# Construction RV *Anna Weber-van Bosse*


## Progress report #5: July 2023

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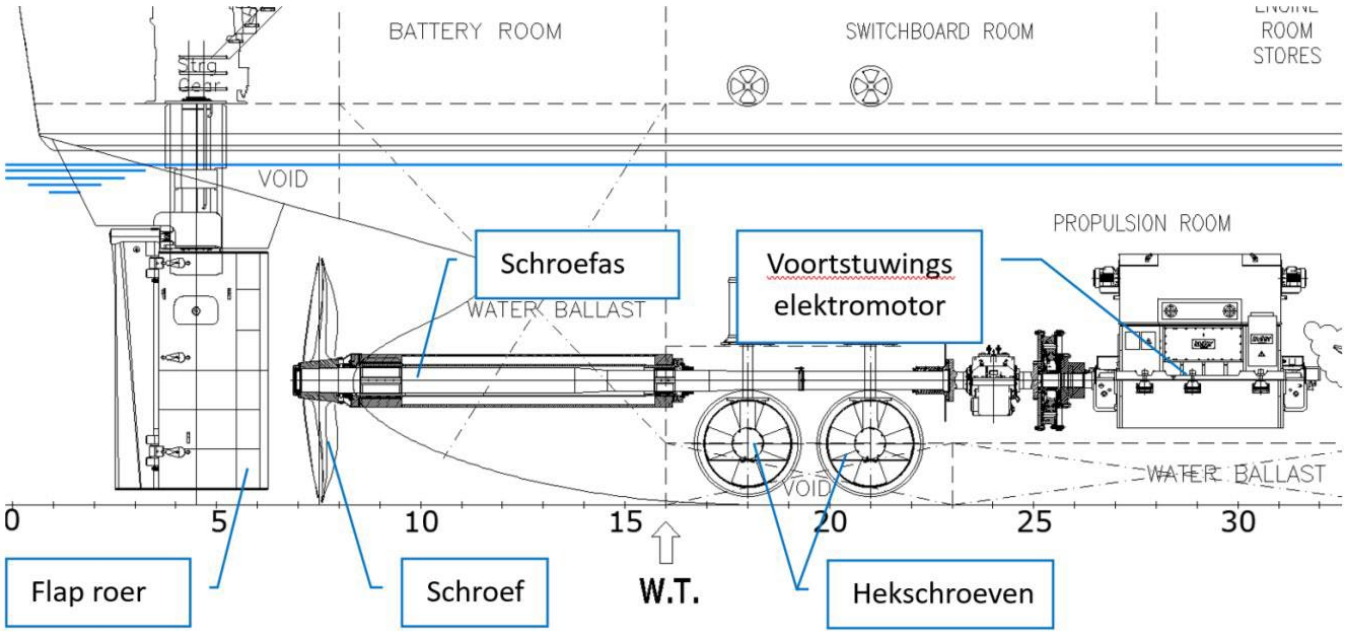
## INTRODUCTION

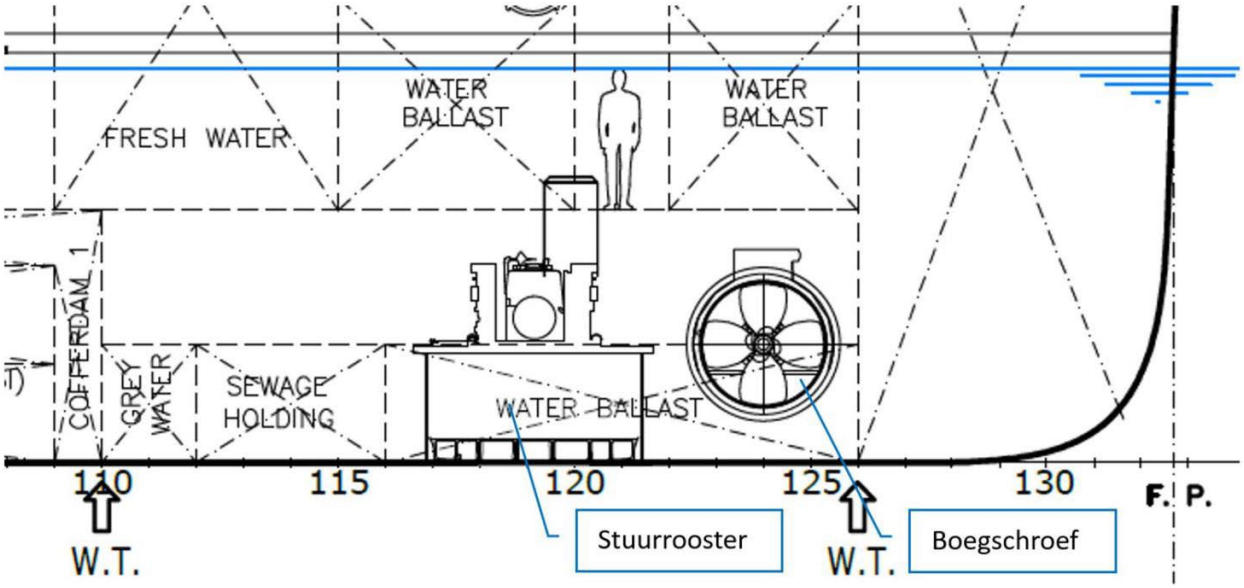
When it is complete, the RV Anna Weber-van Bosse will serve as the ocean-going research vessel for the Netherlands' national research fleet. The fleet is owned and operated by the National Marine Facilities
(NMF), a department of the Royal Netherlands Institute for Sea Research (NIOZ). The NMF fleet consists of three vessels capable of conducting research from the shallow coastal waters out into the open ocean.

