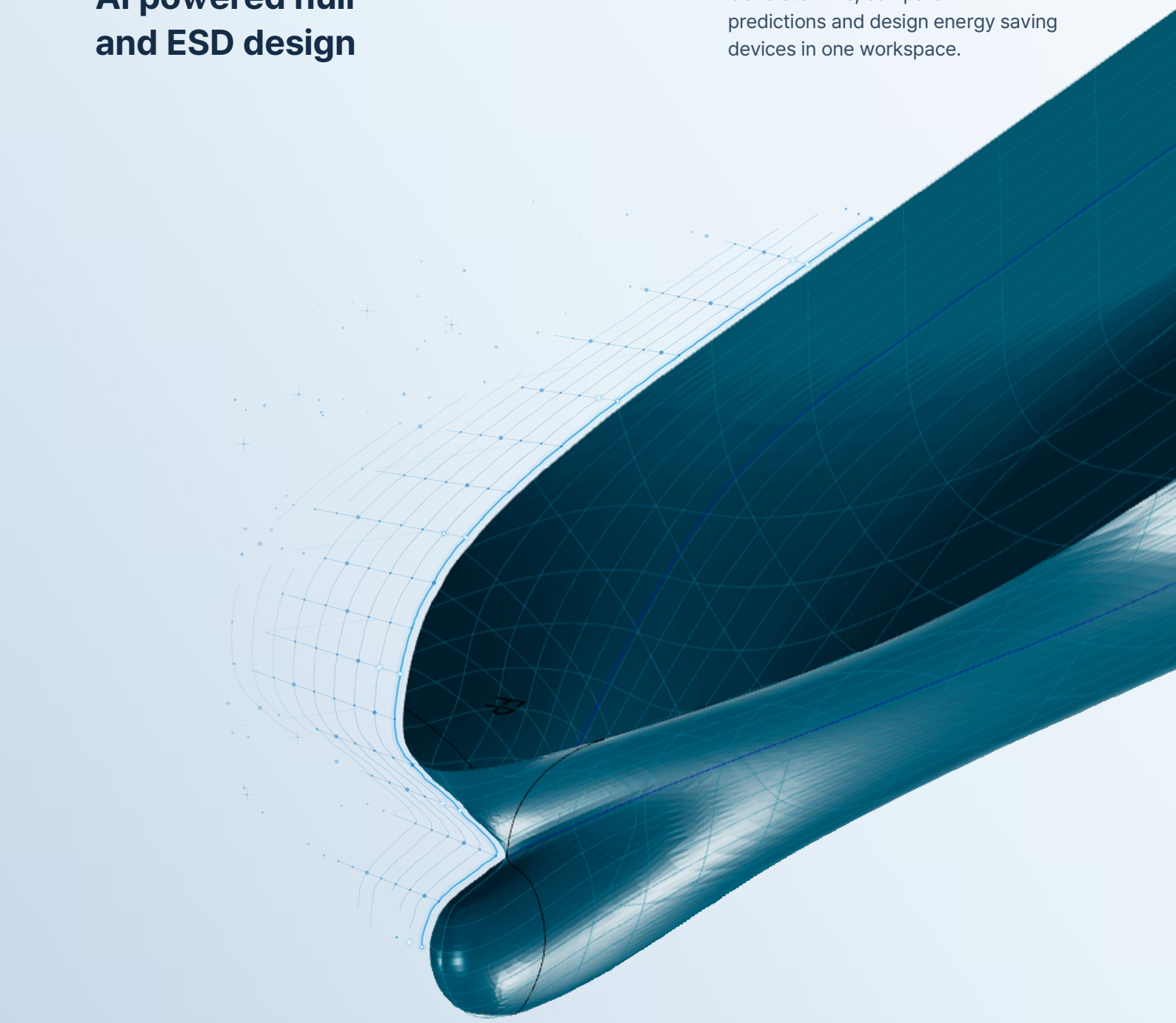
MarinAX

PRODUCT CATALOG 2026

MAX-Hull

AI powered hull and ESD design

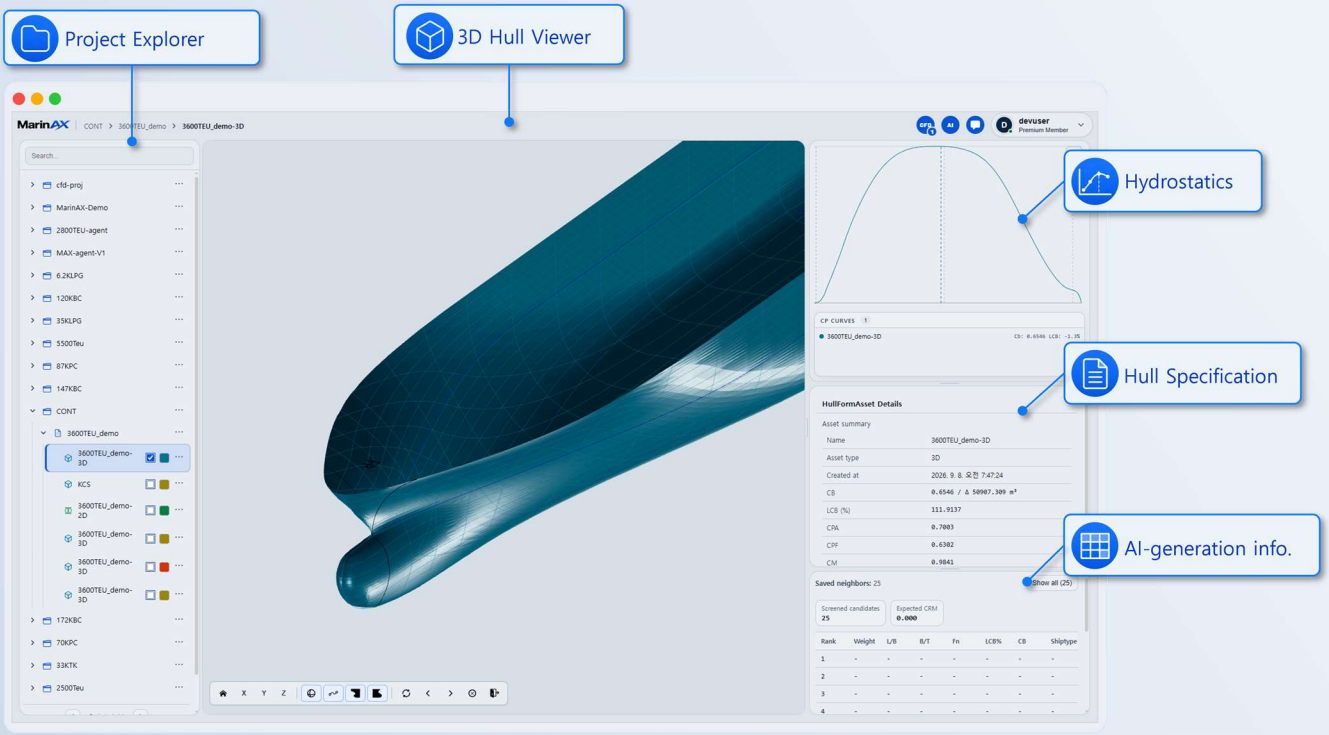
Generate hulls, compare AI predictions and design energy saving devices in one workspace.



HULL GENERATION / AI PREDICTION / ESD DESIGN

An integrated workspace for hull form design

MAX-Hull brings generative AI, flow prediction and established engineering tools into one hull form workflow. Start with principal design parameters or import an existing hull, then review geometry and associated information before selecting alternatives for further analysis. The workspace keeps the design context visible as you move between these tasks.



The project explorer, 3D hull viewer and design information shown in one workspace.

Create or import

Generate a new hull from a small set of principal inputs, review AI recommendations, or upload an STL hull to bring an existing design into the project.

Inspect and compare

Review geometry and hull data. Use AI flow fields, the resistance heatmap and performance estimates to identify alternatives for closer assessment.

Validate and coordinate

Design energy saving devices on the hull, connect candidates to CFD, and ask Agent MAX to coordinate generation, prediction and comparison.

Generate hull forms from principal parameters

Start with principal dimensions and operating conditions. MAX-Hull recommends the remaining shape variables and generates a 3D candidate for review. Examine the proposed values against the design brief, then keep useful candidates as the specification develops.

EXAMPLE INPUT

Principal dimensions

LBP	**163.0 m**
Breadth	**27.5 m**
Depth	**15.0 m**
Draft	**8.75 m**
Design speed	**19.0 kn**
Propeller diameter	**6.6 m**

AI recommendations complete the initial hull-form specification.

<30 sec AI generation time*

AI recommended shape variables

Recommendations include block coefficient, bilge radius, LCB and bulb length, with further forebody and afterbody variables. Review these values alongside the inputs you supplied to establish a concrete starting point for the design study.

