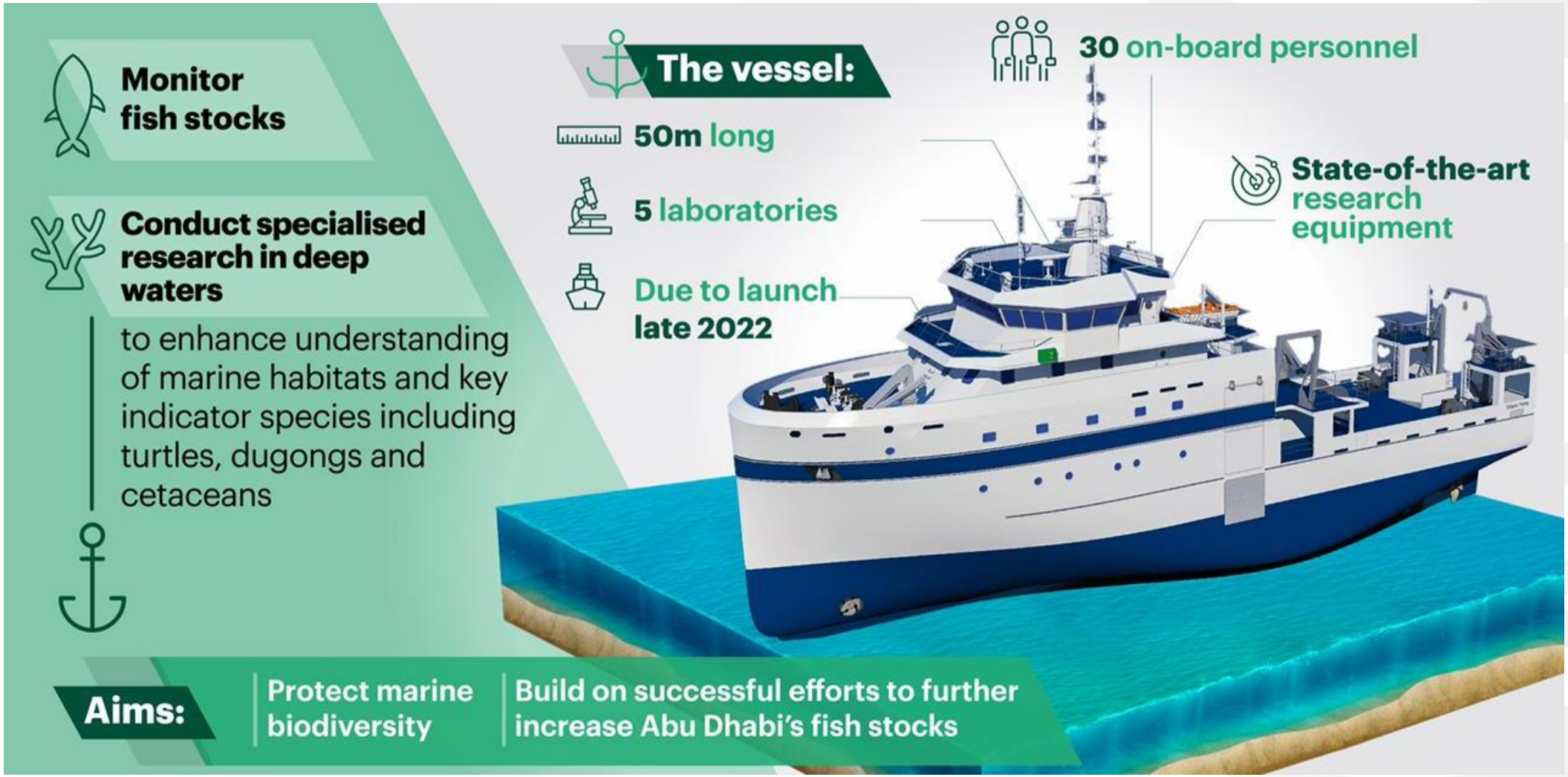
JAYWUN

جيوَن

FREIRE
SHIPYARD

هيئة البيئة - أبوظبي
Environment Agency - ABU DHABI

Technical


Monitor fish stocks
Conduct specialised research in deep waters
to enhance understanding of marine habitats and key indicator species including turtles, dugongs and cetaceans
The vessel:
50m long
5 laboratories
Due to launch late 2022
30 on-board personnel
State-of-the-art research equipment
Aims:
Protect marine biodiversity
Build on successful efforts to further increase Abu Dhabi's fish stocks

