



DEERBERG MAIN OFFICE

Moltkestrasse 6a
D-26122 Oldenburg
Germany
Tel.: +49-(0)441-973 57-0
Fax: +49-(0)441-777 337
Mail: info@deerberg-systems.de
Web: www.deerberg-systems.de

established 1979
Company Planning, Marketing, Organisation, Sales
Discussion partner for Executives

established 1982
Technical Analysis, Design, Supply of partial or complete
Concepts and Equipment for Waste Handling on board Ships
Navy Contact: Klaus D. Eule, Commander ret.
klaus.eule@deerberg-systems.de

established 1985
Contact: Päivi Mäkinen,
Manager Business Unit Lifecycle Services
Moltkestrasse 6a, D-26122 Oldenburg, Germany
Tel: +49-(0)441-973 57-0
Fax: +49-(0)441-777 337
paivi.makinen@deerberg-systems.de

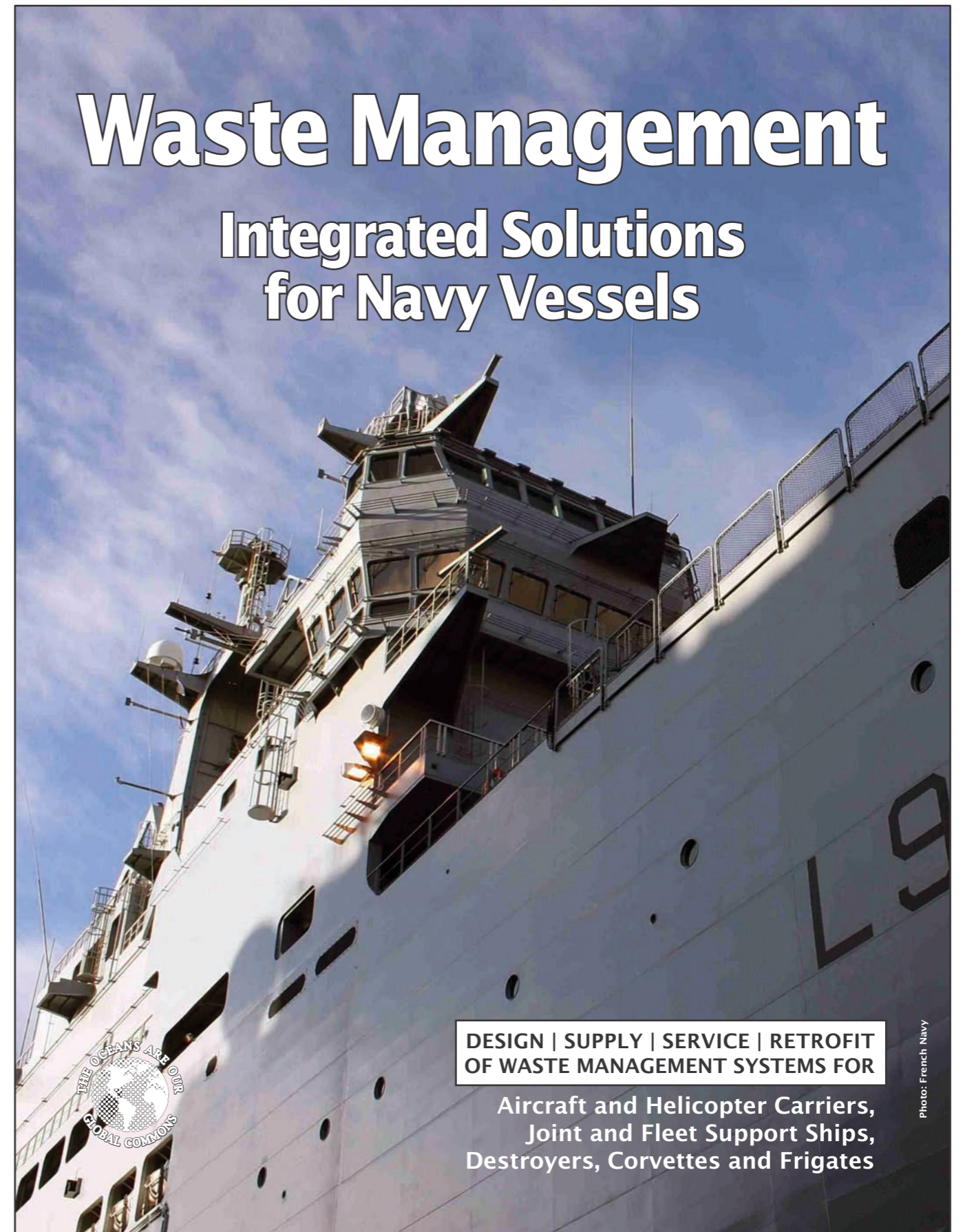
**JOCHEN DEERBERG
BUSINESS CONSULTANCY**