Constraints and design review

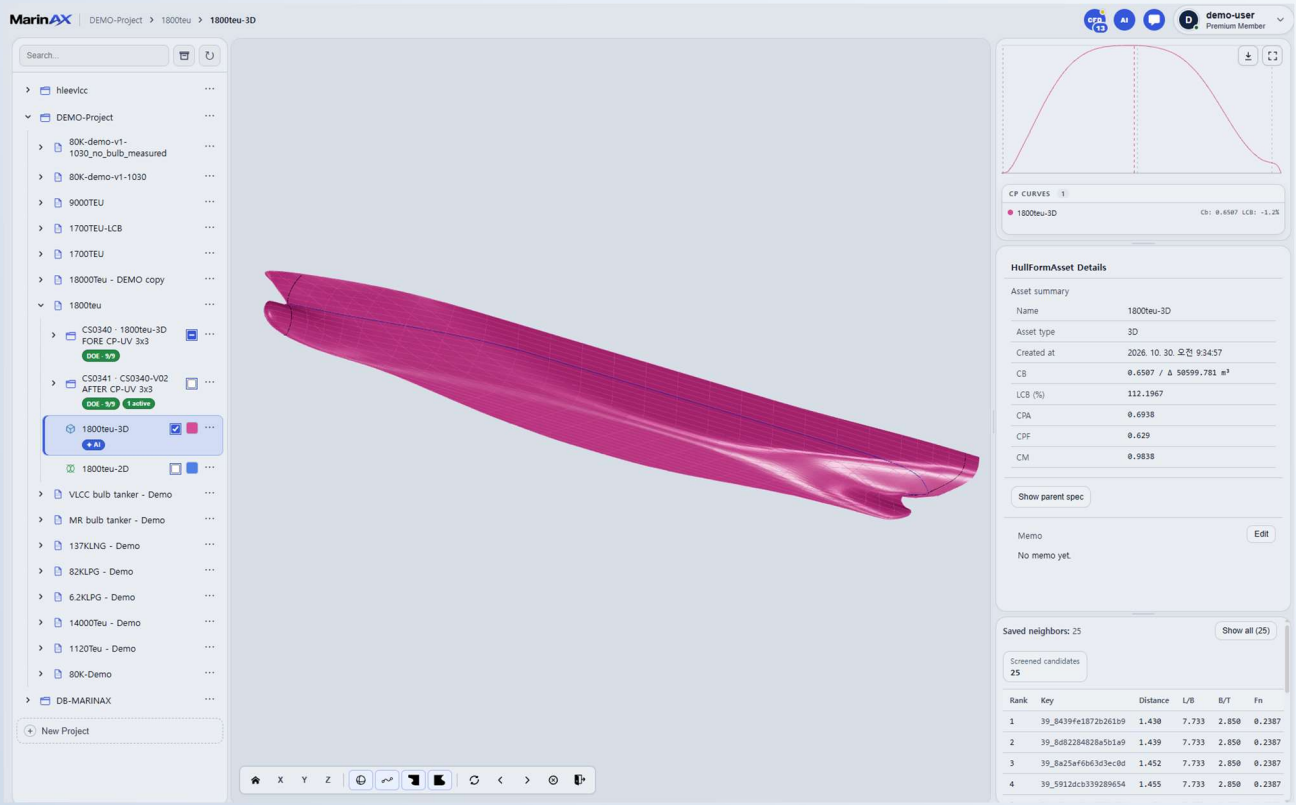
Constraint-aware generation considers the stated design conditions when creating the hull. Inspect the resulting geometry and its associated information, then decide whether the next step is a flow prediction, a geometry variation or a detailed CFD assessment. Retain promising alternatives in the project.

* Published generation time. Actual time varies with inputs and execution environment.

Manage alternatives and inspect the 3D form

Find hull assets in the project explorer and inspect the selected design in the 3D viewer. Start with one generated baseline, then adds a controlled family of alternatives.

The project tree keeps the relationship between these assets visible throughout the study.



*Project hierarchy at left, generated baseline and viewing controls at right.

Select and organize assets

Use the project hierarchy to locate the baseline and its design alternatives. Visibility checkboxes control which assets appear in the viewport, while color controls help distinguish visible geometry. Check the selected asset before interpreting its lines, predictions or subsequent design changes.

Review the form in 3D

Rotate the hull and use the available viewing directions to inspect its overall form. Review the fairness of the bow, stern and visible sections before moving to the next analysis.

Actual public demo capture. The interface is shown as an example of the product workflow.

Bring existing hulls into the same workflow

Upload an existing hull as an STL file and bring your current design into MAX-Hull.

Start the study with geometry your team already uses, then inspect it and plan the next analysis alongside AI-generated candidates in the same project.

FROM EXISTING GEOMETRY TO AN ANALYSIS CANDIDATE

01

Import STL

Bring an existing hull into the project

→

02

Review the form

Inspect geometry and selected assets

→

03

Assess the hull

Review AI predictions and plan CFD analysis

*Illustrated workflow for an existing hull. Individual steps are explained below.