Summary Of The Marine Research Vessel Tasks

Fisheries Study
Includes a case study of fish stocks and biological data of commercially valuable fish

Study of Marine Biology
Includes an integrated study of ecosystems, natural habitats and wildlife

Chemical Oceanography
Chemical analysis of seawater quality including all types of pollutants

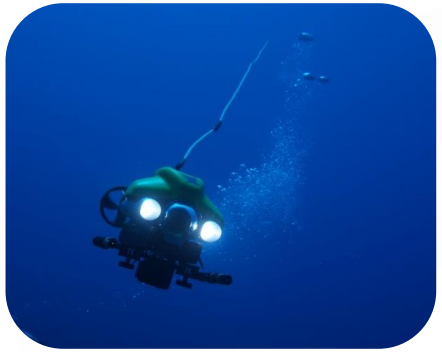
Physical studies of oceans
Study of water movements (waves, tides, sea currents)

Marine Geology
Research and study of the seabed by sound wave exploration and sample collection

Models Of The Research Equipment

Fishing equipment, winches and nets

Equipped with several types of cranes to be able to do all different tasks and other fishing equipment

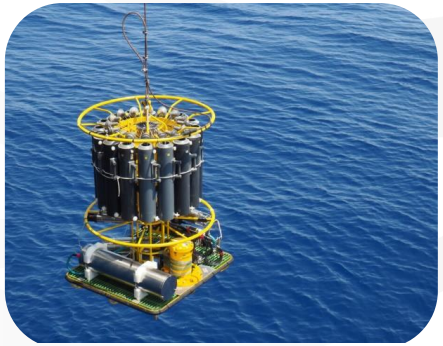


ROV

Monitoring and imaging devices to document seabed habitats through the use of a hydrorobot

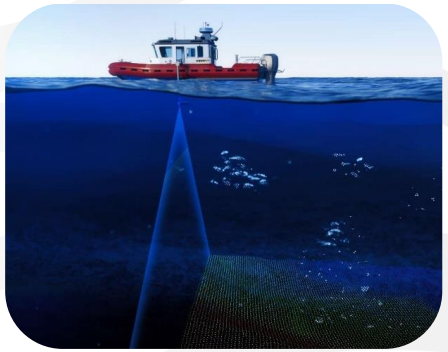
Diving facilities

Such as storage rooms, air refilling, diving platform and storage of snorkeling instruments



CTD Rosette (Sea-bird SBE -19)

Water sample collection and measurements of salinity, temperature, oxygen, chlorophyll, pH levels, water quality and marine currents



Acoustic equipment (Simrad EK 80 Echo-sounders

Devices that use sound waves to monitor the seabed, habitats and wildlife

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NB- 730

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ENVIRONMENT AGENCY ABU DHABI

NB-730

MAIN PARTICULARS

Year of construction	2022
Length over all	47.10m
Length between perpendiculars	45.00m
Beam	12.00m
Depth to main deck	5.95m
Design Draught	4.20m
Speed (max)	13.00 Knots

COMPLEMENT

29 People (18 crew + 11 scientist)

PROPULSION & GENERATION

2 x CPP propellers driven by diesel engines + 2 x 200 kw PTI (e-motors)

2 x 1840 kW main propulsion engines MTU 16V4000M53

2 x 650 ekW main gensets MAN D2862LE321

1 x 248 ekW emergency genset VOLVO D13MG

1 x 195 kW tunnel thruster ZF TT 2001FP, L-DRIVE

1 x 262 kW tunnel thruster ZF TT 3001FP, L-DRIVE

CLASIFICATION

LR: ✠ 100A1 RESEARCH VESSEL ✠LMC, UMS, DP(AM), BWTS, CAC (3)

HYDROACOUSTICS

1 x Deepwater Multibeam Echo Sounder (2000 m) KONGSBERG EM 712 1º x 2º

1 x Shallow Water Multibeam Echo Sounder (200 m) KONGSBERG EM 2040 07

1 x Hydrographic Echo Sounder KONGSBERG EA 640 (12 & 200 kHz)

1 x Wide Band Echo Sounder KONGSBERG EK 80 (18, 38, 70, 120, 200 & 333 kHz) + ADCP 150 kHz

