

PROPELLERS

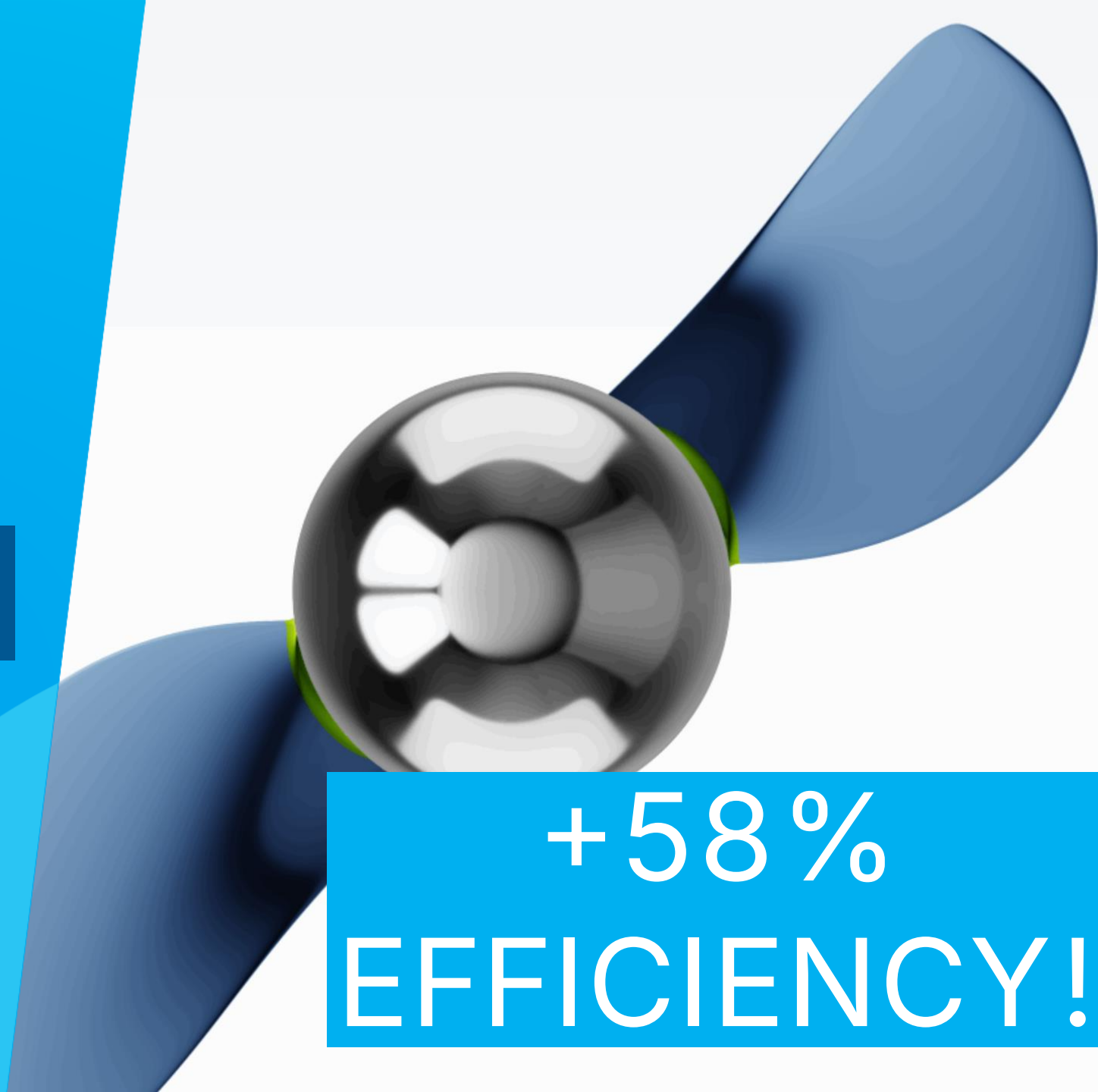
AI

PROPELLER

DESIGN



AirShaper



+58%
EFFICIENCY!



