



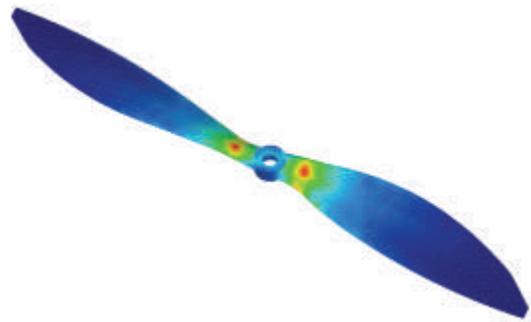
# Propellers

**Design, Prototyping and Testing**

## Overview

Design, Analysis and Research Corporation (DARcorporation) engineers are capable of performing detailed aerodynamic design and analysis on any propeller. Flow characteristics around the propeller rotor can be accurately analyzed and the optimal propeller layout can be determined to ensure superior aircraft performance. The pressure distribution obtained from the aerodynamic analysis is also used in subsequent structural design and analysis for optimal strength and weight of the propeller blades and related structures. DARcorporation can quickly construct propeller prototypes and perform performance testing as well, so DARcorporation is a one-stop shop for your propeller design needs.

include recommendations on the number of blades, airfoil selection, chord and pitch distribution, rotor diameter, RPM, etc.



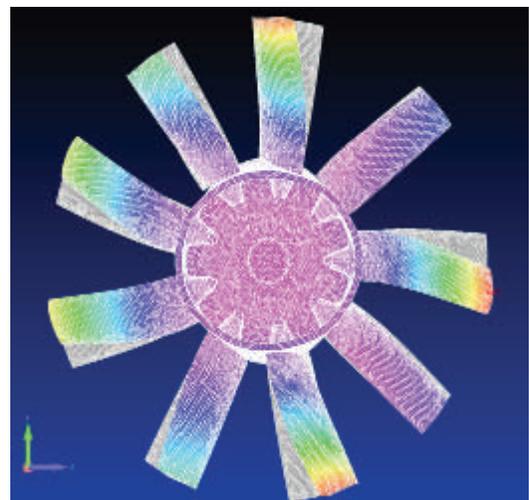
## Structural Design and Analysis

DARcorporation utilizes physics-based high-fidelity Siemens NX Nastran and Autodesk Nastran to analyze the propeller and rotor structures. DARcorporation engineers can perform structural analyses on strength, vibration, fatigue and optimization. Unwanted vibrations are detected and designed out of the system. The propeller is designed in such a way that the natural frequencies of the blades are different from the operating RPM.



## Aerodynamic Design and Analysis

Based on Blade Element Momentum (BEM) theory, DARcorporation has developed and customized in-house software for initial aerodynamic design of the propeller blades. Using high-fidelity CFD with rotation simulation, the full power-thrust curve can be constructed. The deliverables of aerodynamic design





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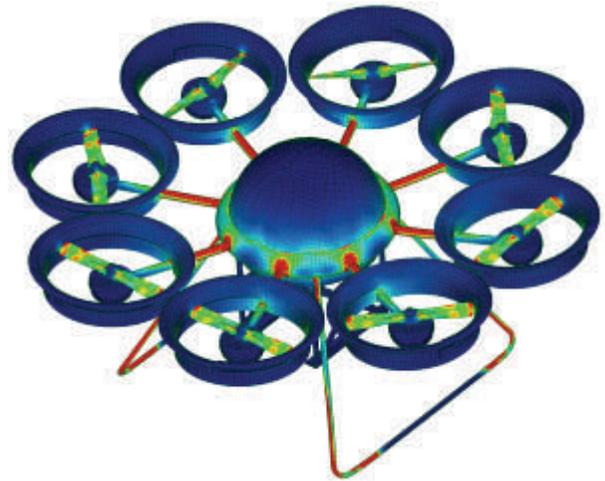
## Prototyping and Testing

DARcorporation engineers are familiar with rapid prototyping. We also have extensive experience in data acquisition, test planning and test management to ensure the performance of the propeller we design meets your design goals.



## Drones/UAVs

DARcorporation has collected and analyzed a large number of commercially available drones and recognized the potential for significant improvement in the area of propeller performance and efficiency, as well as in the area of structural design. Optimizing propeller blades by performing a detailed aerodynamic analysis will ensure that the drone flies longer, further and more efficiently. Optimized structures will offer the same benefit. The extensive expertise DARcorporation has in aerodynamics and structures can provide any drone with a substantial improvement in propeller performance and overall quality.



## The DARcorporation Advantage

Experience in the design, detailed analysis and building of prototypes gives DARcorporation a unique advantage over other companies, since we can go from initial design all the way through full size manufacturing. The unique tools developed for design and analysis make DARcorporation the best choice for any custom propeller development. DARcorporation engineers can advise on what the best materials are for the design and what the best configuration is. We will work with you to design and optimize the propeller for performance, manufacturability and cost.