1 x KONGSBERG Seapath 380 + 3710 DGNSS

1 x Side Scan Sonar EDGETECH SSS 4205 (120, 410 & 850 kHz towfish)

1 x ROV BOXFISH Alpha 300

1 x Underwater camera system

1 x Synchronization unit KONGSBERG K-SYNC 4ch

DECK HANDLING EQUIPMENT

Stern A-Frame: 1 x 5t FERRI

Telescopic boom for CTD: 1 x 2t FERRI (CTD rosette for deep & shallow water 911plus SBE32)

Side-Frame: 1 x 5t FERRI

Main Crane: 1 x 8t @ 11m GUERRA M1000.24A2

Aft Crane: 1 x 1,15t @ 11,8m GUERRA M180.20A4

Forward Crane: 1 x 1,15t @ 11,8m GUERRA M180.20A4

2 x 3t Hydraulic Trawl Winches IBERCISA

1 x 2,1t Hydraulic Net Drum IBERCISA

1 x 2t Hydraulic CTD Winch IBERCISA (cable: 2250m of 8,18 mm)

1 x 4,3t Hydraulic Oceanographic/Hydrographic Winch IBERCISA (cable: 2000m of 11 mm)

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ENVIRONMENT AGENCY ABU DHABI

NB-730

HYDROGRAPHIC & METEO EQUIPMENT

- Complete Ferry box underway system
- 1 x Thermosalinograph SBE 47
- 1 x Fluorometer ECOFLENU
- 1 x Automatic shipboard meteorological station EMS-CSI WP2PXY DUAL POINT
- 1 x Auxiliary shipboard weather station AIRMAR 220WX Dual
- 250cm^2 + 1000cm^2 KC Van Veen grabs + KCD biological and triangle dredge
- 1 x BC 700 box corer + Mini & Maxi Multicorer
- 1 x Diving respirable air compressor COLTRI MCH16 ERGO ET