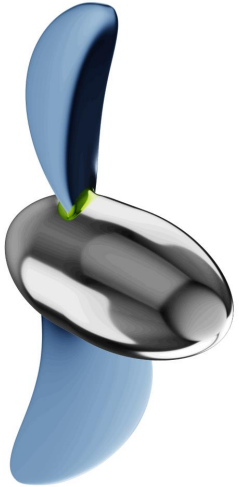
AirShaper

THE COMPETITION

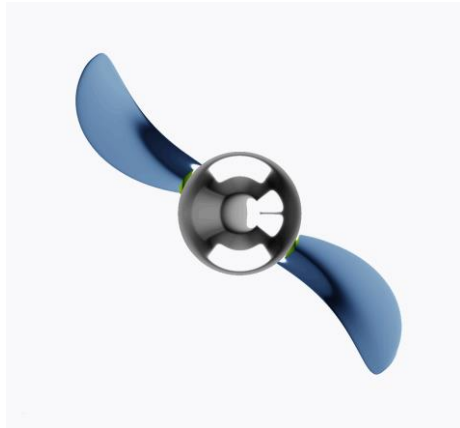


APPROACH

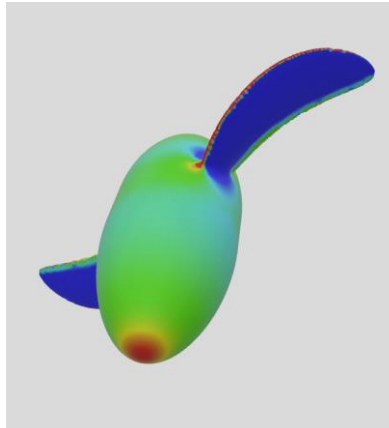
Parametric
model



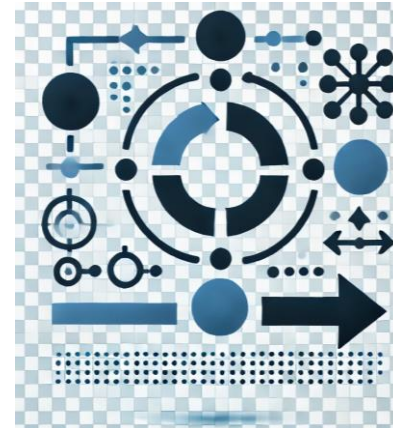
Design space
exploration



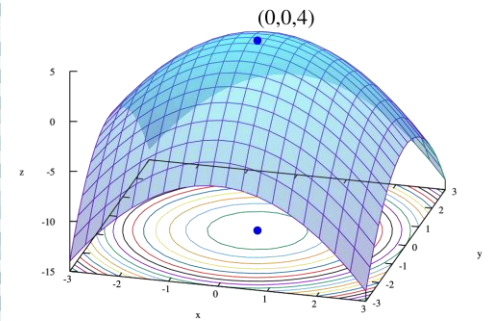
CFD
Simulations



Surrogate
model

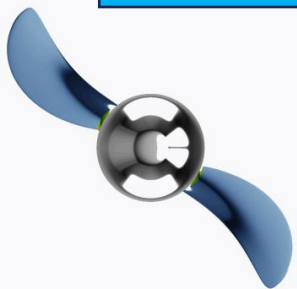


Optimization
& Validation



