

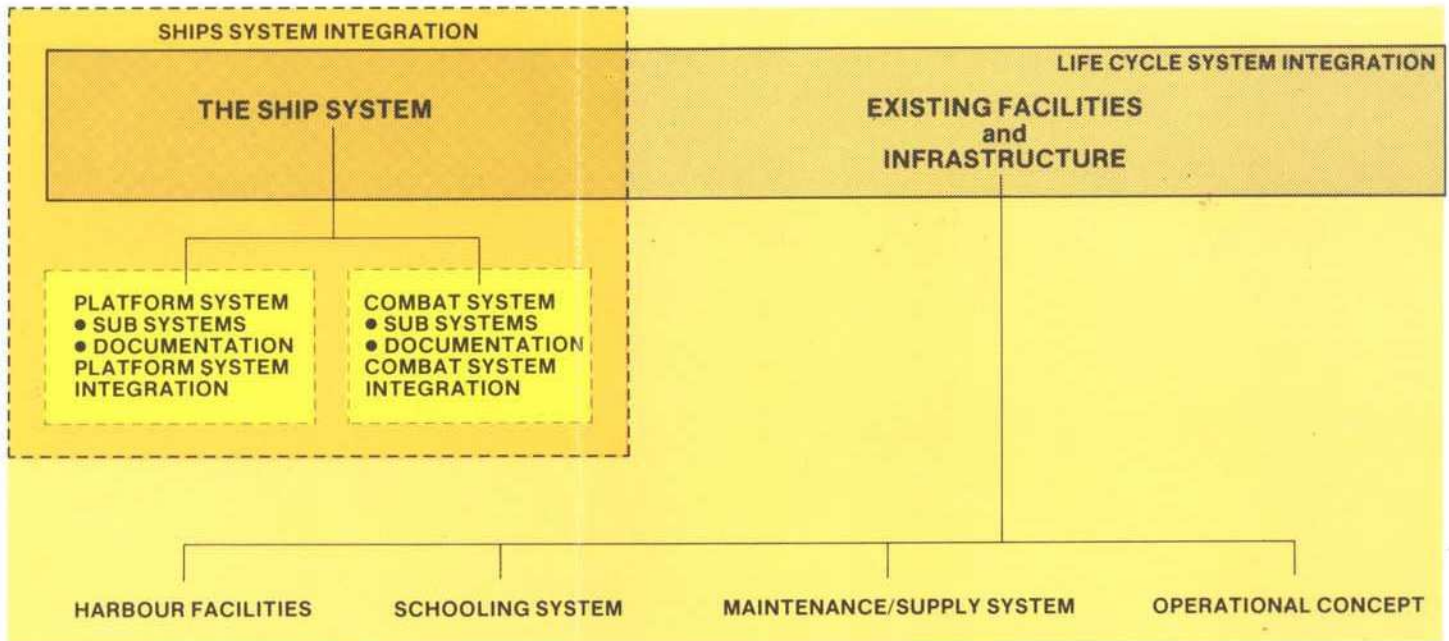
*Ontvangen van Bastiaan Winde.*



# NAVAL ENGINEERING



# RDM System House



## The Submarine Platform RDM Life Cycle Support ILS Management

The platform of a modern submarine with its control and surveillance systems, is becoming increasingly complex. RDM provides the integration, including the integration with the combat system. RDM supplies these functions by offering both hardware and software.

The delivery of a complete submarine system does not end with the commissioning of the submarine itself. RDM therefore developed an approach to the life cycle support which can be subdivided into the following:

RDM has available to the customer a basic RDM ILS concept, based on the latest submarine know-how and experience, that can be fully adapted to the customer's operational needs.