Inspect the imported geometry

Begin with a 3D review of the uploaded form and identify the design you want to assess.

Keep it in the same project as generated alternatives so that the existing hull remains part of the engineering context.

This provides a clear reference when the study starts from a current design rather than a new specification.

Predict and validate

Use AI predictions of surface pressure, wall shear stress and wake distribution to investigate the selected hull.

Relate the field patterns to the geometry and the review objective, then proceed to high fidelity CFD where further validation is needed.

Compare the existing design with other project candidates as the study develops.

Read the geometry with its design information

MAX-Hull presents hull information alongside the 3D geometry. Review the available hydrostatics, hull specifications and AI generation information to understand the selected candidate before deciding how to evaluate or modify it.

Hydrostatics

Inspect the hydrostatic information and curves associated with the selected form. Read these alongside the 3D hull to connect the geometric review with the design characteristics shown in the workspace.

Hull specifications

Review values such as block coefficient (CB) and longitudinal center of buoyancy (LCB). Use the selected hull record to understand the candidate being examined and the information available for the next comparison.

AI generation information

Inspect the generation information linked to an AI-created hull. Reviewing the project, the selected geometry and its generation context together helps you relate a candidate to the design study before progressing to predictions, modifications or CFD.



Design curves and hull information example.

Displayed information follows the product screen example. Individual screen values are illustrative design data.

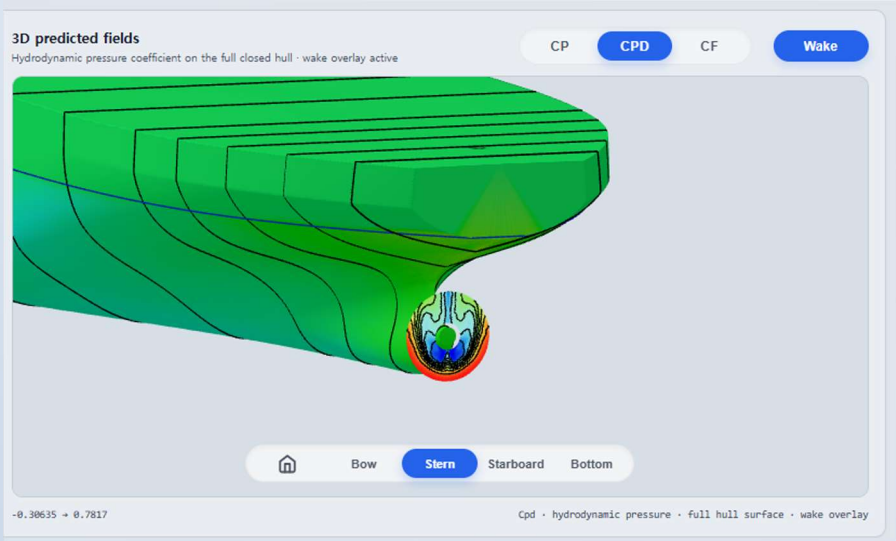
Inspect the predicted flow around your hull

The AI surrogate model predicts flow fields for AI-generated and user-supplied hulls. Review the distributions in interactive 3D to investigate a candidate early in the design process and focus subsequent engineering work.

<30 sec

Published full-field prediction time*

3D PREDICTED FLOW FIELDS



*Wake distribution in the product viewer.

Surface pressure and wall shear stress

Inspect how predicted pressure varies over the hull surface. Use the distribution to examine regions of interest and to compare the flow response of candidate forms under a consistent design question.

Progress to CFD validation

Use rapid predictions to explore alternatives and prioritize the next cases. For higher-confidence validation and accurate performance assessment, connect selected designs to high fidelity CFD within the wider workflow.

