

besecke

Smart Automation & System Technologies

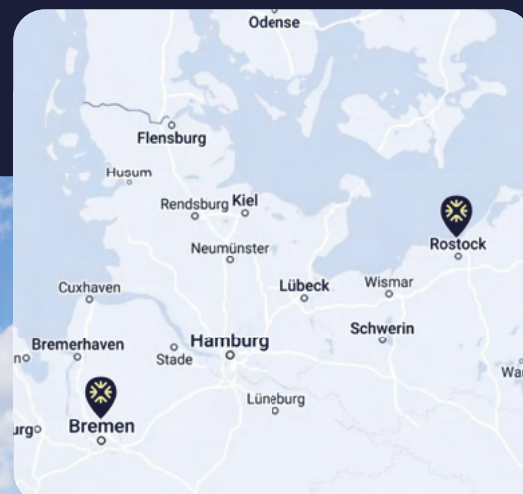
Flexible, precise, efficient and transparent – that's how our automation and systems technology can be described in a nutshell. For decades, we at besecke GmbH & Co. KG have been developing tailor-made solutions for customers all over the world. Our claim: technology that works reliably and perfectly suits your requirements.

We place particular emphasis on maritime systems – from energy supply to ship automation. We also implement industrial automation solutions for the food, automotive and special machinery industries.

Our approximately 180 employees work in an interdisciplinary manner and accompany you through all project phases – from detailed planning to commissioning and beyond.

We offer not only complete systems, but also service and support during ongoing operation. Thanks to our independence in the choice of components, we use exactly the technologies that are best suited to your application – manufacturer-independent, innovative and future-proof.

Whether it's a single project or a complex overall system: with besecke, you are choosing a partner who combines technology with experience and passion – and makes your vision a reality.



Locations

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In everything we do, we seek the smartest solution:

**minimum Input, ➔
maximum Impact.**

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MarESiS
Maritime
Energy
Simulation
System

Hybridisation
and efficiency gains
in shipping

smart automation

Maritime Energy Simulation for the Design of Electric and Hybrid Ship Systems

Innovation in energy simulation

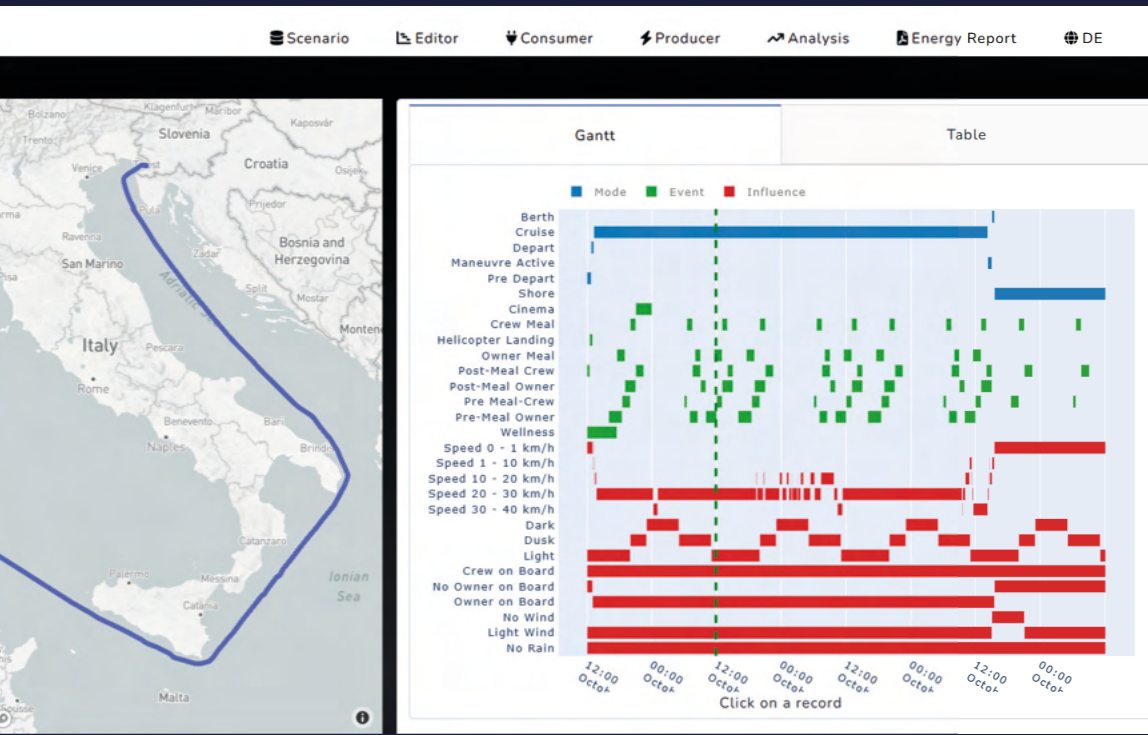
The MarESiS simulation environment offers a novel method for dimensioning and designing hybrid ship systems. Instead of relying solely on simplified operating modes, MarESiS realistically maps complex ship operations – with precise energy demand forecasts.