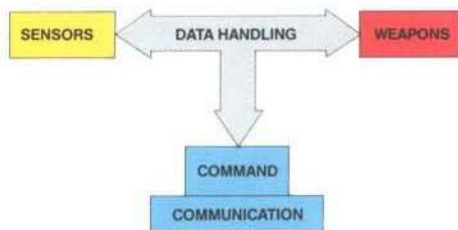
## The Submarine Combat System

With a modern fully integrated Combat System, adapted to the customer's specific demands and requirements, the submarine weapon system is a vital tool for keeping the countries' safety and freedom. Basically RDM sees the combat system as follows:

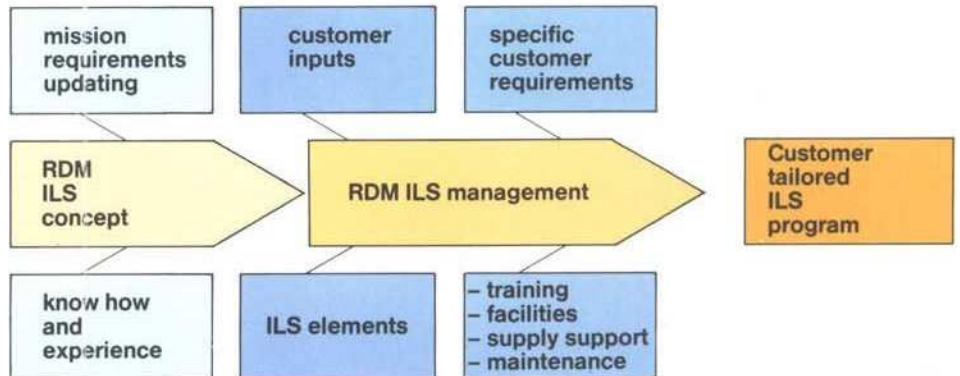
- Integrated Logistic Support Plan
- Maintenance Plan
- Tools and Test Equipment
- Spare Parts
- Documentation and Technical Data
- Personnel and Training
- Transportation and Handling
- Facilities
- ILS Management

## The RDM Team

It goes without saying that RDM collaborates closely with the Royal Netherlands Navy, research institutes, naval architects and major system suppliers.



RDM has the flexibility to offer a variety of combat system configurations that can be adapted to specific preferences for equipment or sub-systems.





**Submarines built by RDM**



*Introduction*

RDM (de Rotterdamsche Droogdok Maatschappij b.v.) was established in 1902. From its beginning RDM has been constantly involved in the building, repair and modification of every type of naval and merchant vessel, offshore construction and major equipment on-board ships.

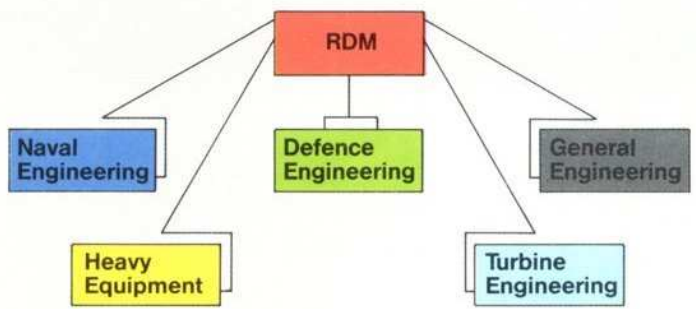
The company is ideally situated in the middle of the Rotterdam harbour area on the New Waterway, which provides direct and open access to the North Sea.

*RDM Products and experience:*

Whereas the RDM Naval Engineering activity has been concentrated and specialized on the production of submarines, other divisions offer products such as:

- General Engineering with, all kinds of ship shafting systems, hydraulic systems and cylinders, construction equipment and special projects for instance: mining equipment design.
- Defence Engineering with field howitzers, armoured vehicles and overhaul programs for all this equipment.
- RDM Turbine Engineering with complete steam turbine islands for electric power stations, the largest units sofar of 660 MW.
- Heavy Equipment with pressure vessels for use in the nuclear and petrochemical industry, wellhead separators and heavy fabrications.

**The Company:**



RDM products benefit from a continuous crossflow of technology.