PARAMETRIC MODEL

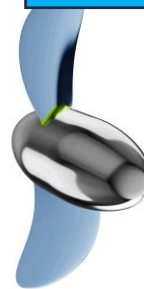
Chord length



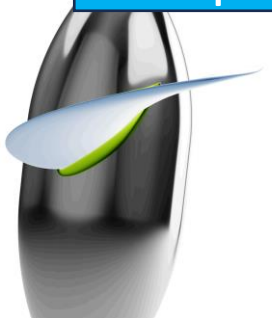
Radial shift



Pitch



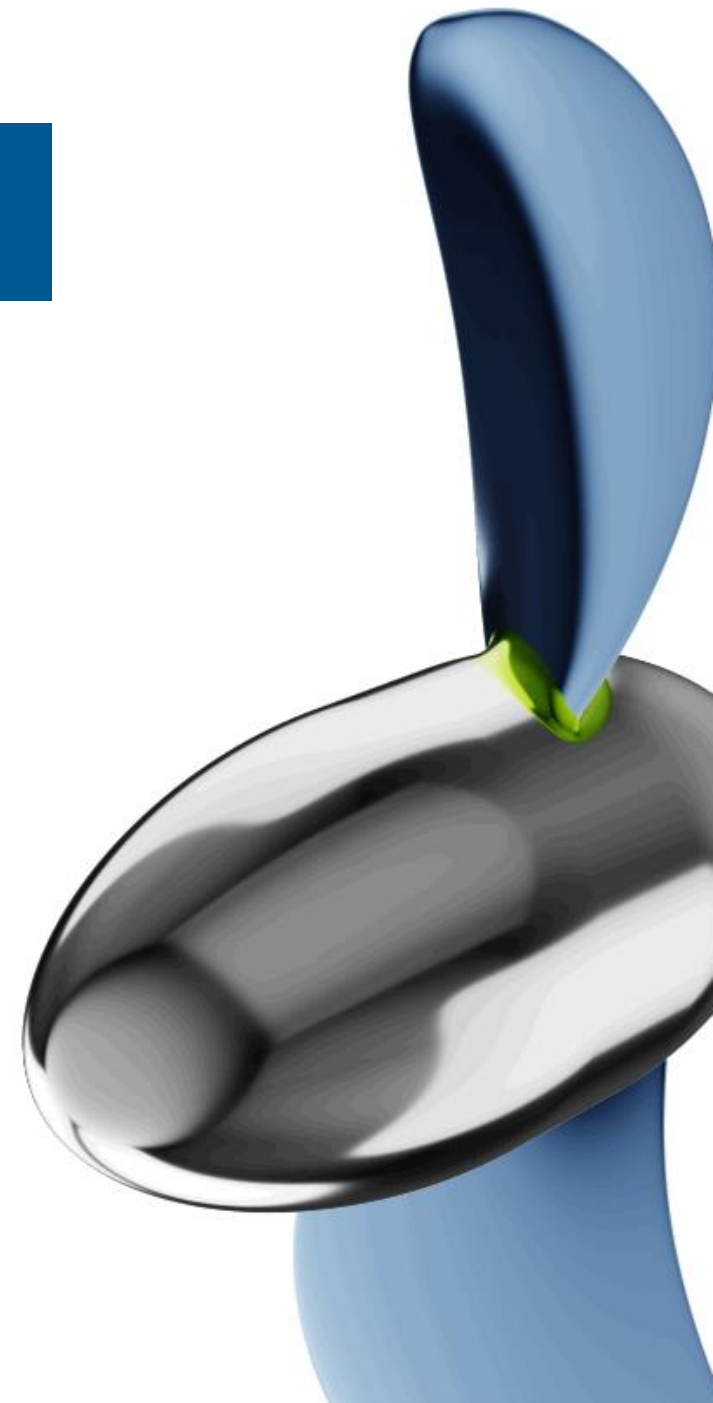
Tip AoA



Tip rake

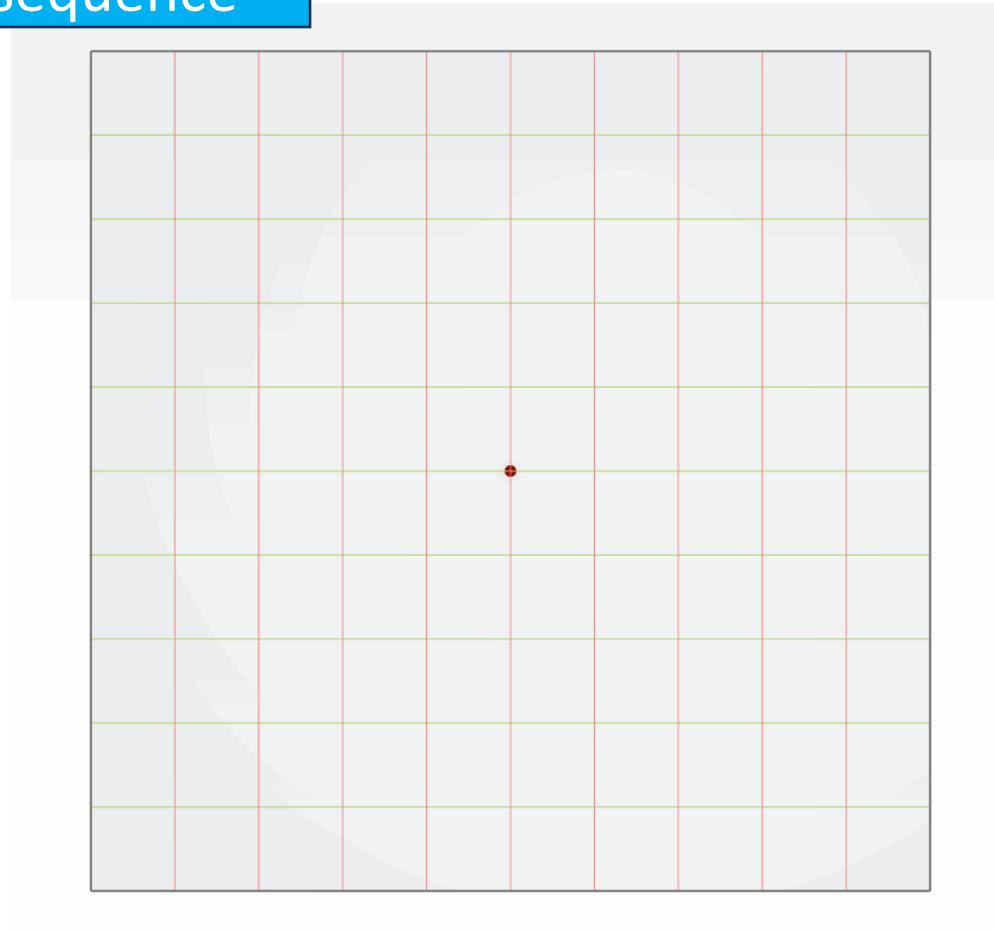


Radial range



DESIGN SPACE EXPLORATION

Sobol sequence



CFD SIMULATION – API SETUP

Simulation Setup

1 | Simulation Type

On The Ground ☒ Above The Ground