DEERBERG-SYSTEMS

**DEERBERG-TRADING
DEERBERG LIFECYCLE
SERVICE DIVISION**



Waste Management Integrated Solutions for Navy Vessels



DESIGN | SUPPLY | SERVICE | RETROFIT
OF WASTE MANAGEMENT SYSTEMS FOR

Aircraft and Helicopter Carriers,
Joint and Fleet Support Ships,
Destroyers, Corvettes and Frigates

Photo: French Navy

International Offices



DEERBERG FINLAND TAMMISAARI OFFICE

established 1993
Tel: +358-19-208-773
Fax: +358-19-208-774



DEERBERG UK LONDON OFFICE

established 1992
Tel: +44-207-266-2607
Fax: +44-207-289-4260



DEERBERG USA MIAMI OFFICE

established 1992
Hugo Cabrera
100 Bayview Dr., PH25
Sunny Isles Beach
Florida 33160, USA
Tel: +1-305-949-6391
Fax: +1-305-949-0314
Cell: +1-305-778-8351



DEERBERG POLAND GDANSK OFFICE

established 1992
Jurek Tylkowski
Uliza Kollataja 4F
83-200 Starogard
Poland
Tel: +48-58-562-0790
Fax: +48-58-562-0790
Cell: +48-60-444-5087



1756 - 2010
For over 250 years Quality
and Innovation has been
a Deerberg Tradition

Integrated Waste Management Solutions for Navy Vessels



Changing Requirements



Photo: Koninklijke Marine

Over 70 Navy Vessels equipped

Political will, public awareness and changes in operational profiles have obliged Navies to comply with marine environmental regulations. On board waste treatment has become essential to maintain operational flexibility, save cost of operations and protect our marine environment.

Essentially all waste streams will have to be treated to avoid pollution. Crew health and safety as much as cost and time for discharge in ports are determining the concept of the waste management system. In addition to waste water and sewage treatment there is a need for an efficient food waste system to treat or safely store food waste from the galleys and mess rooms. Most ships require recycling equipment for handling of solid waste to reduce its volume for storage. Larger vessels, like Aircraft or Helicopter Carriers, Joint or Fleet Support Ships or Destroyers and Frigates with large amounts of waste require an incinerator or other means of thermal treatment for complete destruction of the waste. For the operation of these systems life-cycle in-service support to cover logistics and training as much as maintenance and spares must be provided.

Deerberg-Systems has more than 30 years of experience in waste management aboard ships, including 72 Navy Vessels for 13 Nations. On this basis the Deerberg Navy business areas - RD&D, System Design, Retrofits and In-Service-Support - are fully integrated with the marine industry and commercial business processes to serve the Navy requirements for all Navy Vessel types and sizes.

Solid & Food Waste Handling

Deerberg MPWMS®: Key to the Deerberg-Multi-Purpose-Waste-Management-System MPWMS® is the Deerberg Movable Grate Incinerator. It reliably and effectively burns solid waste, incl. plastic, dried food waste and bioresidues, sludge- and cooking oil, as well as medical and sanitary waste. Different equipment sizes accommodate the requirements on naval vessels ranging from Corvettes to Aircraft Carriers.

Sorting- & Non-Sorting Operation: The Deerberg Movable Grate Technology allows for non-sorting operation. Glass and tins are fed through the Incinerator for disinfection. The ash remains are non-melted material free of organic matter.

Perfect Ash-Burnout Guaranteed: The Deerberg Incinerator is characterized by its quality of materials and workmanship, long lifetime, and highest operational results. Perfect ash-burnout, especially with regard to food and wet waste, is guaranteed. Process controlled burners and fans guarantee a self-adjusting and reliable process.

DEVATEC® Food Waste System: The Deerberg Food Waste Vacuum Transport and Processing System DEVATEC® Combi consists of one or more feeding stations, located in galleys, pan-

Waste Water & Recycling

tries and preparation areas. A vacuum pump creates the vacuum which transports the food waste to a dewatering unit where the food waste is further processed. The excess water is pressed out and fed into the waste water treatment plant. Depending on the total waste management concept the dewatered food waste is either stored in a tank for further incineration (AWT Interface required), or later on shore landing.