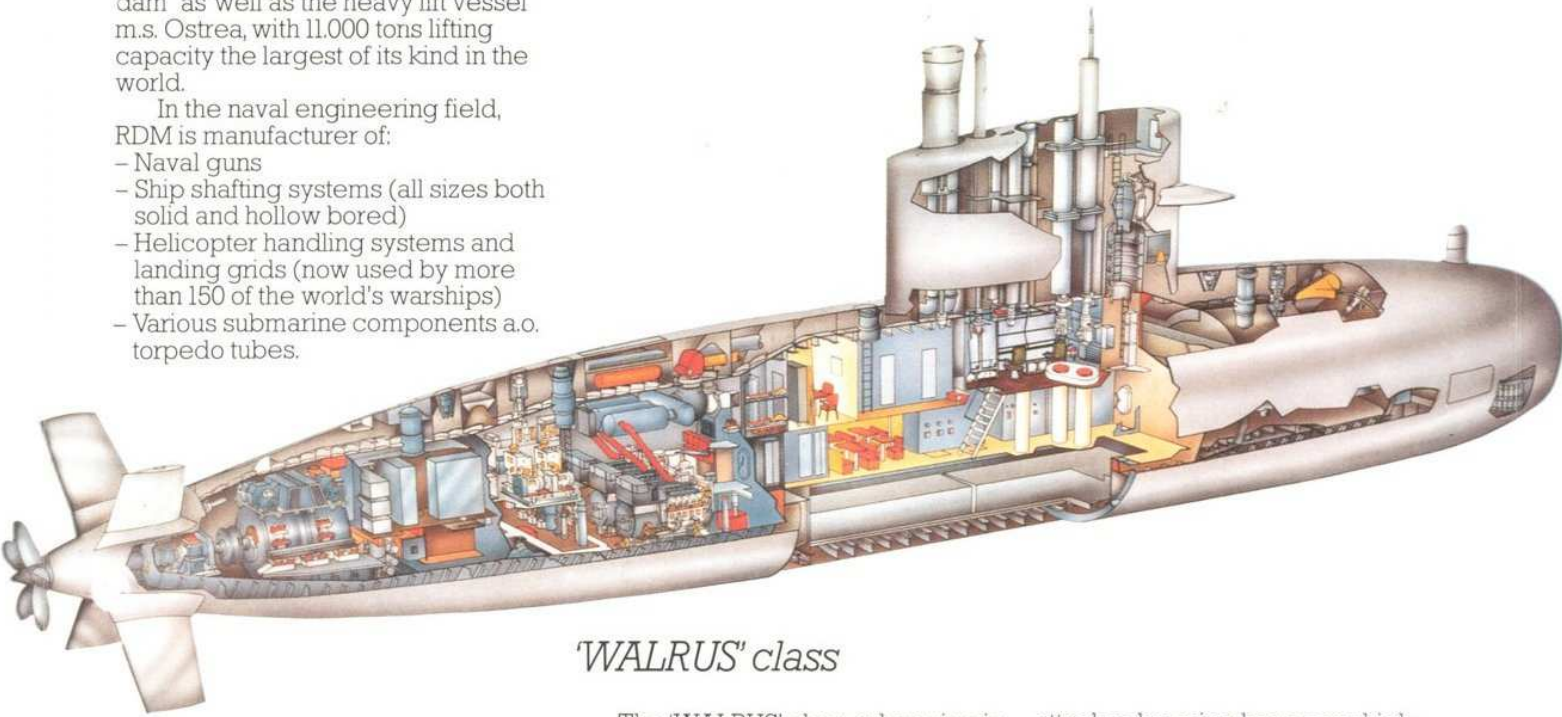


## RDM Naval products

RDM has built such well known vessels as the Holland-America line's ss Nieuw Amsterdam and ss Rotterdam as well as the heavy lift vessel m.s. Ostrea, with 11.000 tons lifting capacity the largest of its kind in the world.

In the naval engineering field, RDM is manufacturer of:

- Naval guns
- Ship shafting systems (all sizes both solid and hollow bored)
- Helicopter handling systems and landing grids (now used by more than 150 of the world's warships)
- Various submarine components a.o. torpedo tubes.



## RDM Submarines

Submarine construction at RDM, now one of its main activities, commenced in 1929.

RDM's approach to submarine construction is that of a system house offering the customer complete submarine systems consisting of platform, combat system and facilities necessary to operate a submarine fleet. This includes all the necessary services such as: project management, training programs and facilities, life cycle support and maintenance programs.