Static ☒ Moving
Air ☒ Water

2 | Velocity *

Uniform ☒ Logarithmic

Enter object speed, i.e. 1

Please select velocity unit ▾

3 | Model Rotation *

X (Roll): * Y (Pitch): * Z (Yaw): * Reference 

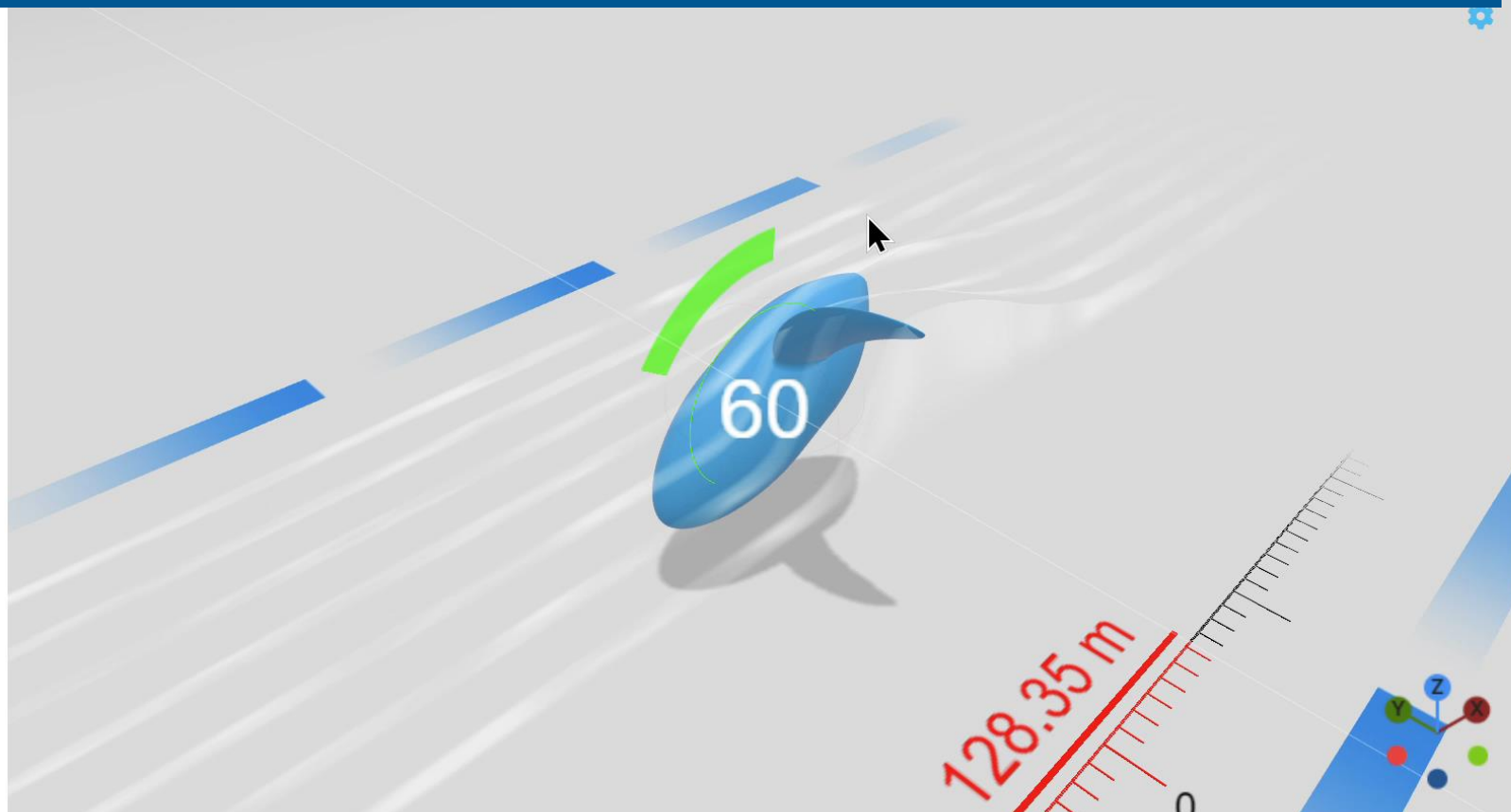
0  60  0  

4 | Model units *

Please select unit ▾

5 | Model Scale *

1 



 Wheels

 Propellers

 Radiators

Model Dimensions (approximate)

