
pelikan
il battello ecologico
AMR
PORTS AND DE-POLLUTION:
OPEN THE NEW ERA OF PELIKAN...



THE PELIKAN PROJECT

Pelikan is a working boat used for cleaning water surfaces. This 100% Italian project was born in Ancona as an idea of Garbage Service, expert in the field of marine de-pollution.
Two technologic partners took part to this project and brought important contributions: Novamont the world leader in the field of biochemistry and the inventor of Matrol-Bi (gear lubricant made from vegetable oils), which has been used for the first time in the marine environment for this project; Cial, the National Consortium for the collection and reuse of aluminum, that has provided the recycled aluminum to build the hull.

The idea of Pelikan comes from the need to innovate the working crafts used to collect solid floating waste, half submerged waste, and oily waste in the water surfaces. A true and deep innovation of great value, which led to a highly specialized shipbuilding work, through the redesign of all the technologic components and the use of environmentally friendly materials and organic products, which make Pelikan an efficient and ecologic boat, thanks to its minimal impact on the ecosystem. Features that make Pelikan become a unique example of intelligent and sensitive technology, fully coherent with the activities for the defense of the sea, for which it was designed.

Nowadays Pelikan represents a proposal that is capable of making Ancona the world capital in this niche sector, given the large commercial potential of this boat in Italy, Europe and all over the world.
The challenge of the new Pelikan era, shared by all the partners, is to export not only the boat, but also an integrated system of know-how and technologies, in order to protect the marine environment.

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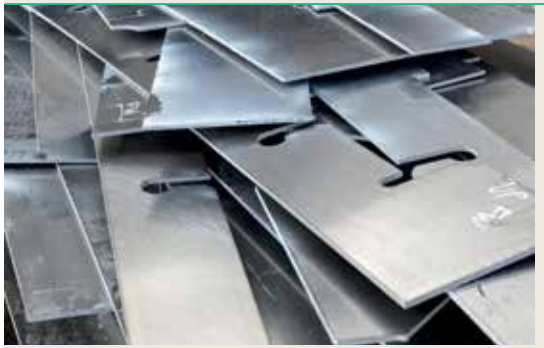
TRULY ECOLOGICAL...



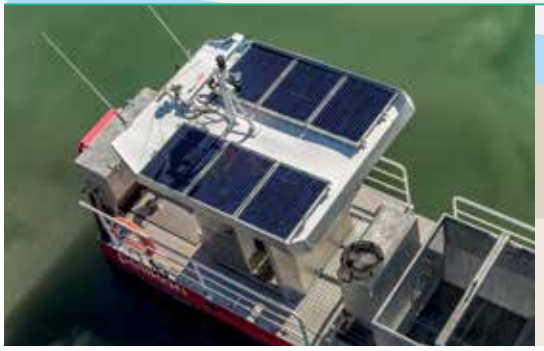
Recycled aluminum is transformed into light-alloy sheet (5083 - H321 - H111).
Picture: 60 8C extrusion.



Processing stage in the shipyard with cutting and welding of the aluminum hull.



Plant-based biodegradable hydraulic fluid that is used in the automation.
Matrol-Bi is the last frontier of research by Novamont, the Italian leader company in the green chemistry field.