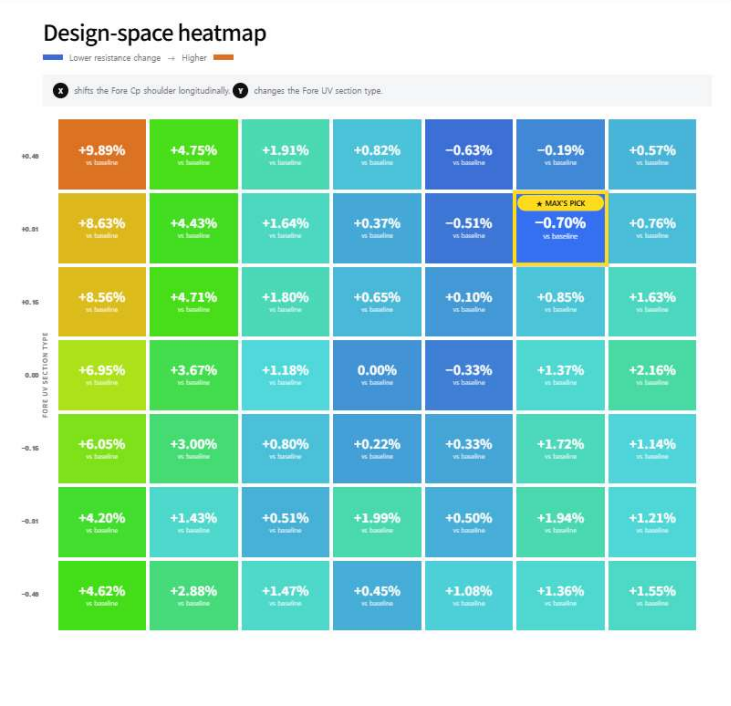
Wake distribution

Examine the predicted flow around the hull and in the stern region. The wake view provides another way to assess how alternatives influence the propulsion efficiency and where more detailed investigation may be useful.

* Published prediction time. Actual time varies with inputs and execution environment. AI predictions require engineering review.

Compare hull alternatives in a resistance heatmap

Compare predicted resistance across a controlled design space before inspecting individual flow fields. In the public demo, two forebody factors form a 7 x 7 study with 49 cases. Each cell connects one parameter combination to a predicted model-scale resistance.





Read the axes

The horizontal axis shifts the Fore Cp shoulder longitudinally. The vertical axis changes the Fore UV section type. The center cell represents the unshifted reference form.

Read the colors

Follow the legend from blue for lower predicted resistance toward yellow and orange for higher values. Read the color together with the resistance number

* Captured from the guided demo. The star identifies the suggested case; cell values are rounded.

Inspect the selected case

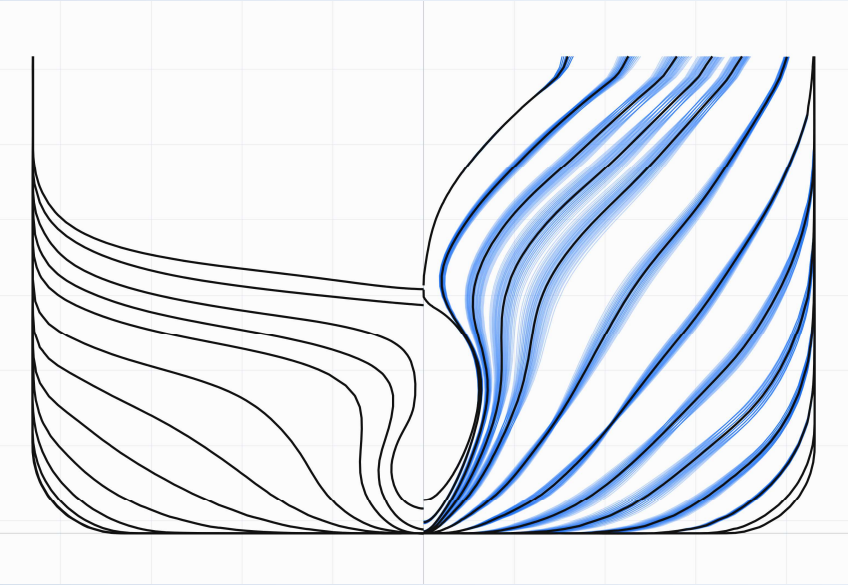
The selected detail panel reports 48.964 N which is -2.32% versus the reference in this example. Use the detailed value when comparing close candidates rather than relying only on the rounded grid number.

Choose the next analysis

Use the map to focus the candidate set, then examine the corresponding hull lines and predicted flow fields. Continue to CFD where a higher-confidence performance assessment is required.

Review hull lines and preliminary performance

The engineering workflow connects generated and existing hulls with 2D lines and statistical performance estimates. These tools support an initial review of the form and help define which alternatives or design questions should be investigated in greater depth.



Standard 2D body plan from the guided 7 x 7 design study.

Review the 2D lines

Examine the hull lines alongside the 3D view to understand the form through 2D representation. Look at the relationship between the visible sections and the overall geometry when reviewing a candidate. The lines provide a practical reference for discussing where a form differs and which regions deserve further design attention.

Use statistical estimates

Use the available statistical performance estimates as an early stage assessment, then consider them alongside the geometry review and AI flow fields. This helps organize the questions for a detailed study. Select the alternatives that require higher-confidence performance assessment and continue to CFD when further validation is needed.