CFD SIMULATION - RESULTS

An

3D

Surface Pressure

Surface Friction

Vertical Streamlines

Horizontal Streamlines

Noise

Elements

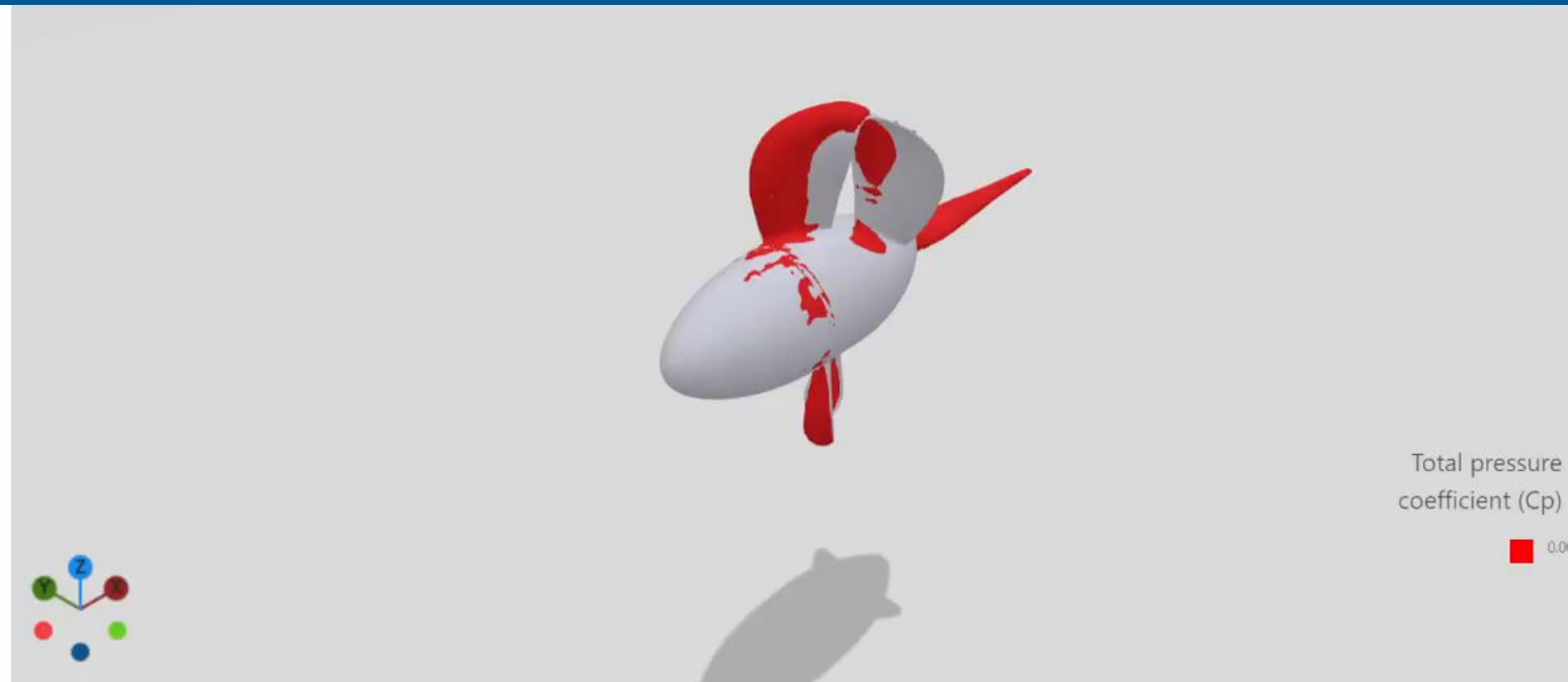
Forces

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Simulation Output

