ITALIAN UPDATE 2017

CNR "OFFICE FOR PLANNING" - Central Management for Planning and Infrastructure
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19th ERVO
SYKE
European Research Vessel Operator
19th Annual Meeting
12-14 June 2017
Finnish Environemtal Institute
Helsinki (Finland)

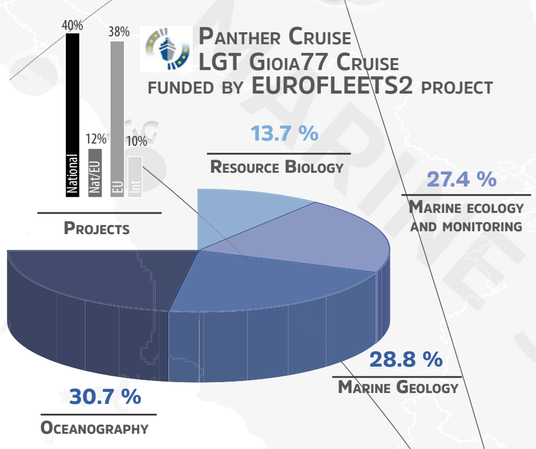
RV MINERVAUNO

Category: Regional
Gross Register Tonnage (GT): 615
Length overall (m): 46.6
Breadth (m): 9.0
Depth (m): 4.5
Draft (m): 4.6
Max speed (kn): 13.0
Service speed (kn): 10.8
Main engine (kW): 2x746
Endurance: 30 days
Crew: 12 people
Scientific personnel: 13 people
Built year: 2003
(upgrading 2010 and 2014)

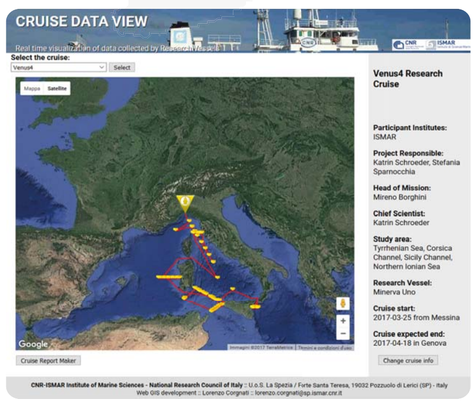
Main Equipment:
Ship positioning system, high resolution bathymorphologic system, geomorphic and bottom sampling system, magnetometric survey and seismostratigraphic system, SuPEr MohaWK 3000 m ROV

ACTIVITIES

	n.of surveys	days at sea	average days per surveys
2015	19	292	15.4%
2016	23	334	14.2%
2017	18	267	14.8%



VESSEL POSITIONING AND CRUISE DATABASE

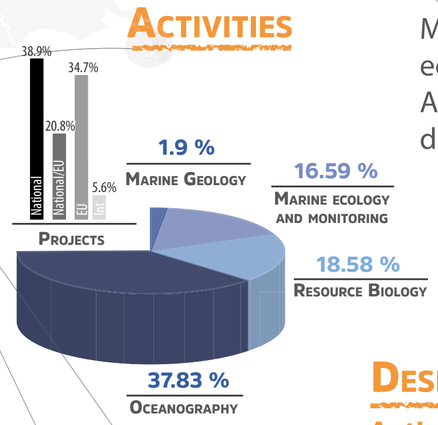


RV G. DALLAPORTA

Category: Regional
Gross Register Tonnage (GT): 285
Length overall (m): 35.3
Breadth (m): 7.7
Depth (m): 4.1
Draft (m): 3.0
Service speed (kn): 11.5
Main engine (kW): 810
Crew: 8 people
Scientific personnel: 12 people
Built year: 2001

Main equipment: fishing cables, winches for the nets and echosounder transducers, rosette, CTD or other instruments. An UWTV has been designed for the quantification of some demersal fishery resources.