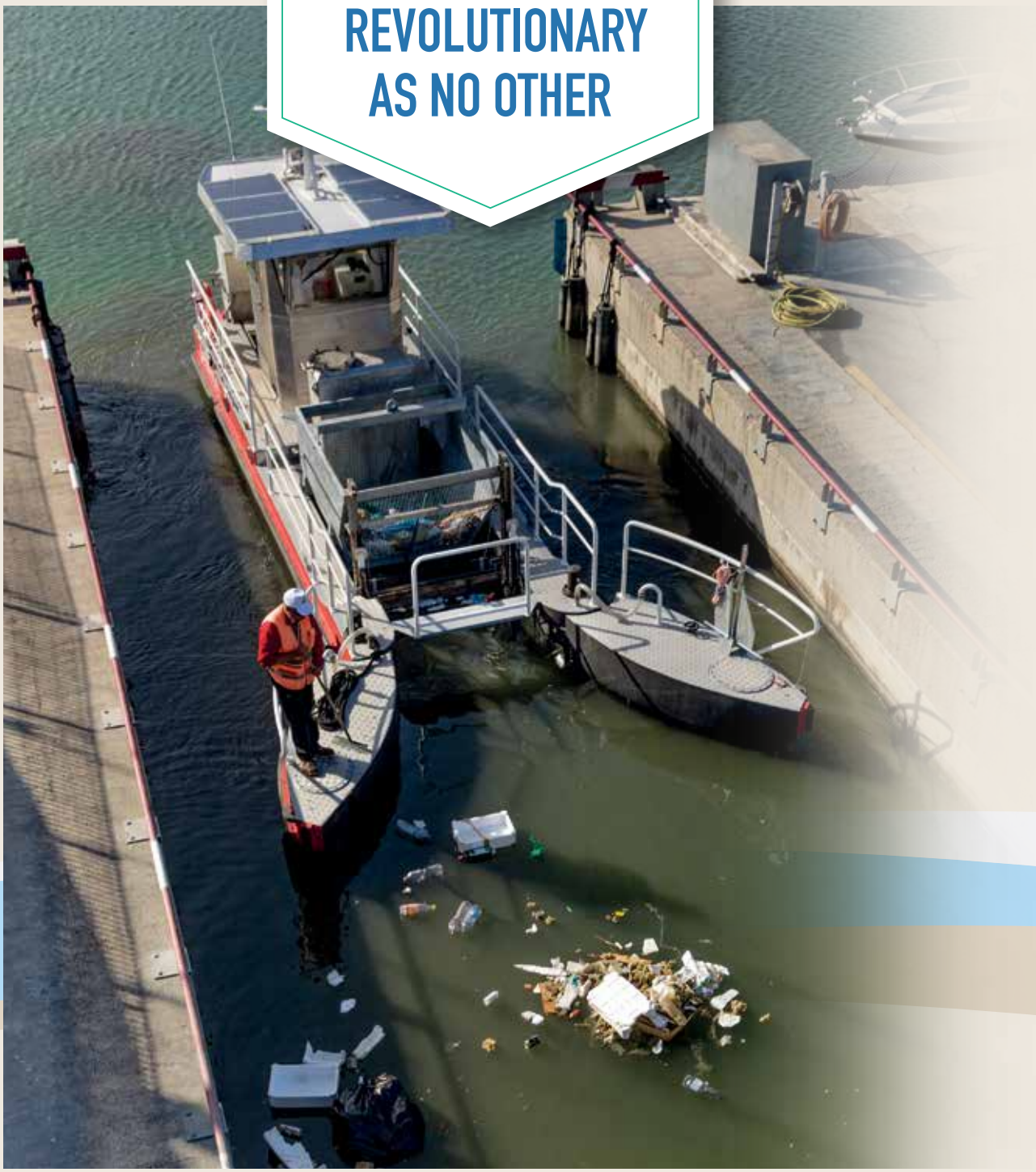


Photovoltaic panels are placed on the roof (800 W total) to charge batteries when the engine is off and, when it is on, to power electrical auxiliary services and air conditioning in the cabin.

Lightweight, impact and corrosion resistant, durable, non-magnetic and, most important, 100% and endlessly recyclable: these are some of the properties and characteristics that make aluminum one of the most popular materials used in various industries and design sectors, as well as in the nautical sector.
Therefore, it could only be aluminum, actually 100% recycled aluminum, the material made available by CIAL in order to realize the innovative Pelikan boat, designed by Garbage Service and dedicated to cleaning solid or oily waste in water surfaces, ports and other areas.



REVOLUTIONARY AS NO OTHER



The boat is equipped with a dual system (right / left) for spraying chemical dispersants, approved by the Ministry of Environment.



Divergent aft /flow inverter that allows the boat to have a high maneuverability, especially in reverse.



Porthole for visual inspection of the aspirant system which is used to collect liquid waste.



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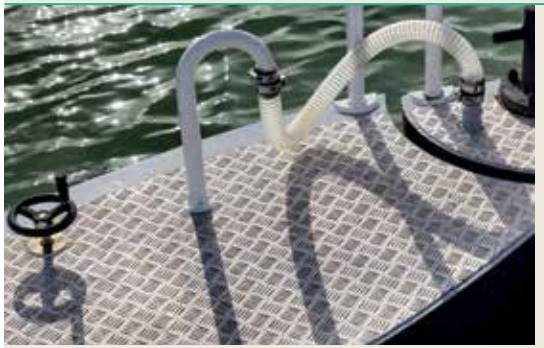
INNOVATIVE DETAILS



Ballasting: depending on the type of waste to collect, the pliers can be ballasted through depression to increase the draft at the bow.



The oxygenation is used to break down the iridescence due to hydrocarbons and various pollutants, by creating a mixture of water/air through a forced circulation system.



Speed of 9 knots thanks to the innovative design of the hull.



A 2.57 m^2 cabin, which is insulated, soundproof, air-conditioned and equipped with a stereo system nd a barometric unit.



A 3.5 m^3 litter bin for waste storage, made in hot dip galvanized steel (useful capacity 3 m^3).



Openable bow pliers in AISI 316 L with safety lock bolt.



Suction system of solids and liquids.



The separator of hydrocarbons operates in depression conditions whilst making possible to separate the film from the pollutant mass of water suctioned in absence of emulsion.





Engine: VOLVO - PENTA D4-180/HS45AE 180 kW 132 hp 2800g/? -12 Volt 115 AH low power consumption and low CO2 emissions.

N° 4 batteries:
1x engine,
1x motor pump fire,
2x services



Lifting mechanism to collect solid waste through a basket on the bow, which includes a rack and a steel pinion and is controlled by the control board.