Frontal Area [m²] *: 0.002

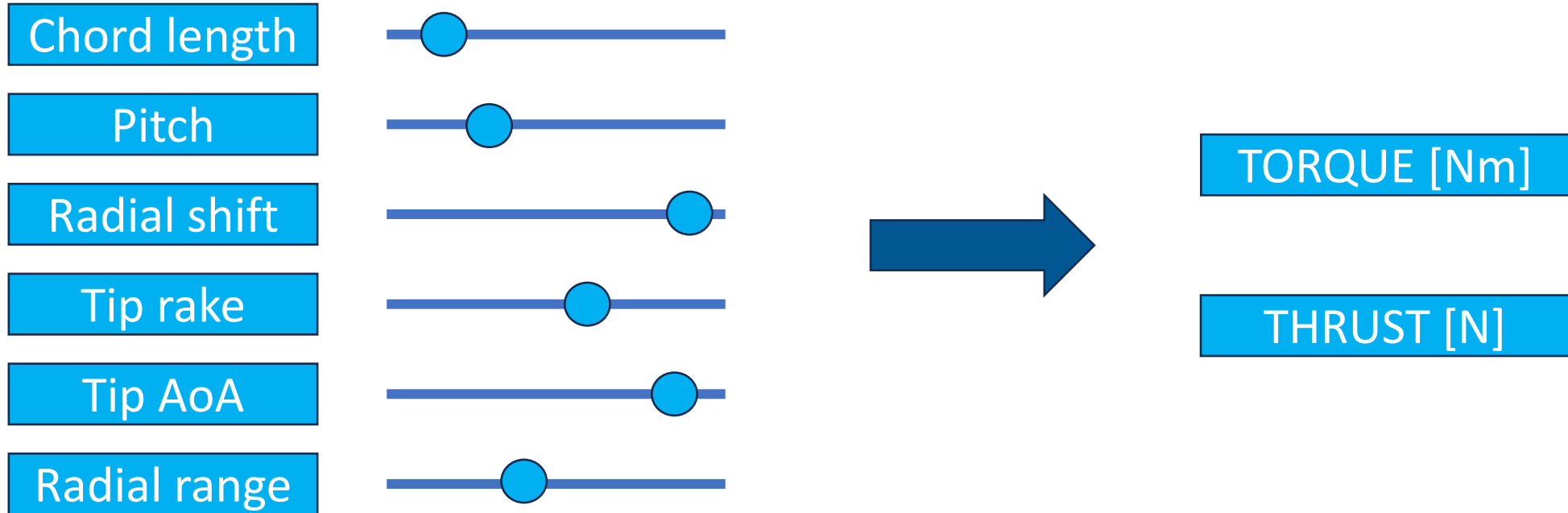
Sharable Link

https://app.airshaper.com/simulations/bestdesign_j12[Copy Link](#)

Share Simulation

Here you can share this simulation with other people. Just enter their email address below.