Combining geometry, preliminary estimates and flow information gives the design team several views of the same candidate before committing to detailed analysis.

Available statistical methods, output items and application ranges can be reviewed in a product demonstration.

Refine a hull and compare alternatives

Use the integrated engineering workflow to review and modify hull forms, manage design alternatives and continue their assessment. A candidate can be revisited after geometry inspection or flow analysis, making iteration part of the same design study.

Design studies can start from an AI-generated candidate or an uploaded reference hull. Keeping both in the project lets the team review a proposed change in the context of the existing design before the next analysis.



Guided demo: two factors, seven steps each.

Define the change

Begin with a specific design question based on the previous review. Identify the region or characteristic to revisit, modify the form using the available tools, and inspect the resulting geometry. Keeping the question explicit makes the next comparison easier to interpret and helps determine which analysis is appropriate.

Compare on a common basis

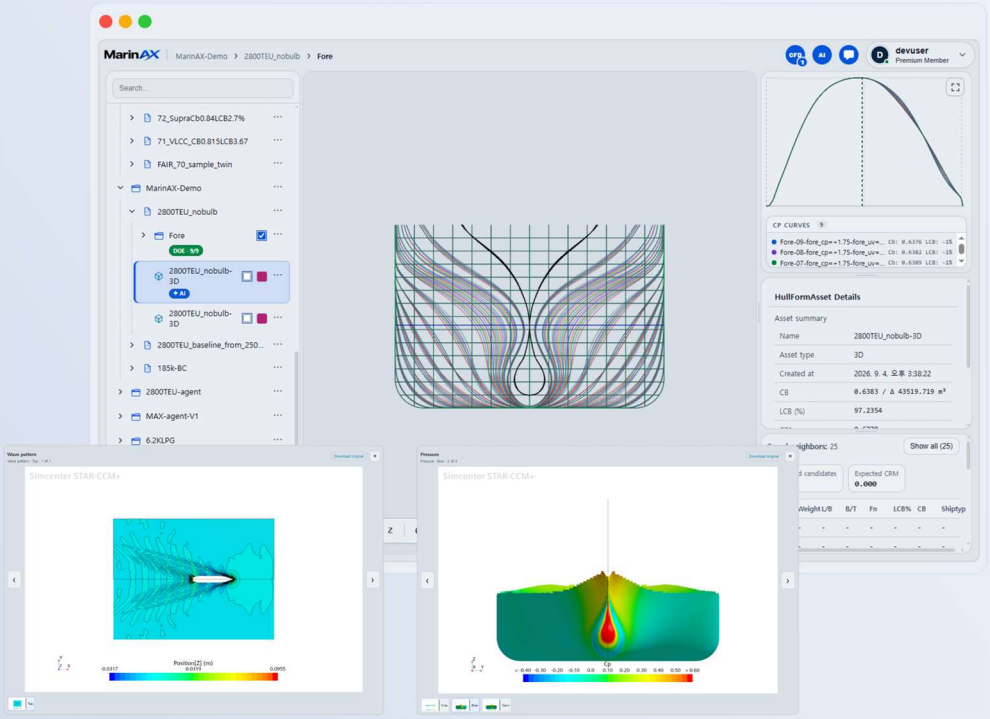
Keep useful alternatives in the project and choose the forms you want to compare. Review their geometry and associated information, then use AI prediction or CFD for the next assessment. For a meaningful engineering comparison, use consistent operating conditions and consider the relevant results together rather than selecting a form from appearance alone.

The workflow supports iteration across generated hulls and existing designs. The depth of analysis can increase as the candidate set becomes more focused.

The public demo fixes these two factors at seven steps and locks other transformations. Product controls can be reviewed in a demonstration.

Connect selected designs to CFD validation

Use high fidelity CFD when a selected hull requires a more detailed performance assessment. MAX-Hull connects the design workflow to CFD so that fast exploration and higher-confidence validation can form successive stages of the same engineering study.



Hull design reviewed with CFD wave-pattern and pressure results.

Select the cases that matter

Start from the alternatives identified during geometry review, statistical estimation or AI prediction. Define the hulls and operating conditions that need further investigation. This focuses the detailed analysis on the questions that remain important after the earlier design exploration and provides a clear basis for comparing the resulting cases.