ACTIVITIES

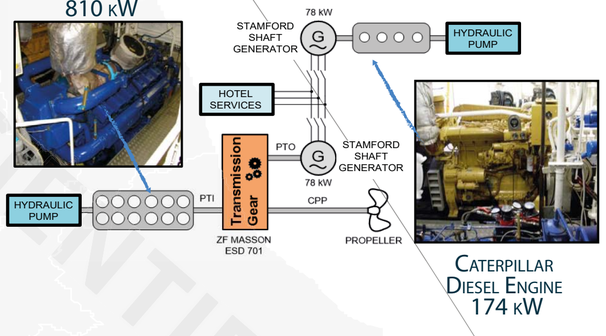


	n.of surveys	days at sea	average days per surveys
2015	24	310	12.0%
2016	26	304	11.7%
2017	25	297	11.9%

DESIGN OF THE HYBRID PROPULSION ARCHITECTURE

Author: Veneri Ottorino

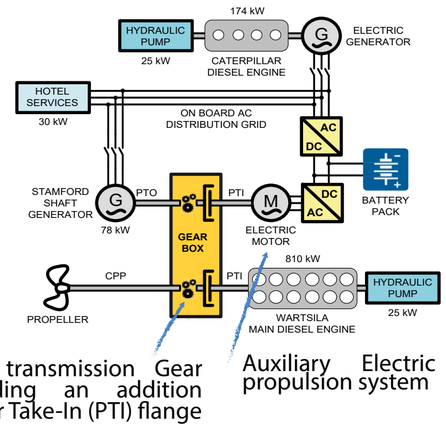
PROPULSION SYSTEM ACHITECTURE



HYBRIDIZATION RETROFIT

Ritmare
La ricerca italiana per il mare

HYBRID PROPULSION ARCHITECTURE WITH DC BUS FOR INTEGRATION OF ACCUMULATION SYSTEM AND RENEWABLE-SOURCE POWER GENERATORS

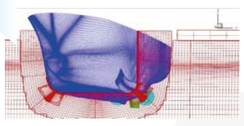


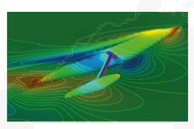
New transmission Gear including an addition Power Take-In (PTI) flange

Auxiliary Electric propulsion system

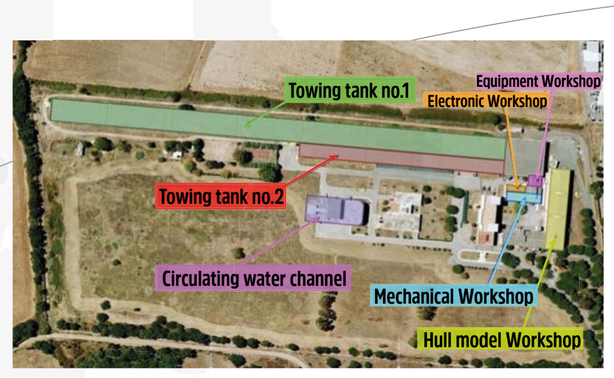
TECHNOLOGICAL CHALLENGES @INSEAN-CNR MARINE TECHNOLOGY RESEARCH INSTITUTE

Author: Leotardi Cecilia

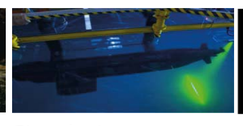


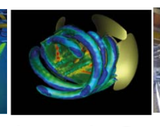


Numerical modeling and simulations for hydrodynamics of hull, propeller, wave breaking, sloshing, hydroacustics and structures



Mechanical and electronic equipment Workshops, Woodshop





Towing tanks, Circulating water channel, Cavitation tunnel, Maneuvering basin (NEMI), Hydraulic channel, sloshing lab, high-speed ditching