SURROGATE MODEL



OPTIMIZATION & VALIDATION

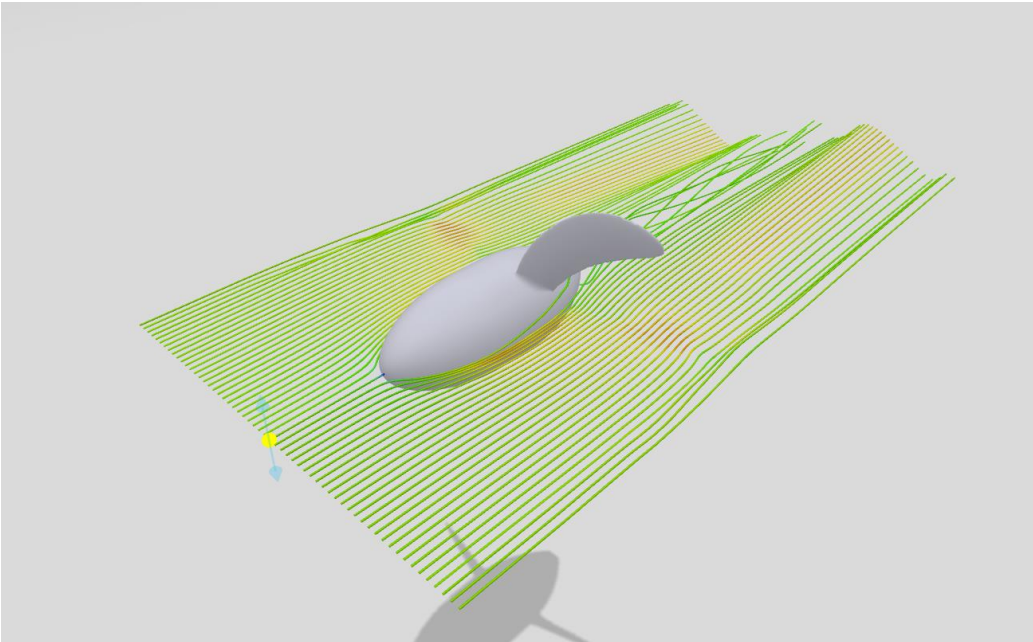


+58%
EFFICIENCY!

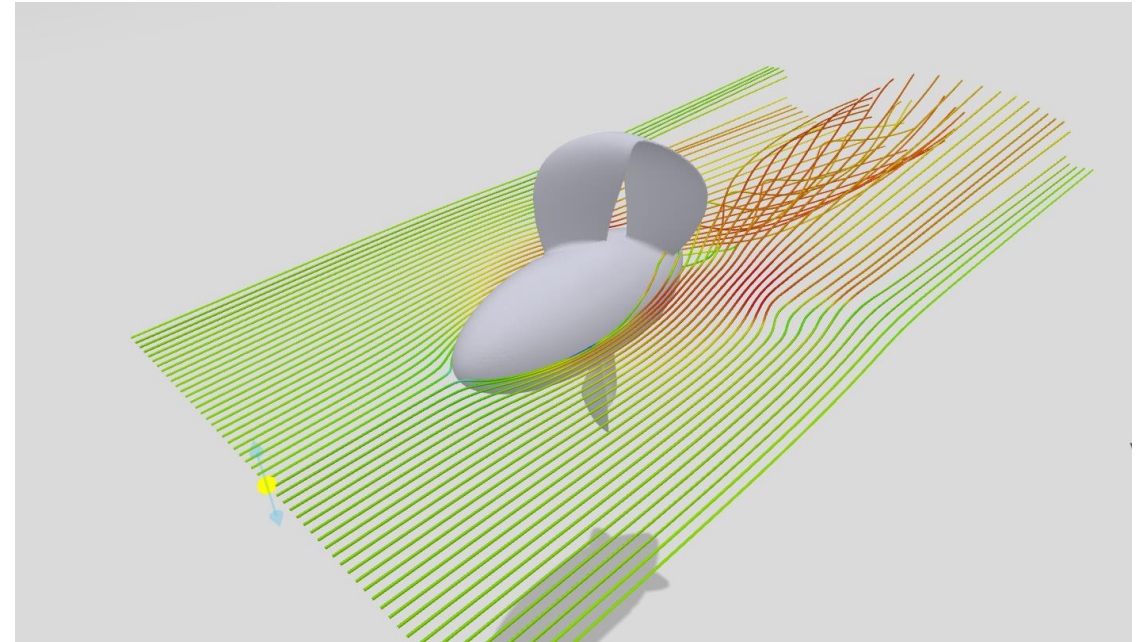


SEE FOR YOURSELF

Conventional propeller



Toroidal propeller



OTHER COOL STUFF

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CAR AERODYNAMICS

APTERA TEST DRIVE



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AEROSPACE

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300 MPH HYPERCAR DESIGN



[7X Design Rayo - How to design a 300 mph hypercar based on a Lamborghini Huracan](#)