As we explained in last month's progress report, each month we will explain part of the vessel's technical components until construction actually begins on the vessel. Last month, we provided a brief summary of the various laboratories on board the vessel. This month, we will describe the propulsion and manoeuvring installations to be installed on board.

The Anna Weber-van Bosse will be built with a diesel-electric propulsion system. The propeller will be powered by an electric motor, instead of directly via the internal combustion engine. The vessel's fixed-speed propeller will have a diameter of 3.6 meters. The propellor and motor placement will be optimised to reduce the noise produced by the vessel as much as possible, to minimise any noise emitted underwater. This is vital for the research conducted by the NIOZ, as acoustic sensors play a major role. The design of the propeller will be validated by MARIN, and DNV will help optimise the design. The vessel will also receive a DNV Silent R (Research) rating, one of the strictest norms for underwater noise. The propeller will be connected to the electric propulsion motor via a drive shaft and a thrust bearing. The electric motor will produce up to 1,600 kW to power the propeller. The vessel will be equipped with a Becker flap rudder mounted to a rotary vane steering gear immediately aft of the propeller.




In addition to the fixed propeller, the *Anna Weber-van Bosse* will be equipped with a variety of systems for maneuvering the vessel and holding its position while at work. Two 495 kW stern thrusters will be mounted aft. These stern thrusters will feature air injection to help reduce noise emissions. A 765-kW bow thruster will be mounted forward. This bow thruster is a rim drive permanent magnet component that offers high levels of efficiency and extremely low noise emissions. The low noise levels for the bow and stern thrusters are mainly important to ensure the comfort of the passengers and crew on board. When the vessel is operational, the crew and scientists will work around the clock, so the systems will be running while part of the ship's complement is sleeping. Along with the bow thruster, the vessel will also be equipped with a 900kW forward steering grid that can rotate 360 degrees and provide propulsion in every direction. The steering grid can also serve as a primary propulsion system in emergencies.

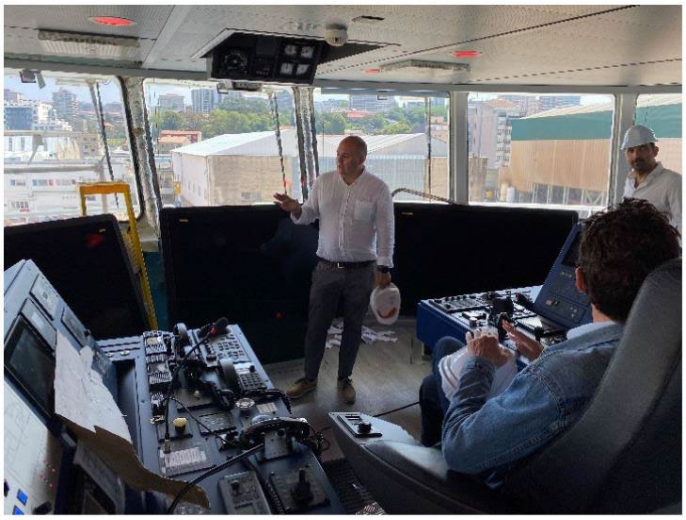



All of these propulsion systems are needed to manoeuvre the vessel during Dynamic Positioning (DP) operations. The entire on-board network is designed for DP operations, and features the required level of redundancy to ensure stability (DP2). We will go into this in more detail in next month's update.

## A LOOK BACK OVER THE PAST MONTH

The engineering staff at Armon are hard at work delivering the blueprints to the NIOZ. This mainly involves information needed for the basic design. The shipyard's focus at the moment is on completing the basic layout blueprints and schematics. Other blueprints are also beginning to trickle in. The NIOZ and Armon have made clear agreements about which documents are included in the basic design. Around 70-80% are already complete, which is generally on schedule. The main areas of concern at the moment are the integration of the methanol systems and the location of the exhaust port, which in turn has consequences for back pressure in the system.

Another visit to the shipyard was conducted in week 29. The team also visited the RV *Tom Crean*, which was at the yard for its warranty docking. Armon delivered the *Tom Crean* last year as the latest research vessel for the Irish Marine Institute.



## PROGRESS

Progress at Armon is generally running according to schedule. The goal of completing the basic design by 15 September is still feasible, but the yard will have to make more progress in the area of methanol. The NIOZ is still talking with Armon about the additional classification ratings for the implementation of methanol at a later date. We will have to choose whether to aim for a methanol-ready rating, or to have all of the documentation inspected according to the full methanol dual-fuel rating. As we described before, adding a methanol rating will have an impact on the final delivery time.

The NIOZ has received most of the MARIN reports over the past month, and will spend the next month evaluating them. MARIN will begin cavitation testing on the propeller design in early August.

## SCHEDULE FOR THE MONTH AHEAD

The work in the coming month will focus on the last steps needed to complete the basic design by mid-September. The degree to which methanol will be included in the initial construction will require special attention. The specifications for purchasing components for the new build will be submitted for inspection. Work will also begin on the final evaluation of the complete basic design, which is one of the milestones in the construction schedule. Along with the evaluation of the basic design, the team will also consider the details involved with production over the next month. Several checks must be conducted of the outfitting and various production and quality control procedures. This will have to be completed before production can begin. The first steps in choosing the details of the facilities on board have also been taken together with the shipyard. For example, an initial design for the lighting calculations and the necessary components has already been delivered. These can be used by the NIOZ users (crew and scientists) to make choices about the furnishings on board.

For more information, please visit: http://www.NewResearchFleet.nl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