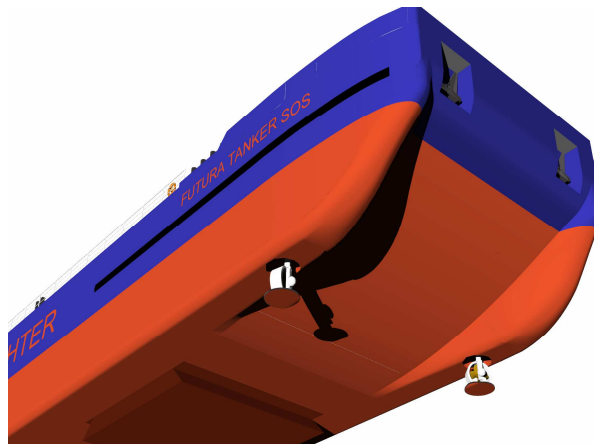
SOS stands for

Sea State independent Oil Skimming System

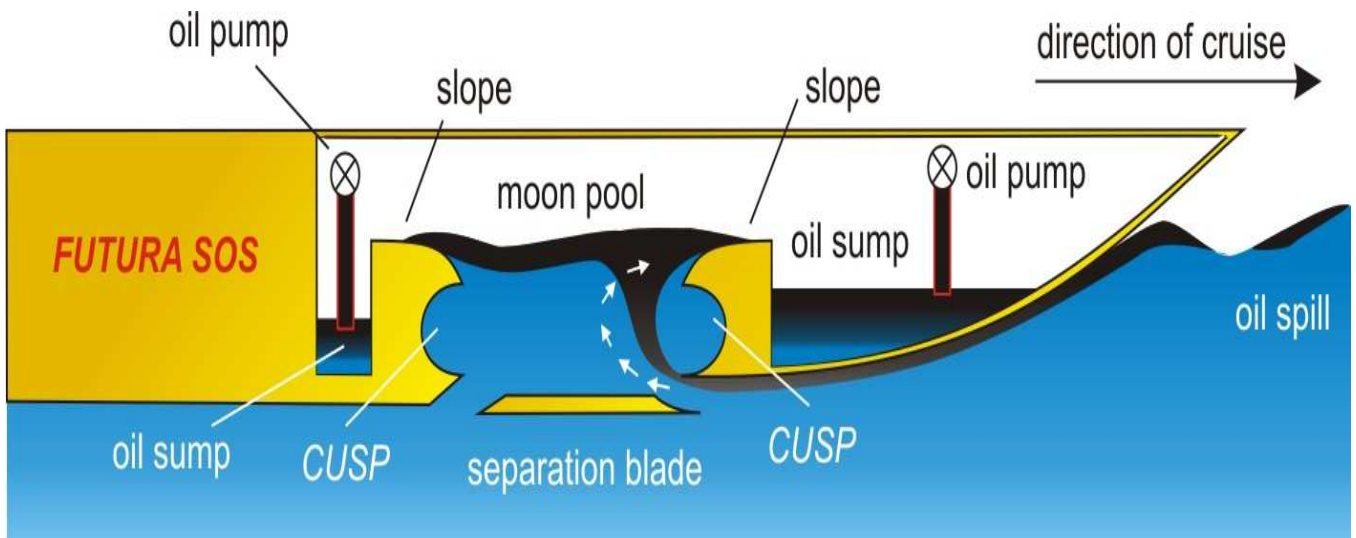
The Semicatamaran-bow of the FUTURA ship is the oilskimmer.



The forward drives are retractable in this FUTURA design.



In the FUTURA TANKER version the first loading tank section behind the bow-section is either used as loading tank or moonpool – water/ oil separation tank – closed by double sealing, double hull hydraulically operated separation blade at the bottom. Refer to page 12 of this introductions for the general modularity.