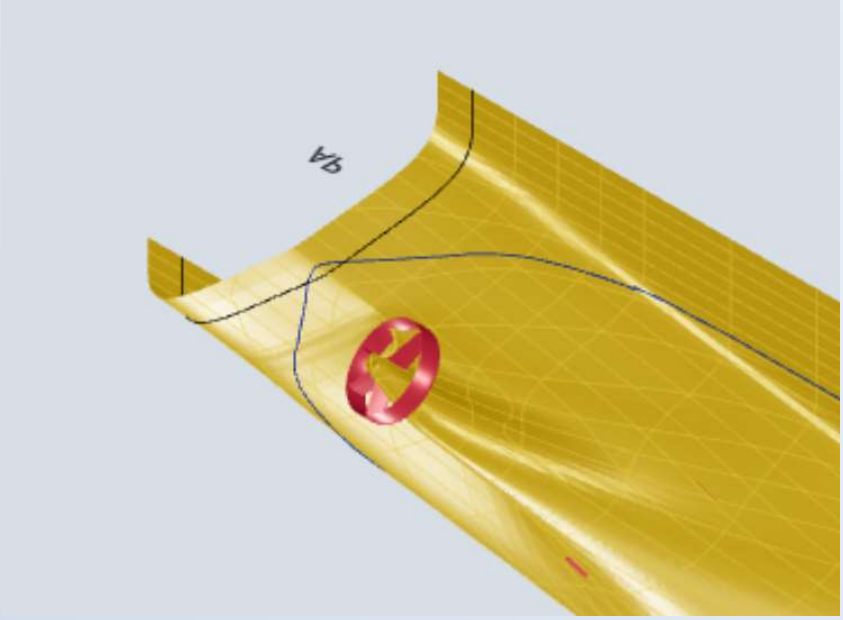
Review the CFD evidence

Inspect the available CFD results, including the wave and pressure views illustrated here, and relate them to the candidate geometry. Use the findings to assess the alternatives and determine the next design action. A selected form may progress, return for modification or become the reference for a subsequent comparison.

AI provides rapid early insight. High fidelity CFD supports verification and detailed performance assessment.

Design energy saving devices on the hull

Extend the design study from the hull to energy saving devices (ESDs). MAX-Hull places flow-control fins, a duct and pre-swirl stators on the selected hull. Inspect generated devices, adjust their design parameters and regenerate the geometry within the same workspace.



Guided demo: generated duct and stators on the stern. Forebody hidden for inspection.

Flow-control fins

Set station, waterline and angle, then define length, half-span and thickness. Choose port, starboard or both sides to control placement.

Duct geometry

Set shaft center, offset, mean radius and NACA profile. Adjust chord, thickness and pitch around the duct.

Pre-swirl stators

Set each blade angle and pitch, root and tip radii, chord and thickness. Inspect the generated arrangement on the hull.

Adjust parameters and regenerate

Open the relevant device editor to review the recommended values. Change a parameter and generate a new device geometry, then inspect its placement on the hull. The fin example exposes position, orientation and size in one dialog; duct and stator editors provide their own geometry controls.

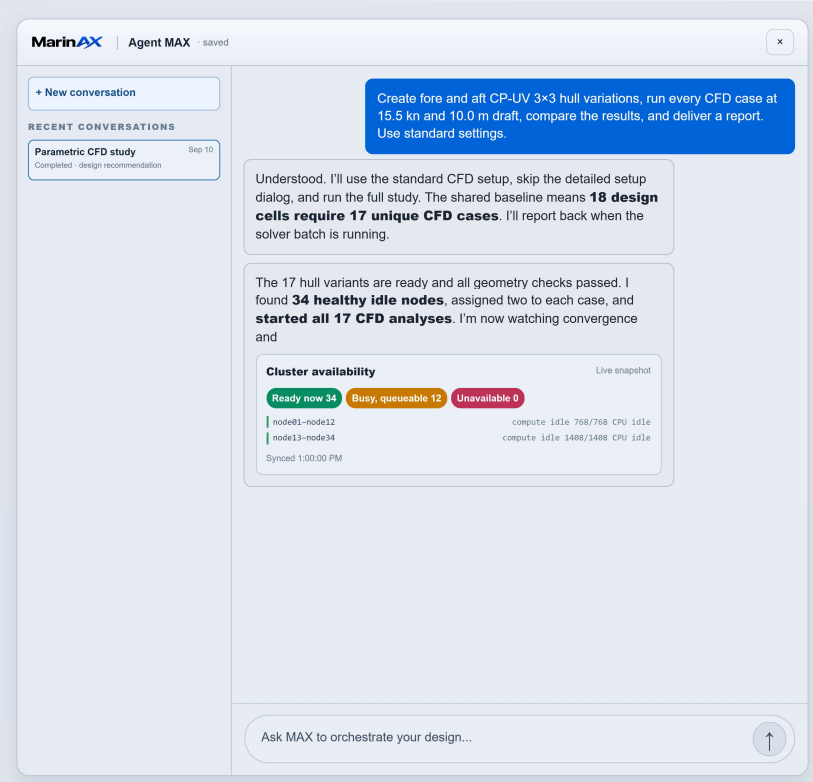
Compare configurations in context

Keep the selected hull and its generated devices together in the project. Review how the configuration changes as individual devices are adjusted, and use this geometric review to define the next performance study. Assess the hydrodynamic effect with an appropriate analysis before making a final design decision.