Why MarESiS?

Traditional methods of energy balancing work with a few operating modes and so-called concurrency factors. These are not very transparent and often lead to oversizing of energy generators – resulting in inefficient operation.

MarESiS, on the other hand, takes into account not only the classic operating modes (manoeuvring, port operations, sea operations,...) but also typical on-board events. An event (e.g. preparation of crew meals) is assigned to consumers that are in use for this purpose. These events can then be assigned time periods in the simulation during which they typically take place. This granular breakdown of ship operations into individual events and their exact timing allows complex ship operations to be mapped.

The result: a detailed representation of ship operations and optimal dimensioning of generators and storage systems.



Your Advantages

- More efficient energy use → lower operating costs
- Ecological operation → reduced emissions and pollution
- Future-proofing → flexible design for new technologies
- Greater comfort → for crew and passengers

How MarESiS Works

1. Database

Use of real route and weather data from comparable ships.

2. Simulation

Linking consumer activities with empirical data and specifications.

3. Knowledge database

Stored with comprehensive expert knowledge.

4. Implementation

Simulations are created by our trained employees.

Result

A personalised energy report with

- Description of the scenarios
- Determined load profile
- Suggestions for a generation-storage concept
- On request: Comparison of several concepts

Practical example: Hybridisation of the MS Müritz

MarESiS was used in the modernisation of the passenger ship MS Müritz.

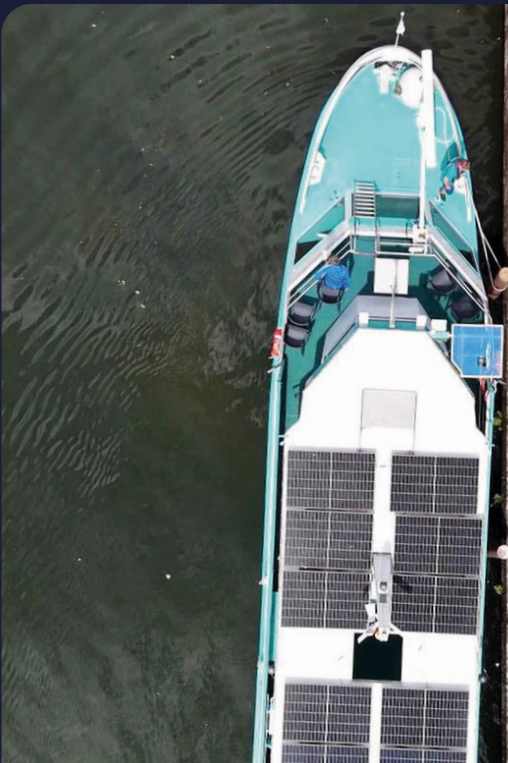
Objective: Greater efficiency, sustainability and comfort

Measures implemented

- Supplementing generator operation with: 100kWh battery pack
- Photovoltaic system (5kW peak power)
- Intelligent energy management system (EMS) for optimal control
- Operation via a touch panel on the bridge

Advantages

- Significant increase in efficiency
- Longer maintenance intervals
- Less noise and odour pollution
- Noticeably higher travel comfort due to less vibration



MarESiS – Your Key to Sustainable and Efficient Ship Systems.