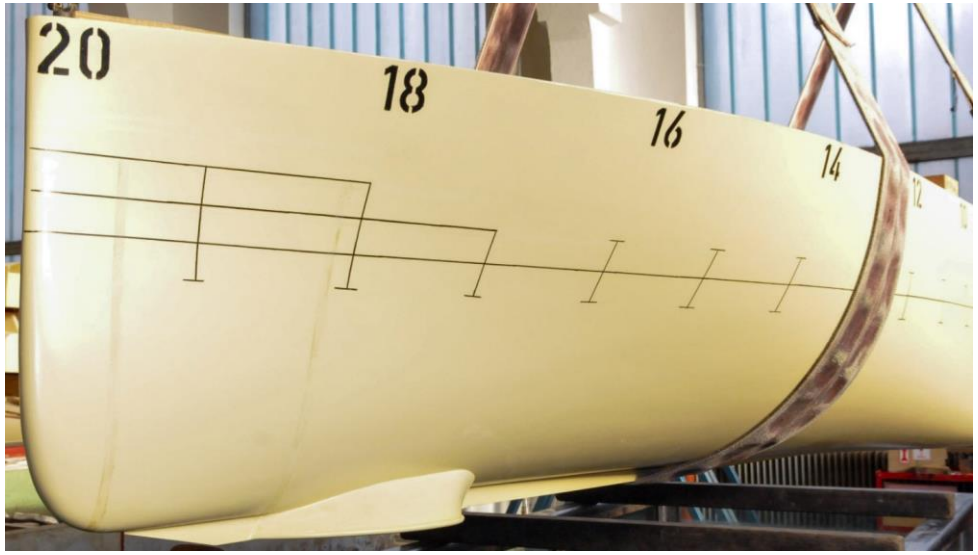
LABORATORY EQUIPMENT

- 1 x 43L ECOFILL benchtop autoclave
- 1 x Total Organic Carbon Analyzer TOC-L CSH
- 1 x Spectrophotometer UV-1800
- 1 x Fume Hood (Filter Type) Smart 391
- 1 x Universal Precision Electronic Oven Digitronic - TFT 33L
- 1 x Stereoscopic microscope Nikon SMZ18
- 1 x Ph measurement 21/09089 Star A211
- 1 x 4l Desiccator 200mm
- 1 x Drying Oven 21/09089 Dryglass 126L
- 1 x Bench top Centrifuge 21/09089 Avanti J-15
- 1 x Nitrogen analyzer 21/09089 TNM-L
- 1 x Marine scales set M1100 (60 kg & 3 kg)
- 1 x Cleaner and disinfector MIELE PG8583
- 1 x A90 Cabin UB-S-90
- 1 x Magnetic stirrers set AGMATIC-N
- 1 x Spectrofluorometer FL 6500 PERKIN ELMER
- 1 x UHPLC LC-300 UV/VIS
- 1 x Spectrophotometer FT/IR SPECTRUM TWO + HATR
- 1 x Titrator METROHM Titrando
- 1 x Milli-Q Water Purification system (Pure and Ultrapure water) MILLIPORE Direct Q-3
- 1 x Bacteriological Security Cabinet LABCULTURE LA2-4A1E
- 1 x Spectrofluorometer HORIBA DUETTA
- 1 x Nutrients Autoanalyzer SMARTCHEM 200
- 1 x Milli-Q Water Purification System (Pure water) SISTEMA ELIX ESSENTIAL
- 1 x High purity nitrogen generator PARKER HANNIFIN 6GE010
- 1 x Zero air producer PARKER HANNIFIN
- 1 x 85l Freezer -86ºC THERMO SCIENTIFIC Forma

In **January 2021**, the Environment Agency Abu Dhabi /EAD) and Freire Shipyard made effective a contract for designing and building a **modern, efficient and environmentally friendly** Multipurpose Fisheries & Oceanographic Research Vessel to conduct exploratory research in coastal and deep seas between 50° N and 50° S at any time of the year under varying hydrographical and meteorological conditions (mainly: Arabian Gulf, Arabian Sea and Red Sea)

Environmentally sound technologies and best engineering procedures like the following ones were implemented:

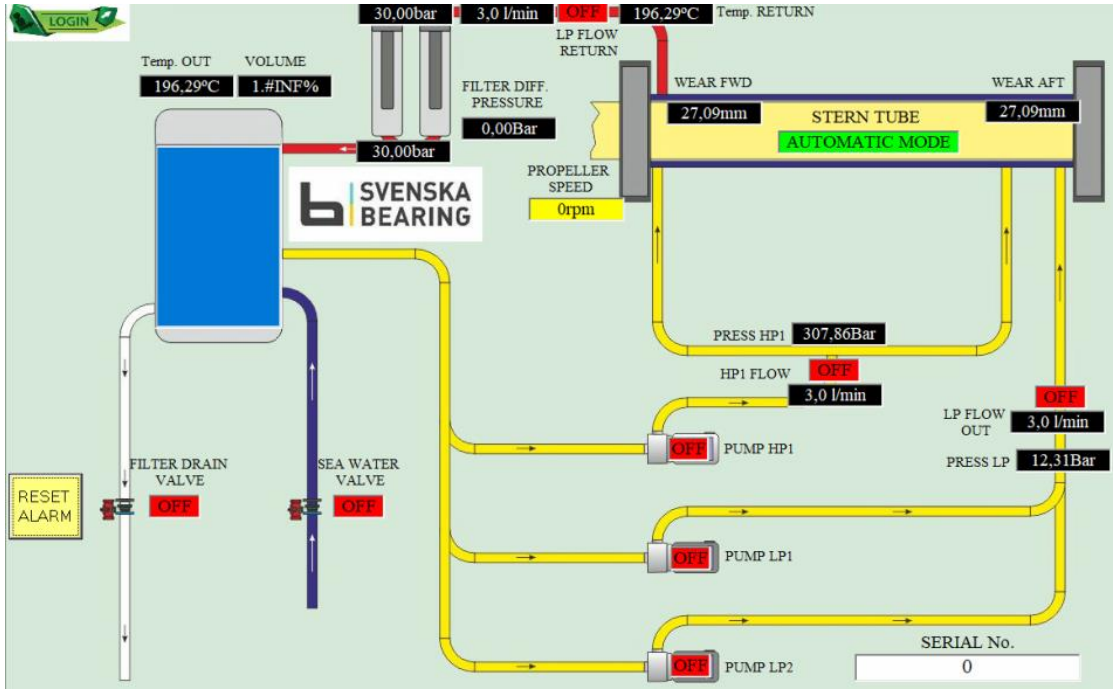
- ✓ Hull lines were tested and optimized at Viena model basin (SVA) to achieve a very low resistance hull (less fuel consumption and pollutant emissions) and mitigate any risk of bubble sweel down phenomena.