ESD geometry design is demonstrated here. Device placement alone does not establish an efficiency improvement.

Coordinate engineering through conversation

Describe a design objective in natural language and ask Agent MAX to coordinate the associated engineering tasks. The agent brings together generation, prediction, comparison and optimization within the MAX-Hull workflow, guided by the judgment of a hull form specialist with 40 years of experience.



*A conversational request and execution plan.

State the objective

Explain the target of the study and the work you want performed. Include the hull variations, operating conditions and requested comparison when they are relevant, so the task is connected to a clear engineering question.

Coordinate connected tasks

Agent MAX orchestrates work across the design environment. The conversation can connect hull generation with analysis and comparison, allowing a multi-step study to be expressed as one engineering request.

Review progress and continue

Follow the task status in the conversation and review the resulting information. Use the outcome to choose a follow-up question, request another comparison or continue the design study with a revised objective.

Agent MAX screens illustrate the website demonstration and its conversational workflow.

Run a design study and organize the results

A single request can describe the hull variations, analysis conditions and result summary required for a study. The website demonstration shows Agent MAX coordinating these connected tasks and returning information for the next engineering decision.

"Create fore and aft CP_UV 3 x 3 hull variations, run every CFD case at 15.5 kn and 10.0 m draft, compare the results, and deliver a report. Use standard settings."

1 Specify the study

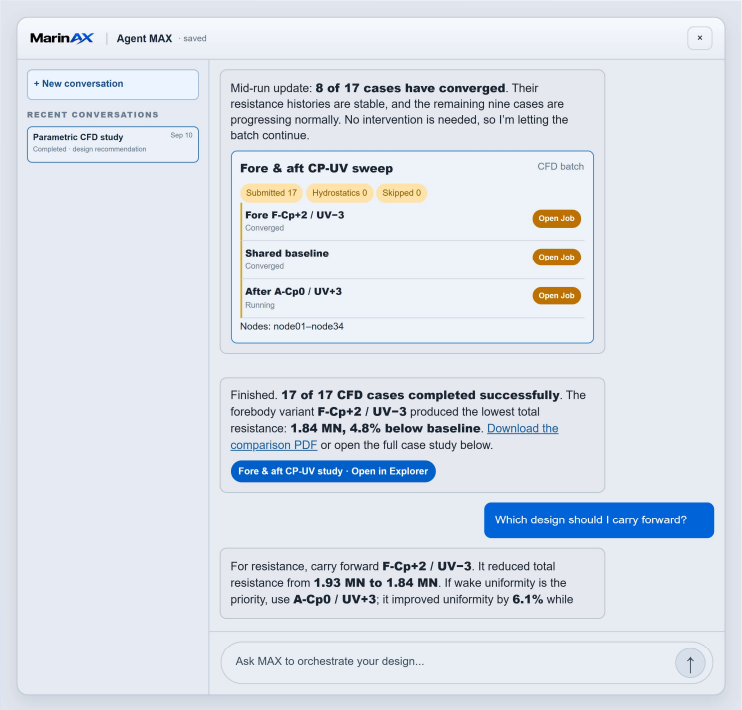
State the parameters to vary and the operating conditions to use. In this example, the request defines a fore and aft variation study with a common speed and draft, followed by comparison and reporting.

2 Follow execution

Agent MAX coordinates the requested generation and analysis tasks. The conversation shows execution progress, allowing the designer to see how the study is advancing before reviewing the results.

3 Compare and continue

Review the comparison and requested report, then use the findings to select a candidate or define the next design task. The conversation provides a point from which to continue the study.



Result comparison in the website example.

Illustrative workflow. Resistance values and improvement percentages in the demo are not validated product performance claims.

MarinAX

MAX-Hull

Share your target vessel and design goals with MarinAX. A focused demonstration can connect the product capabilities to the questions your team needs to address, from generating a new form to reviewing an existing hull and planning further analysis.

Explore MAX-Hull with your design workflow

Target vessel and operating conditions

Vessel type, principal dimensions, operating speed and draft.

Current design process

Existing hull data, engineering tools and the design questions under review.

Capabilities to explore

Generation, AI prediction, ESD design, geometry review, CFD integration or Agent MAX.

Try the guided demo maxhull.marinax.co.kr

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