

# Systems integration

How Alewijnse implemented oval-shaped nanocrystalline cores for common mode suppression, increasing reliability under all operating conditions.



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# Introduction

Today's highly complex systems demand a high degree of alignment of different elements. In order to achieve this, it is essential to have a deep understanding of how to align the sub-systems.

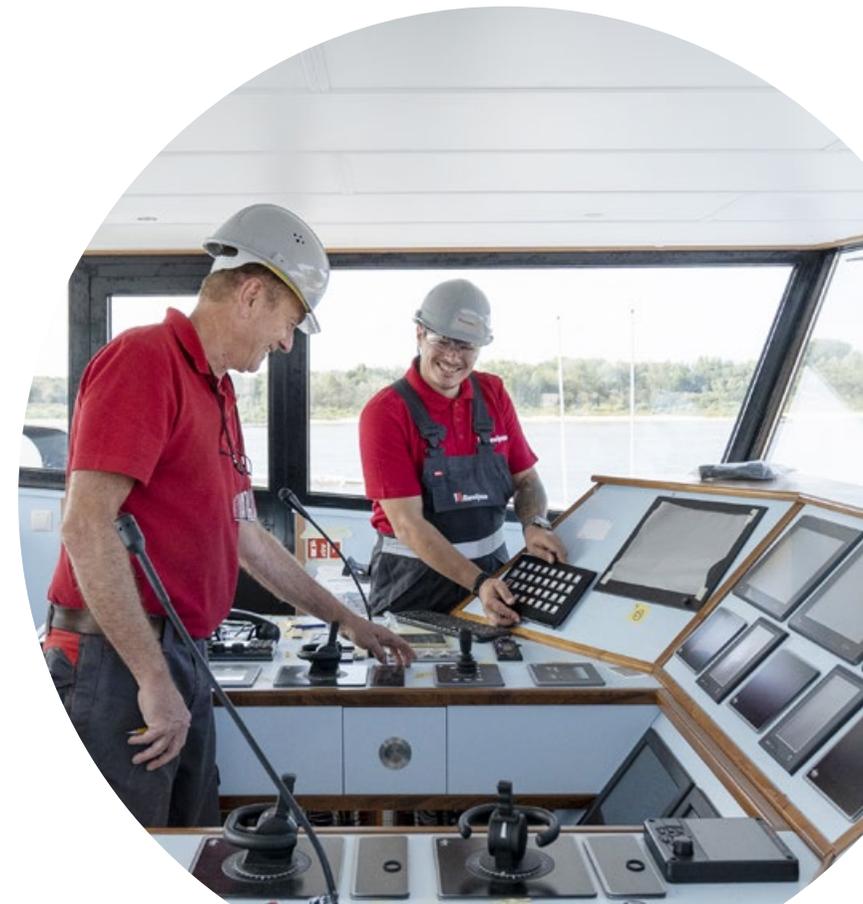
Depending on the needs of the customer on a project, we can provide a range of alternative integration packages that allows the customer to choose whichever best suits the project execution.

## **Effective and connected systems**

Problems with specific systems will arise when proper integration of these subsystems is not done. This can lead to systems not performing as expected.

When system integration is not carried out in a proper way on a project, systems may not act well as a whole, resulting in longer operational trials. Problems with EMC (Electromagnetic Compatibility) may trigger related phenomena, such as circulating currents or malfunctioning equipment. Equipment may fail without any obvious cause. These can all make systems unpredictable, not completed on time and going over budget.

By translating each customer's requirements into an accurate engineering package, the various systems can be safely and reliably integrated, and all issues of this kind avoided. For each customer we can offer a range of integration packages depending on the requirements of each project. They can then select whichever best suits their objectives. Below are brief introductions to the packages, but of course giving advice in a face-to-face conversation is always the best way to communicate the details.



### Option 1: Systems integration package

The first package we offer is our systems integration package. We define systems integration as the integration of two or more, Alewijnse and/or third party delivered, electric and/or automation, subsystems into a single integrated system that provides overarching functionality that the separate systems cannot provide.

We offer the following:

We make sure all integrated systems act seamlessly as a whole.

We make sure each individual system performs well, meeting or exceeding the agreed specifications, whether it is made by Alewijnse or a co-maker.

Within this package we provide a comprehensive range of services that includes conceptual design, basic engineering, detailed engineering, production, installation, commissioning, supervision and project management for all the systems involved. This is in contrast to the usual practise where each supplier takes care of only their own systems and does not take responsibility for the third-party systems contributing to the functionality of the ship or plant. The integration responsibility is then the responsibility of the customer itself. Systems installed in this way can become increasingly complicated and the customer often lacks sufficient in-depth knowledge of specific domains. With our package we take responsibility for the entire integration process and ensure that all the systems work together as a whole.

### Option 2: E-Installation integration plus package

We also offer an e-installation integration plus package. This package covers projects that require us to connect our own equipment to that provided by third-party suppliers, based on third-party supplied data plus additional independent technical reviews. Using these reviews, we then assess the performance ratings, manage information flow and provide solid advice to our customer. Within this package we also provide services such as conceptual design, basic engineering, detailed engineering, production, installation, commissioning, supervision and project management for Alewijnse supplied systems, and technical reviews of third-party supplies.





### Option 3: E-Installation integration package

Alewijnse also offers the E-installation integration package. With this package we connect equipment that we supply to the equipment of third-party suppliers, based on third-party supplied data. Within this package we provide services that include conceptual design, basic engineering, detailed engineering, production, installation, commissioning, supervision and project management for Alewijnse supplied systems only. This package does imply that integration responsibility is shifted towards the customer. This means that the customer is responsible for achieving a complete working installation and the third-party supplier is responsible for providing the correct data.

### Our engineering approach

In order to ensure that different parties work well together, it is vital that the same methodology is used by all involved. The preferred approach is systems engineering. Systems engineering is an interdisciplinary field of engineering and engineering management that focuses on the design, integration, and management of complex systems over their life cycles. At its core, systems engineering utilises systems thinking principles to organise the body of knowledge.

We believe that by establishing such a methodology together with a precise framework we are able to make a valuable contribution and improve the way we work with our partners. Its success has already been proven in projects that we have undertaken on large complex vessels of various types.



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Our goal is to co-create value with and for our customers and partners. We aim to develop and improve electrification and automation solutions which are innovative, sustainable and of the highest quality. We focus on making a valuable contribution to successful projects in the maritime and industrial sectors.

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