

推进系统的设计基于成熟的技术和现有基础设施。

在岸上或海上将 RDF 存放或装载在标准集装箱内。
无需特殊或新加设备，仅占货船总存放空间的 5%或更少。

通过将油料存放在集装箱内，在运输过程中、在港口存放时和在海上航行时，可以避开外物干扰，在港口等待装货时，亦不会对环境造成任何影响。

与传统的柴油推进系统相比，新的系统产生的废气更少。
下表列出了柴油发动机和垃圾衍生燃料推进系统的废气排放数据。

采用这一替代推进系统在环境保护方面的优势是显而易见的。

燃油类型	每年使用量 (吨)	HCl	CO	NO _x	SO ₂	有机化合物总量	微粒	HF
仓储燃油	46.200	0	30	391	1704	6	201	0
RDF	175.175	6	3	133	35	2	2	0.002
RDF 与仓储燃油相比提高的排放		6						0.002
RDF 与仓储燃油相比减少的排放			27	258	1669	4	199	
变化百分比		100	-90	-66	-97.9	-67	-99	100

柴油发动机和垃圾衍生燃料推进系统的废气排放对比

- 在工作时，RDF 推进系统包含一个自动化处理系统，它的装备能满足最苛刻的强制性环境标准。
- 燃烧不含戴奥辛，并根据环保规定，使用静电沉淀剂或堆袋室，并辅之洗涤器以对燃气进行过滤。
- 收集残余物和飞尘并将其存放在空油箱内到达港口后，根据当地标准 WTE 设备岸上操作惯例处理（或再回收）灰烬。



满足京都及 EC 法规的要求

根据京都条约，使用非传统的燃油提供推进动力不会排放出 CO₂，这一系统被正式列为可持续生态型运输系统。

该系统完全满足欧洲所有最新的可再生能源使用法规，特别是 **2003/30/Ce 法规**（鼓励在运输中使用生物燃料和其它可再生燃油）。

Eco-technology

The design of the propulsion system is based on proven technology and existing infrastructure:

- Storage and loading of RDF in standard shipping containers either both on land and aboard ship requires no special or new equipment and occupies less than 5% of the ship's overall storage capacity.
- Storing the fuel in standard shipping containers provides protection against the elements during transport, storage in port and while at sea and is a zero environmental impact storage solution at the ports while waiting to be loaded.
- The operating system generates far fewer air emissions than a conventional diesel propulsion unit. The following is a summary of air emission from a diesel-fuelled engine and a waste-fuelled boiler.

It is evident that there are considerable environmental benefits in adopting the alternative system.

Fuel Type	Annual Usage in tons	HCl	CO	NO _x	SO ₂	Total Organic Compounds	Particulates	HF
Bunker Oil	46.200	0	30	391	2840	6	201	0
RDF	175.175	6	3	133	35	2	2	0.002
Increased emissions RDF vs.bunker Oil		6						0.002
Reduced emissions RDF vs Bunker Oil			27	258	2805	4	199	
% Change		100	-90	-66	-98.8	-67	-99	100

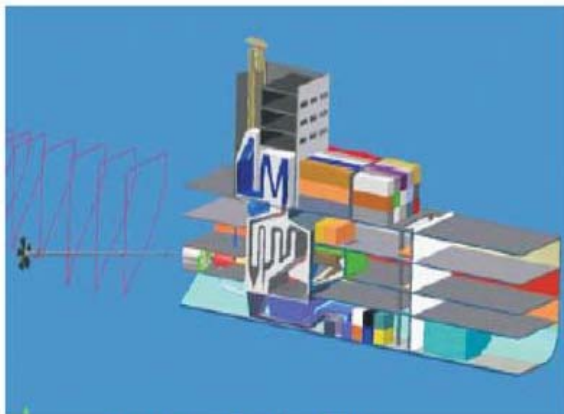
Comparison of air emissions from a diesel-fuelled engine and a waste-fired steam boiler

- During operations, the RDF propulsion system includes an automated handling system, and is equipped to comply with the most strict environmental standards in force.
- Combustion is dioxin-free and flue gases are filtered as required by the environmental regulations using either electrostatic precipitators or a bag house, followed by a scrubber.
- Bottom and fly ash are collected and stored in the empty fuel containers. Upon arrival in port, the ash will be disposed of and/or recycled, in accordance with normal local industry practice of WTE facilities on land.

Kyoto and EC Directive Compliance

According to the Kyoto Treaty, the possibility of fuelling the propulsion with non-conventional fuel clears the value of the CO₂ emissions in the atmosphere and officially places the system into the eco-sustainable transport systems category.

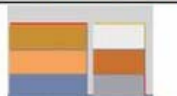









The system fully complies with all the latest European directives regarding the use of renewable energy Sources and in particular **Directive 2003/30/Ce Promoting the use of bio-fuels and other renewable fuels for transport.**



Starboard Section View



Boiler, Flue Gas Treatment and fuel handling Systems

Illustrations are from preliminary design	
	Fuel (RDF) storage in containers
	Lifting system for RDF in containers
	RDF preparation and handling area
	RDF fired boiler
	Flue gas treatment and stack
	High pressure steam line
	Steam turbine, reducing gear to propeller and link with emergency motor
	Low pressure steam line and condenser
	Ash disposal collection system
	Ash holding containers