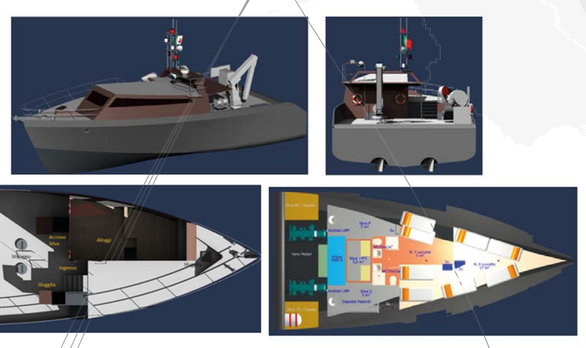
INNOVATIVE FISHING BOAT TESEO

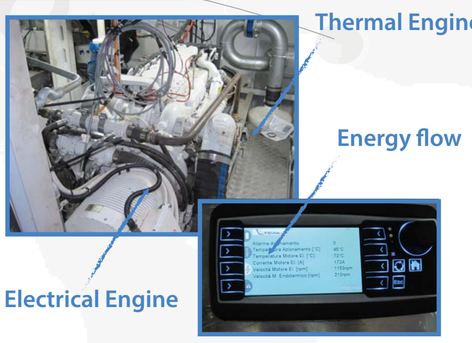
Author: Veneri Ottorino

LFT (m): 17.44
Breadth (m): 7.62
Depth (m): 2.70
Thermal Engine (kW): 2x198 Diesel
Electrical Engine (kW): 2x50
Battery: 2x19 kWh 66 Ah
Photovoltaic system (kWp): 1.80

Sicilia Navtec
Distretto Tecnologico Sicilia Trasporti Navali

2D AND 3D DESIGN





OCEANOGRAPHIC TOWER ACQUA ALTA

Authors: Pomaro Angela, Sclavo Mauro
Bastianini Mauro

Location (GPS): 45° 18′ 51.29″ N - 12° 30′ 29.69″ E
Height: actual 12.55 m s.l.m.m.
(future 14.55 m s.l.m.m.)
Decks surface (within the main pillars): 35 m²
Installation depth: 16 m
Distance from the coast: about 8 nautical miles
Housing facilities: 5 people in complete autonomy for about 1 month

RESEARCH INFRASTRUCTURE
LTER - LONG TERM ECOLOGICAL RESEARCH NETWORK

EQUIPMENT

Real time transmission and communication capabilities; ICT infrastructure; Biological laboratories; Housing facilities; Electrical supply by photovoltaic panels, wind turbines and diesel generators.

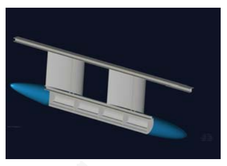
RECORDED TIME-SERIES

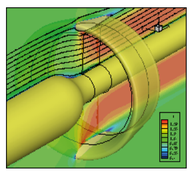
Meteo (air temperature and atmospheric pressure, wind speed, gust and direction, RH, precipitation); ocean (temperature, salinity, dissolved Oxygen, fluorescence, turbidity, current speed and direction, sea level height, wave height, period and direction, underwater images).

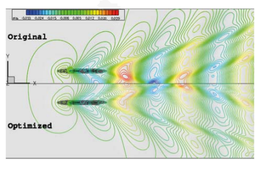
Originally installed in March 1970, after more than 40 years of scientific research activity, the Aqua Alta Oceanographic Tower is completing a renovation program, which envisages a reinforcement of the underwater structures and a thorough refurbishment of the superior structures and technological systems, including the elevation of the main decks by about +2.00m.
This maintenance program represents a great effort of the Italian National Research Council, thus confirming the scientific interest and opportunity offered by this unique infrastructure, which includes long-term measurement datasets, the recent developments in the field of storm surge forecasting and the release of two innovative patents in the field of vision-3D surface recontruction of sea waves.
The Italian National Research Council is committed to the dissemination of the research activities within the scientific community and the general public, as demostrated by the publication of the measured data in an OpenData perspective and by the release of the smartphone application "ISMAR-Data".

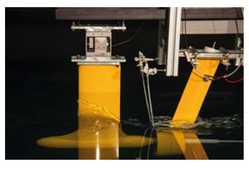
ONGOING OCEANOGRAPHIC RELATED ACTIVITIES (collaboration with ISSIA and ISMAR)

Modular Unmanned Surface Vehicle in SWATH configuration for coastal and protected monitoring (water quality, bathymetry, ..) or oil spill monitoring (first emergency).
-Each waterproof module can be modified to contain instrumentation or hardware/devices.
-Dock can be used for:
AUV or UUV
Solar sail (and/or solar panels)
Crane to recover AUV/UUV
Quadricopter landing
-Azipod with Ducted Propeller has been selected for safety, efficiency, reduced noise, maneuvering purposes
Hydrodynamics, Structural analysis, Propulsion and Control already developed









National Research Council of Italy

ISMAR · IAMC · The Italian Ship Model Basin INSEAN · ISAC · ISSIA · IREA · IGAG · IGG