- ✓ Hybrid propulsion system: the combination of diesel engines and electric PTI e-motors offers significant benefits in a variety of marine duties like, for instance, reduced fuel consumption (less pollutant emissions) and super silent operation when running at low speed.

- ✓ Energy efficiency, sea water temperature and salinity design constrains (above 35ºC and 45ppm) and post-delivery service constrains were key decision drivers during selection of equipment.

- ✓ Shaft lines leakage prevention solutions: water-based shaft bearings lubrication systems was installed.



- ✓ TBT-free anti-fouling coating system suitable for warm environments was applied.

- ✓ A Ballast Water Treatment system designed to remove and destroy/inactive biological organisms from ballast water (suitable for ballast water temperature up to 50ºC and without operational limitation on salinity) was installed.

The research vessel developed by Freire Shipyard and EAD, **delivered in December 2022**, represents the **state-of-the-art ship for advanced research duties** in shallow and deep waters in the Middle East region.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SWL Qc - 2t
Other Posit. (SS2)
SWL Qc - 5t
Top out (SS2)
KALEIDO


MAERSK
EXTERNAL LIGHTING


TOC-L
Labculture

Studies Undertaken by the Research Vessel

ADERN
ABU DHABI ENVIRONMENTAL RESEARCH NETWORK

هـيـئـة الـبـيـئـة - أبـوظـبـي
Environment Agency - ABU DHABI

Fisheries Resources Assessment Survey “FRAS”

- Undertake a comprehensive Fisheries Resources Assessment Survey over two seasons - March–June and October -December, replicating the FRAS survey completed in 2015/16
- In the UAE waters of the Arabian Gulf and the Sea of Oman
- Two near-shore (waters <10m depth) and two offshore (waters >10m depth) running concurrently
- Survey methods include Trawling, BRUV (Baited Remote Underwater Video), and Acoustic
- Oceanographic sampling measurements

Fisheries Resource Assessment Survey general achievements

- 108 days at sea , 324 sites across the UAE
- 2,174 fish were caught, measured, and weighed totalling
- 834 otolith pairs were extracted, from a range of species, for age and growth
- First comprehensive acoustic survey of the UAE’S waters
- First eDNA baseline and genomic sequencing of fish species in UAE’S waters in partnership with G42 and OceanX

Environment Agency – Abu Dhabi leads worlds first offshore atmospheric research expedition from Spain to the UAE

Being undertaken on EAD research vessel fitted with advanced monitoring equipment

Expedition set sail on 25 November 2022 from Spain towards Abu Dhabi

Sampling air quality parameters, green house gas concentration, volatile organic compounds, and aerosol properties

Sailing past 25 countries, travelling 10,000Km +, involving 30+ expertise

Contributing to better understanding of coastal and offshore air quality and climate change

Providing the basis for both scientific discovery and foundation for air quality policies and climate change mitigation and adaptation

EAD leading expedition in partnership with Max Planck Institute for chemistry and climate and atmosphere research center of the Cyprus Institute

June: Successfully completed perform the Transport of Hydrocarbons and Ozone Formation downwind the Arabian Gulf (THOFA) field campaign

MAX-PLANCK-GESELLSCHAFT

THE CYPRUS INSTITUTE

RESEARCH·TECHNOLOGY·INNOVATION

Environment Agency X NYU Abu Dhabi : Initial Characterization of Major Biogeochemical parameters of the Arabian Gulf

Determine the dominates groups of primarily producers of the gulf

Determine the cause of the season hypoxia in the gulf

Understand the microbe's function in the hottest marine body on earth

Samples using on board CTD rosette

First time characterization of pelagic microbial composition during hottest season of the year

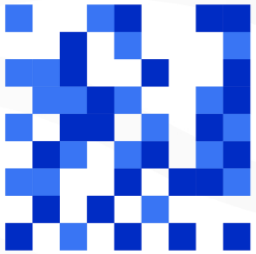
جامعة نيويورك أبوظبي

NYU | ABU DHABI

Upcoming Studies

- Fisheries Resource Assessment Survey Phase 2
- Marine Invasive Species Survey
- Deep Water Marine Ecological Baseline Survey
- Deep Water monitoring program: Ceteceans, Sharks, and Rays

Our partners



More technical Information : Please Scan the code to have a further view of the vessel

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Thank You!!

Environment Agency Abu Dhabi website: **www.ead.gov.ae**