
DARcorporation

Design • Analysis • Research

September 2020

Announcements

AIAA Sustained Service Award



Dr. Willem A. Anemaat, President of DARcorporation, has been selected to receive the 2021 AIAA Sustained Service Award.

This award is presented to recognize sustained, significant service and contributions to the American Institute of Aeronautics and Astronautics, AIAA, by members of the Institute. [AIAA Sustained Service Award](#)

NASA STTR Research Contract

Design Analysis and Research Corporation (DARcorporation) and the University of Michigan MDO Lab received a NASA STTR contract to develop an Open Source Distributed Electric Propulsion Optimization (DEP-MDAO) Tool. NASA selected 409 technology proposals from 312 small businesses. DARcorporation was the only Kansas company to be selected. The tool integrates aircraft sizing, propulsion system sizing and distribution, wing design and propeller design.

Featured Services

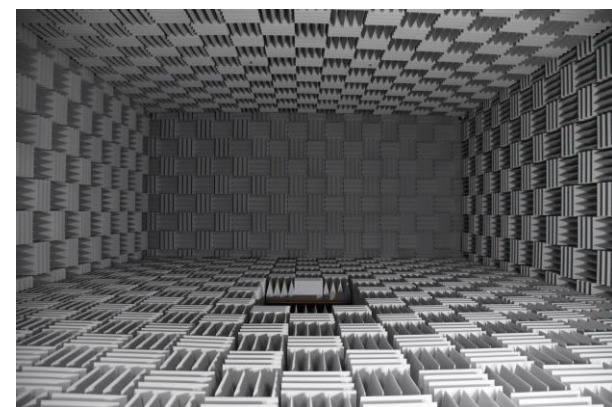
Propeller And Ducted Fan Testing

We can develop a low-cost initial evaluation of your design, to see if we can improve your concept.

- How well does your ducted fan or propeller perform?
- Are you maximizing the output of your ducted fan or propeller?
- Is the performance optimized?
- How much noise is really being generated by your ducted fan or propeller?
- Do you want to reduce the noise without sacrificing thrust?

After our initial evaluation, we will develop a proposal with an estimate of level of performance/acoustics improvements achievable. This will result in a low-risk decision to go ahead with an improved design.

DARcorporation engineers will analyze the results, evaluate the data and provide a report detailing the characteristics of the system and will recommend options to increase the thrust, reduce the power usage, reduce the noise or improve the efficiency of the system. We can then refine or redesign your ducted fan or propeller system to maximize the performance to your criteria.

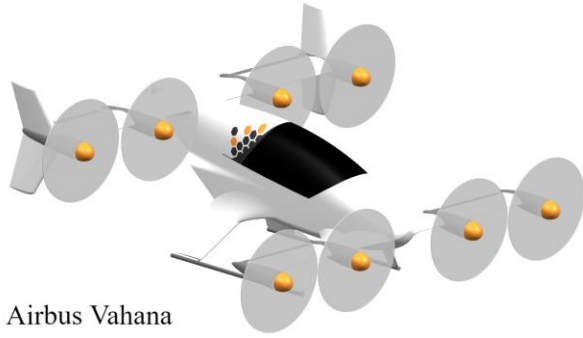


APP 7.0.3.0 Release Notes

New Features Include:

- The new UI option for users with large screens
- Table factor being displayed when different than 1
- Better feedback on failed mission computations
- Increase of the default window size

New Aircraft CAD Models



Airbus Vahana

DARcorporation has added 4 NEW Aircraft CAD models to our [online store](#):

- Airbus Vahana
- Beechcraft Model 99
- Boeing 747-400
- Boeing 767-300



Beechcraft Model 99

Our on-line store offers over 117 aircraft models including:

- Business Jets
- Commercial Airlines
- Fighter Jets
- General Aviation Aircraft
- Gliders
- Military Bombers
- Military Transports
- UAVs



Boeing 747-400

CAD models are available in 3 categories: Aircraft (\$99), Weapons (\$49) and Miscellaneous (\$19.95).

CAD models are 3D solids and are available in multiple file formats. Purchasing a model will allow access to all file formats. File formats are:

- .prt
- .x_t (parasolid)
- .igs
- .stp
- .stl
- .model (CATIA)
- .sat (ACIS)
- .dwg
- .3ds