Principale sketch of the SOS-SYSTEM

The basic function of the SOS-SYSTEM demonstrated in one of a number of tank tests at the Technical University of Berlin



1



2



3



4

Introduction of the system

The general approach of the system is the dual – our even multiable – use concept. The ship must be able to fulfill services even earn money apart from the oil pollution fighting role. The flexibility of the FUTURA-SOS-SYSTEM is illustrated on page 12 of this introduction.

Any mix of the modules is possible to create a tailormade vessel.

The unique advantages of the system:

- The complete SOS-SYSTEM forms an integral part of the ship.
- In case of an oil pollution accident the ship can immediately sail to and into the polluted sea area and start skimming and collecting the oil.
- No rigging of skimmers or other oil collecting devices in sea!
- The whole system is operated and monitored from the wheelhouse. The separation blade at the bottom of the moonpool is opened hydraulically by remote control from the wheelhouse.
- The skimming efficiency of the FUTURA-SOS-SYSTEM is absolutely unmatched especially in rough sea conditions. The possible skimming speed of the ship with or against waves is more than double the speed of known systems.
- No special trained personal is required on board.
- The few parts of the SOS-SYSTEM which do not form already an integral part of the FUTURA ship can easily be retrofitted at any point in time later. The moonpool module can be used as normal cargo tank.

Proven advantages of the FUTURA ships:

- High operational safety due to double hull and four completely independent propulsors
- Unmatched manoeuvrability
The ship moves easy and controlled at any speed ahead, astern and sideways.
The ship turns on the spot and provides extreme short stopping distances even from full ahead.
The ship can hold position in wind and current condition.
- High and flexible cargo capacity
- Energy saving operation
Proven in tank propulsion tests for the coming generation of FUTURA ships.
- Environmentally friendly operation
River beds, canals and air pollution
- Easy maintenance and repair

Oilspill Recovery Systems today

- **Split-Hull Oil Recovery Vessel (SHORV)**
- In transit, this vessel looks like an ordinary ship, but in operation mode, its split hulls open up and the oil film is recovered by weirs in the side walls. The effectiveness of this concept is limited by high wave amplitudes caused by multiple reflections from the vertical side walls in the intake area.
- *Operations limited to moderate sea states*
- *Slow operational speed*
- *efficiency is reduced by wave reflections mixture and mixing processes of oil and water if operated against the sea*



- **Mobile Oil Dyke (MOD)**
- The MOD is a tug-powered catamaran vessel. A special skimming system of 15 m width is installed between the two hulls. At operation speed, the skimming and separation process is driven by the pressure gradient between the front ramp and the stern region. The oil is transported into oil sumps and finally pumped into storage tanks inside the hulls.
- *Tug power required*
- *Slow operational speed*
- *Operations limited to moderate sea states*



- **Multi Purpose Oil Skimming System (MPOSS)**
- This system is suitable for oil recovery vessels in inland waters and near-coastal regions, which feature catamaran hulls in the bow region. The skimming principle is based on floater-flaps that follow the wave contour and separate the oil layer from the sea surface by adjustable blades.
- *Complex mechanical system*
- *Adjustments to environmental conditions required*
- *Due to the small size of the vessel, operations are limited to wave heights up to $H_s = 1$ m*



- **Sweeping Arms**
- At the spill location, oil recovery vessels open their sweeping arms to start operation. The oil is guided over a weir towards a separator and is subsequently pumped into a storage tank system.
- *Efficiency is reduced by wave reflections mixture and mixing processes*
- *Slow operational speed*
- *Operations limited to moderate sea state*



- **Swimming Booms**
- Swimming booms are used to isolate oil spills. It can be used stationary or mobile, while separate skimmer systems are required for oil recovery.
- *requires calm water*
- *only slow operational speed*
- *separate recovery systems required*
- *application limited to coastal areas*



- **Adhesive Systems**
- Synthetic chains of polypropylen fibres which are hydrophobic and absorb the oil are towed behind the ship and have to be periodically recovered for cleaning.
- *Limited to calm water*
- *low draught and complex process decreases efficiency*
- *application limited to coastal areas*