The ship's sides are fully protected by rubber saddle-tanks which end with two anti-rubbing teflon wheels at the bow, with open pliers against the dock or boats.
The entire deck is covered in non-slip aluminum, transversely passable both at the boat's aft and at the bow.



Locker used as storage for materials and varied equipment.



TECHNICAL SPECIFICATIONS

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Overall length	10,90
Width	2,48
Immersion	1,11 m
Displacement	9 ton.
Main engine	VOLVO-PENTA Kw132 hp180
Max. speed	9 kn
Max. capacity liquids	930 lt.
Construction material	Aluminum



Intubated and protected propeller for a trouble-free navigation in waters with half-submerged solid waste.



Railing along the boat's entire perimeter and cross catwalk on the deck to facilitate the transition with open pliers.



The shotgun fire protection, installed on the stern area, is equipped with a powerful motor pump in order to direct sea water with strong pressure in the case of a fire within ports.



Storage tank used for liquid pollutants.



OPERATING FEATURES

The Pelikan is a technologically advanced working boat for the clean-up and collection of wastes on the water surfaces. Its dimensions allow the normal highway transportation thus ensuring a quick transfer, which is an essential factor to provide rapid interventions.
The Pelikan operates with a two-man crew, it is homologated for navigation within six miles off the coast and it is built in accordance to the rules enacted by the Central Inspectorate for the defense of the sea.



COLLECTION AND DISPOSAL OF FLOATING SOLIDS AND LIQUIDS

Part of the boat's bow consists of two pliers that open hydraulically when activated from the cockpit through two levers.
Whilst working at a reduced speed with opened pliers, the boat, using the propeller's suction flow, collects the polluting material in the bow and conveys it into storage containers: the solid material is collected by an hydraulically controlled drum that works by lifting and emptying; slurry oils are collected by a surface suction system, equipped with a case for oil/water separation. The surface suction flow is generated by the propeller/tunnel system whilst closing the side doors formed on the tunnel itself, through an hydraulic control; such doors will be re-opened during navigation in order to allow the necessary water flow to the propeller. For small spots of film/oil slurry, the hull is equipped with nozzle-holding arms to spray proper liquid dispersant.

OXYGENATION OF THE WATER

The oxygenation is used to break down the iridescence due to hydrocarbons and various pollutants, by creating a mixture of water/air through a forced circulation system, which is located at the boat's stern and utilizes the power of the water that is drawn from an auxiliary motor and then injected back into the water, mixed with air.
The system is applicable when the water is subjected to atrophy and allows the restoration of normal conditions.

FIRE SERVICE

The boat can also be used as a support in case of fire within ports.
Thanks to its powerful motor pump, such boat can aspire a large amount of water through the sea water circuit and then direct it on the area affected by the fire, with strong pressure, by using a shotgun installed on the stern area. This prerogative, together with the exceptional maneuver ability (the hull can rotate on itself), allows the Pelikan to be able to offer valuable service.



PROTAGONISTS OF THE INNOVATION

The Garbage Service operates in the environmental field with “port ecological services” since 1956. Its main activity takes place in the port of Ancona and in the marinas of the Marche region, in addition to being present in other Italian ports, both major and minor ones. Garbage Service offers several services such as collection, transport, treatment, recycling and disposal of all kinds of waste, environmental recoveries, cleaning of shorelines, beaches, water surfaces, antipollution, marine/terrestrial de-pollution and asbestos recovery.
It manages its own autoclave plant, used to sterilize wastes coming from abroad. The prompt intervention division, active 24/7, is able to intervene promptly in case of any kind of emergency in the environmental field, and not only in the marine environment. Last but not least, the internal laboratory for water and soil analysis.
Garbage operates within the national territory thanks to the Ansep-Unitam association, which includes 40 companies that work in the ecology sector, with a workforce of 2,500 units and more than 1,000 vehicles abroad and in the Adriatic-Ionian Macro region, in particular in Croatia, where it exports not only its services but also know-how and technology.

CIAL is a not-profit consortium which represents the commitment of aluminum producers and aluminum packaging manufacturers and users, searching for solutions to recycle and recover packaging, as well as preventing wastes production, whilst reconciling the market’s needs with the environmental protection. In these years, this organization, whose task is also to ensure the recovery of aluminum packaging coming from post-consumer recycling, made it possible to achieve and exceed the targets set by the European regulations, making of Italy an example of best-practice in Europe.

Novamont is an industrial company founded by a group of researchers, which has its roots in Montedison’s school of science, becoming a true centre of excellence in the green industry.
Novamont’s project consists in using plant-based raw materials, renewable sources, year by year, which are transformed into “bio-plastics”, used for specific applications with low environmental impact, and have all the traditional materials’ properties whilst being completely biodegradable.

Novamont has provided, in absolute preview, the revolutionary Matrol-Bi, an organic plant-based lubricating oil, which has been used in Pelikan’s gears.





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