Boeing 767-300

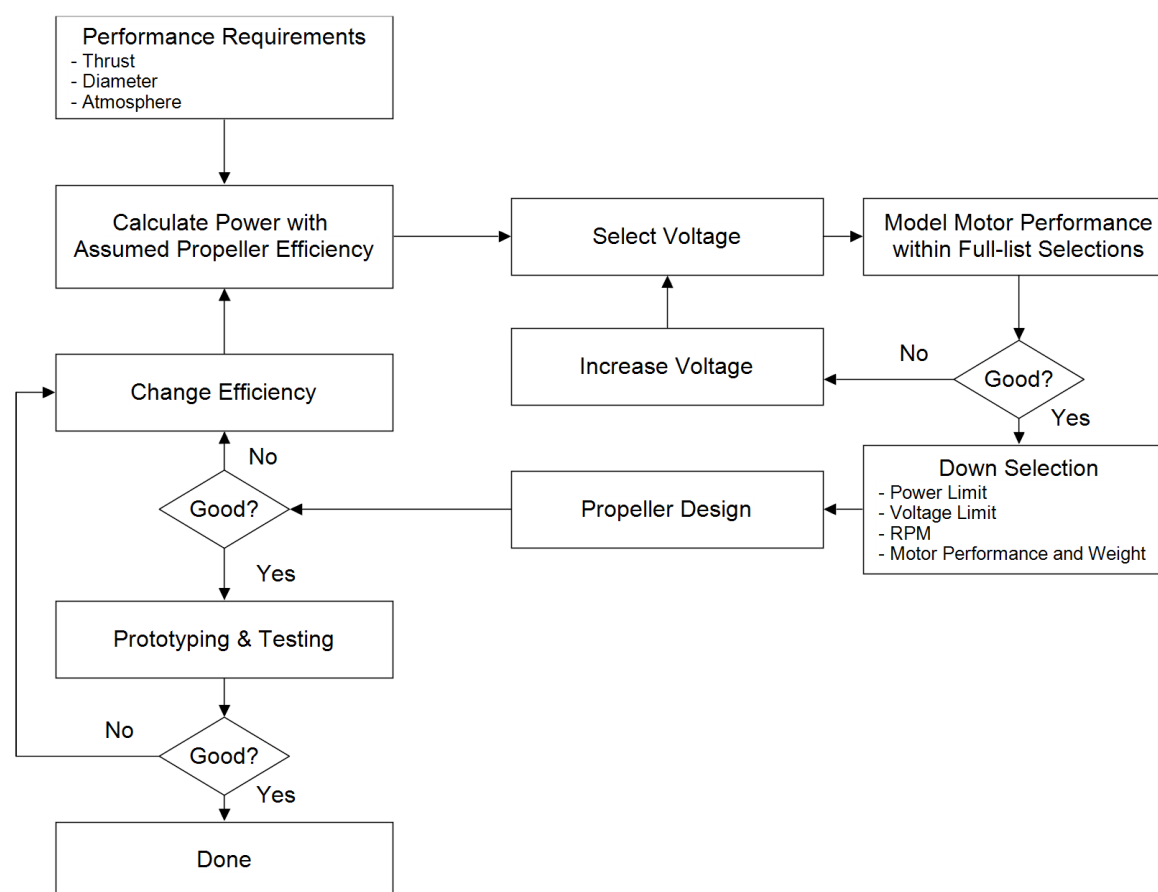
The aircraft CAD models were created by DARcorporation engineers using Siemens NX CAD.

The models were created based on publicly available, open source data (not manufacturer's data) from sources like Jane's All the World's Aircraft, Roskam's Airplane Design Series and publicly available government reports.

Disclaimer: DARcorporation cannot guarantee the accuracy of these models due to limited public information.

UAV Propulsion System Design

DARcorporation engineers have extensive experience in overall propulsion system optimization, achieved by improved rotor/propeller/ducted fan design (performance and acoustics) and parameter-guided motor selection, verified by testing in a controlled environment.



Based on Blade Element Momentum (BEM) theory, DARcorporation has developed and customized in-house software for initial aerodynamic design of propeller blades in ducted or unducted configurations.

Charts of thrust and power coefficients, as well as the full power-thrust curve can be constructed using in-house and/or commercial tools. The deliverables include recommendations on the number of blades, airfoil selection, chord and pitch distribution, rotor diameter, RPM, etc. DARcorporation also has the ability to select the ideal motor/engine for your configuration, either fuel burning or electric.

DARcorporation engineers are experienced in data acquisition, test planning and test management to ensure the propulsion system performs according to your design goals. We will use our state-of-the-art testing equipment/facilities to test your propeller/ducted fan system through a range of sizes and operating conditions.

White Paper: High Efficiency Electric Propulsion Design and Testing

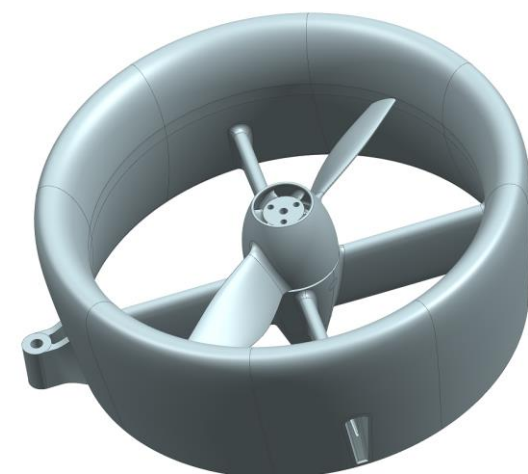
This whitepaper, available on the DARcorporation website, outlines the design process and presents verification testing of an electric ducted fan for small UAV integration.

Flight time estimation is made from performance testing results and vehicle weight estimations.

The use of 3D printing allows for quick turnaround and acquisition of test data while simultaneously lowering costs significantly.

The described process points to the potential of either increasing the payload or the flight time or both, depending on how the vehicle is configured.

Download [High Efficiency Electric Propulsion Design and Testing](#)



Aerospace Webinars

[Free History of Airplane Design Webinar](#)

Join Dr. [Jan Roskam](#) as he profiles some of the best and worst airplane manufacturers in his webinar “History of Airplane Design”. Learn from a legend in aircraft design how some of today’s best known companies got started, persevered or went bankrupt, merged or made it on their own.

Each one-hour webinar focuses on specific companies and their contributions to the commercial, military and transport aircraft industries. All webinars are free. Please register through the links below.

[History of Airplane Design: The English Airplane Manufacturers](#) – Part I (October 7)

[History of Airplane Design: The English Airplane Manufacturers](#) – Part II (November 4)

[Download past History of Airplane Design webinars](#)



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