- **Mechanical Transport**
- The oil spill is recovered mechanically by conveyor belts equipped with shovels.
- *Best performance for heavy oil and chunks*
- *very slow operational speed*
- *requires calm water*
- *application limited to coastal areas or on-shore operations*



STATUS OF FUTURA-SOS-SYSTEM SCALE TESTING AND PROVEN PERFORMANCE IN SEA-OPERATION OF THE SHIP AND THE SHIP`S BOW

Tanktest SOS-SYSTEM
in waves with real oil

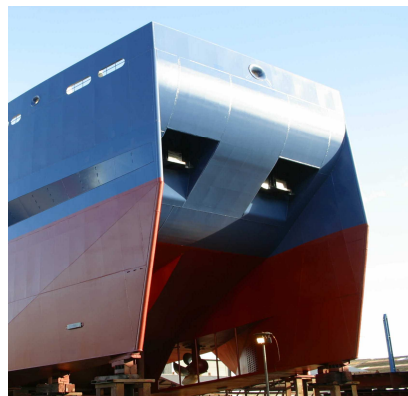


Successfully
tank tested

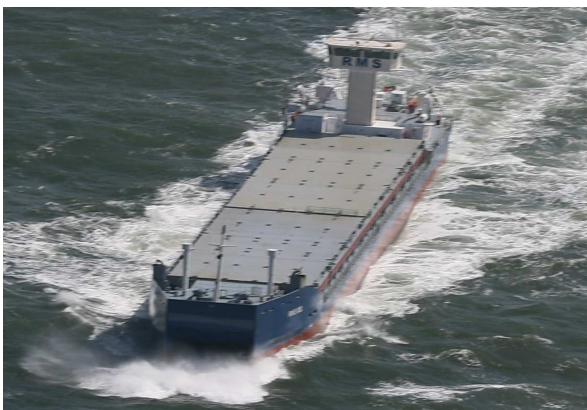
Tanktest FUTURA TANKER
with SOS-SYSTEM in waves