Waste Water Treatment Systems: Our advanced waste water treatment plants (AWT) use a membrane bio-reactor to treat grey water, galley grey water (grease separator required) and black water. The compact and efficient AWT systems produce a high quality effluent without using chemicals. Alternatively we also offer biological sewage treatment plants. Both comply with the latest IMO MEPC 159(55) regulations.

The Deerberg AWT Interface is connecting waste water treatment plants with the on board incineration systems in order to dewater and incinerate the bioresidues from the treatment process.

Recycling: As many Navies have a requirement for sorting waste for recycling and the need to reduce the volume of waste for storage we offer a range of compactors, crushers, and densifiers.

Latest Navy Orders

Amongst the many major contracts we were able to secure, the highlight is the involvement with Babcock for the QE Class Solid Waste & Food Waste Processing Equipment and the AWT Interface on board two QE Class Aircraft Carriers to be built by the Carrier Alliance on behalf of the UK MoD. This order represents the largest order in the 30 year history of Deerberg-Systems.



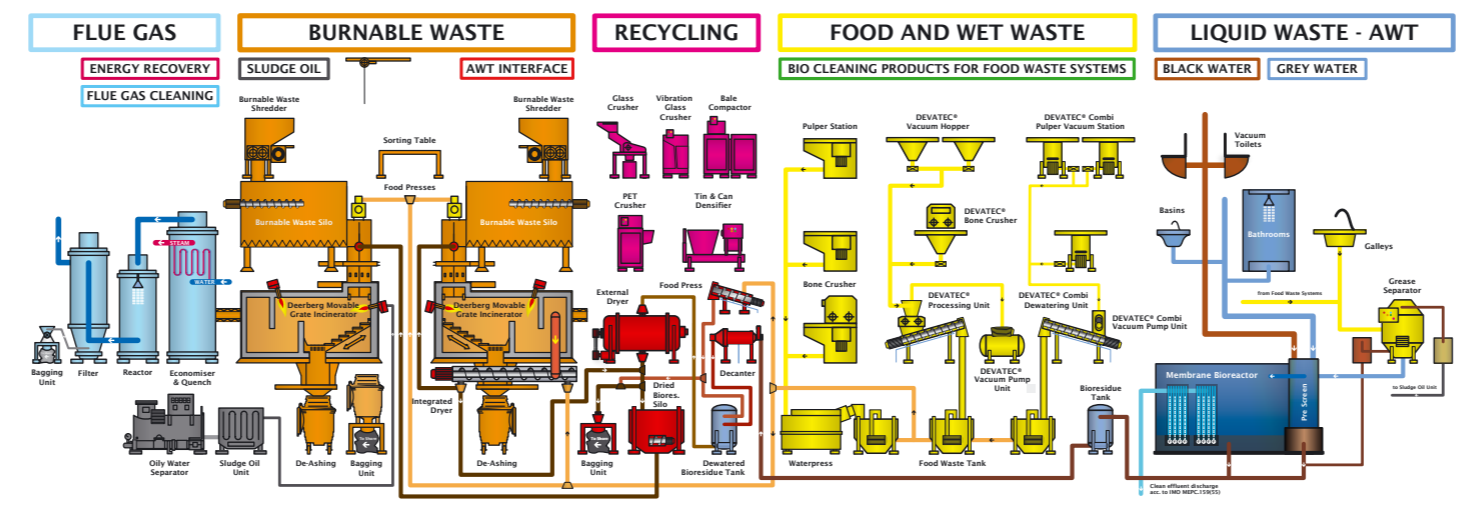
Photo: Royal British Navy

Alongside this we successfully acquired an order with STX France for the third French Navy Helicopter Carrier.



Photo: French Navy

The-Deerberg-Multi-Purpose-Waste-Management-System MPWMS®



Deerberg Navy Waste Management Systems

- ▶ Are available for all vessel types & sizes
- ▶ Provide compliance with current and future environmental regulations
- ▶ Extend Navy vessels operational flexibility and availability at sea
- ▶ Save cost for discharge ashore, training of personnel and in-service support
- ▶ Are flexible and modular in design to respond to specific Navy requirements
- ▶ Relieve crews from dull and dirty garbage work due to a high degree of automation and non-sorting operation



158 LARGE PASSENGER VESSELS, 72 NAVY VESSELS, 27 YACHTS, 10 SPECIAL VESSELS AND 600+ MERCHANT VESSELS EQUIPPED FOR MORE THAN 250 YEARS QUALITY AND INNOVATION AND INNOVATION HAS BEEN A DEERBERG TRADITION