OTHER COOL STUFF

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Analysis

3D Pressure Cloud

Surface Pressure

Surface Friction

Vertical Streamlines

Horizontal Streamlines

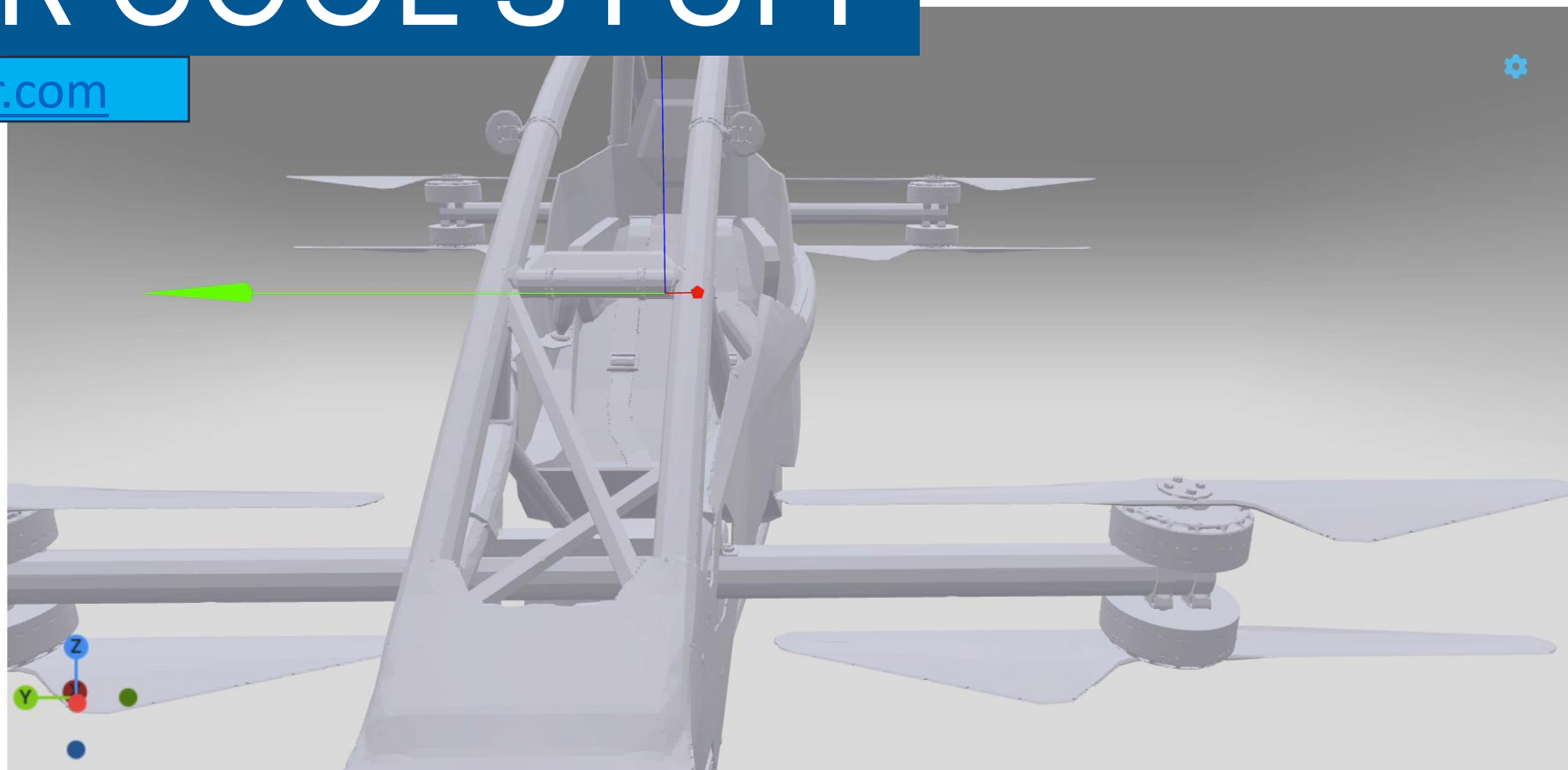
Noise

Elements

Forces

Improvement New

Our intelligent algorithms provide actionable insights to optimize your designs effortlessly. Try our new design advice and see how small changes can lead to significant performance improvements.

[Learn More](#)Coordinate system ⓘ: Wind tunnel ☒ Object

Forces [N]

X: 1.47e+2

Y: -3.04e+0

Z: 2.57e+2

Moments [Nm]



AirShaper

THANK YOU!

wouter@airshaper.com