Built and
proven in sea



The FUTURA bow
„RMS Kiel“ before
launching the ship
in October 2006



FUTURA vessel in the
North sea at Beaufort 6

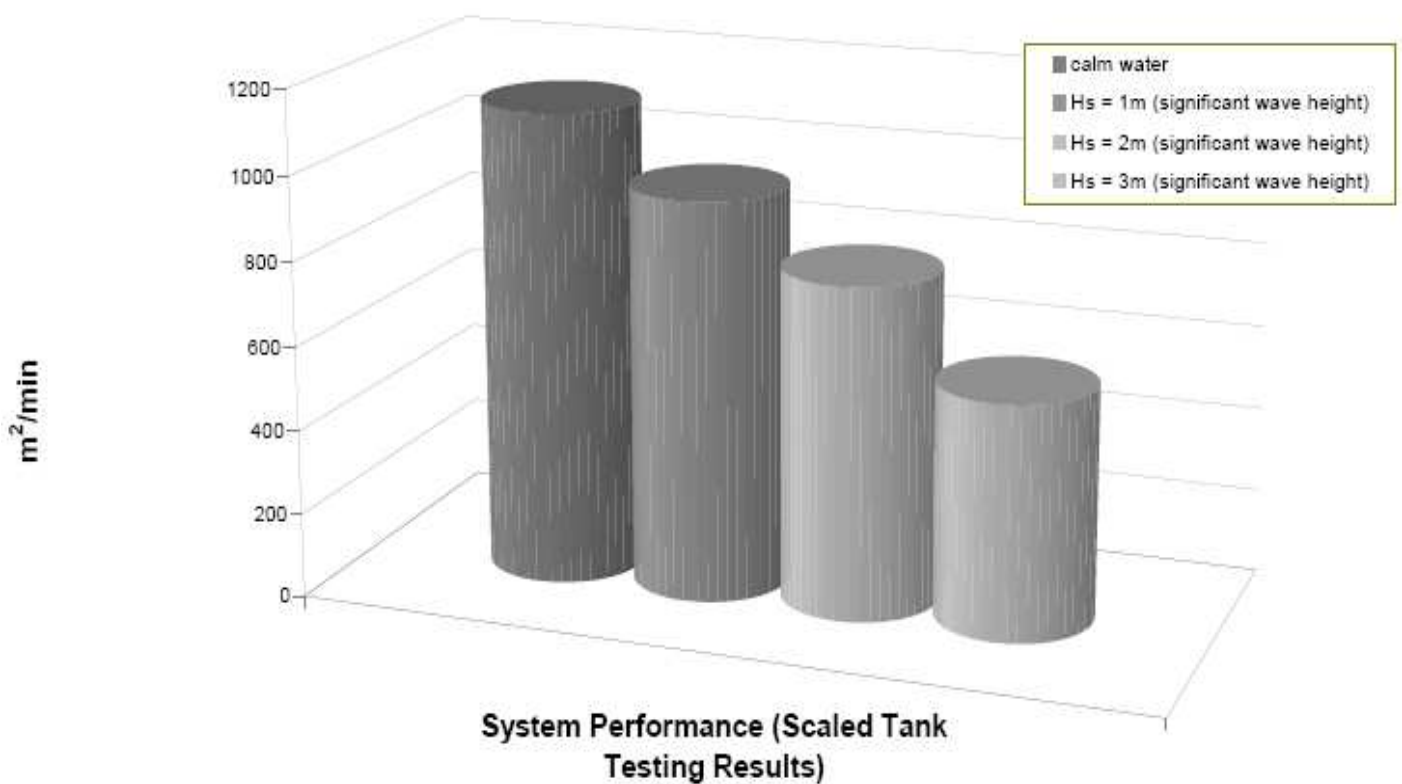


FUTURA vessel in an
icefield instead of an oilspill.