RDM is the designated submarine builder for the Royal Netherlands Navy and offers the following classes of submarines:

- 'WALRUS' class
- 'ZWAARDVIS MK2' class
- 'MORAY' class

RDM also offers comprehensive facilities for the maintenance, updating and midlife conversions of submarines.

## 'WALRUS' class

The 'WALRUS' class submarine is the latest submarine designed for use in the Royal Netherlands Navy and the successor of the present 'ZWAARDVIS' class submarine. The first 'WALRUS' was launched in October 1985, the second to follow in a year's time.

This ocean-going diesel-electric

attack submarine has a very high degree of automation. The use of advanced high yield steel gives 'WALRUS' a deep diving capacity, and high shock resistance. The teardrop-hull design has been proven to be the best hydrodynamic solution, improving even further the low noise signature.

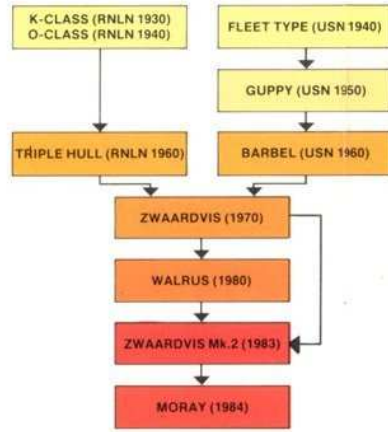


Production of shafts.



## 'ZWAARDVIS-Mk2' class

The 'ZWAARDVIS-Mk2' is a long range diesel electric attack submarine and is a modern, improved version of the 'ZWAARDVIS' class submarine in service with the Royal Netherlands Navy since 1972. Modern submarine technology has enhanced the design of both the platform system and combat system and turned the 'ZWAARDVIS-Mk2' into a very effective submarine suited for the needs of today and tomorrow.



### RDM submarines on offer

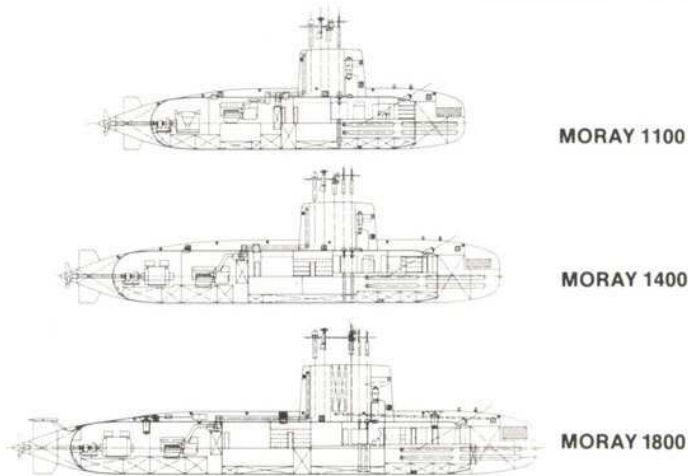


'ZWAARDVIS'-class.

## 'MORAY' class

The 'MORAY' class represents a basic submarine design, that is flexible to respond to the varying operational needs of different customers. This basic design encompasses a wide range of displacements, makes use of the experience with proven systems and incorporates advanced technology.

The modular construction and the flexibility of the basic design allows the 'MORAY' to achieve these objectives, offering an effective submarine system that is efficient, also with regard to life cycle costs.



### MAIN DATA

		WALRUS class	ZWAARDVIS-Mk2	MORAY 1800	MORAY 1400	MORAY 1100	All RDM submarines are characterized by: - Medium to long range - Ocean going - Deep diving - Silent - High shock resistance - Reliable systems, easy to maintain
displacement:	standard tons	1900	1900	1410	1150	920	
	surfaced tons:	2450	2350	1630	1310	1020	
	submerged tons:	2800	2640	1800	1450	1130	
dimensions:	length m	67.7	66	64	54	45	
	width $\phi$ m	8.4	8.4	6.4	6.4	6.4	
	draught m	6.6	7.1				
complement:	man	50	67	41	36	26	
diving depth:	m	300+	200+	300+	300+	300+	



# **RDM *NAVAL ENGINEERING***

P.O. Box 913, 3000 AX Rotterdam, The Netherlands.  
Phone: (+31 10) 87 28 61. Telex: 20753 rdm nl.