The system performance

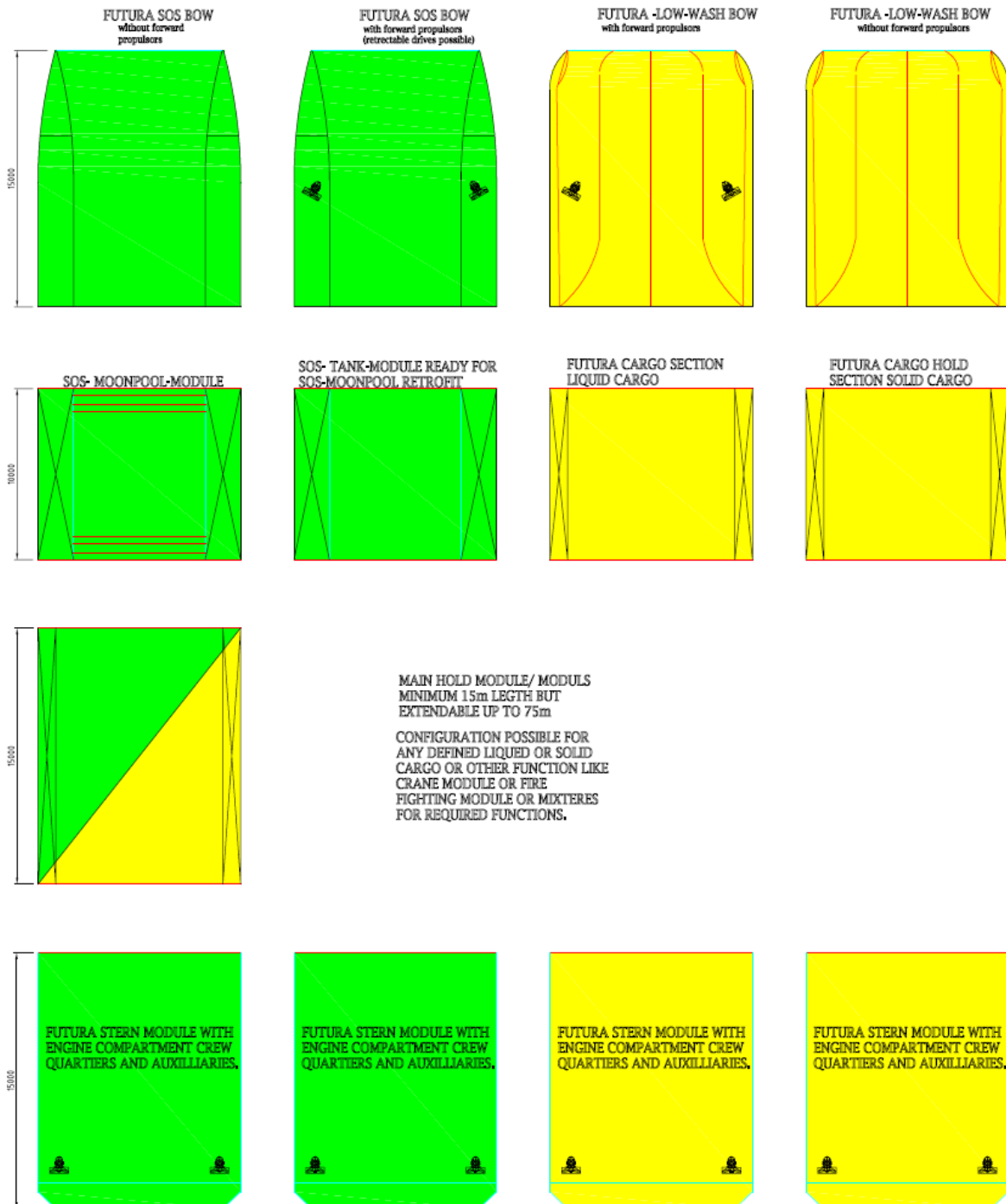
Ships speed almost 4 knots

Oil Recovery Rate of FUTURA SOS - System



MODULARITY AND FLEXIBILITY OF THE FUTURA SYSTEM

ANY REQUIRED MIX OF MODULES AND FUNCTIONS IS POSSIBLE



**And there we are with the
FUTURA-SYSTEM**

Four ships built and
delivered.

All ships are successful
in service since more than
18 month.

In Service

MS „FUTURA CARRIER“

Length: 99,90 m

Breadth: 14,00 m

DWT: 3.400 t/ 4,15 m

MS „Sophia Soraya“

Length: 97,50 m

Breadth: 13,60 m

DWT: 2.900 t/ 3,00 m

MS „Kaja Josephine“

Length: 97,50 m

Breadth: 13,60 m

DWT: 2.900 t/ 3,00 m

TMS „TILL DEYMANN“

Length: 110,00 m

Breadth: 11,45 m

DWT: 3.300 t/ 3,75 m



Ships in service



PERSONALLY IMPRESSIONS

„It is an absolutely silent cruise, like being on a sailing ship!“

M. Grohmann, Journalist for „Schiffahrt und Technik“ on board of „Sophia Soraya“ after shifting propulsion from aft to forward.

„The MS „FUTURA CARRIER“ was one of the largest ships ever sailing the Rhone river to Arles/ France and piers upstream of the harbour of Sevilla/ Spain. The river voyage took a minimum of time and we had a lot of praise from pilots and harbour authorities.“

H. Mussehl, owner of Sprante Schiffahrts Kontor and operator of MS „FUTURA CARRIER“

„Our decision for FUTURA CARRIER ships was governed by economics. Two of these ships perform in our ore-logistic-chain the equivalent of three standard ships.“

A. Schröder, Manager Technics and Operation for „Sophia Soraya“ and „Kaja Josephine“

„I believe in the potential of these innovative ships and I am proud to be on board!“

A. Borkenhagen, Master on board of „Sophia Soraya“, after his first year in command of the vessel.