

Tyler N. Doyle
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- EDUCATION** **Stanford University** Stanford, CA
Bachelor of Science in Mechanical Engineering Sept 1995 - June, 2000
- Captain, Stanford University Varsity Sailing Team.
 - Co-Chair, ASME Stanford Student Chapter
 - Took 1-year leave of absence working as a database programmer at Doyle Offshore Sails, St Philip, Barbados. Developed a production management system and an automated sales presentation system based on OLE scripting of CorelDraw.
- Master of Science in Mechanical Engineering Sept 2000 - Dec, 2001
- Flow Physics and Computation Division focusing on the numerical solution of governing physics partial differential equations on realistic engineering geometries.
 - Course work includes: Fluid Mechanics, Linear Algebra, PDE's, Finite Element Methods, Numerical Methods, Turbulence Modeling, C programming, Mechanical design, Statistics.
- PHD Thesis Research* Jan 2001 – Nov 2004
- Award Stanford Graduate Fellowship
 - Research on applying RANS CFD to shape optimization conducted at the Center For Turbulence Research CTR (Joint Stanford/NASA research group)
 - Developed a CFD based automated sail shape optimization system to optimize the sail sectional shape of a 300ft modern Clipper ship, the Maltese Falcon.
 - Compared computational and wind tunnel data to validate optimization approach.
 - Worked to validate separated flow RANS CFD results for downwind geometries using wind tunnel models in a 7' by 10' wind tunnel at NASA Ames.
 - Worked to start the Stanford Yacht Research group to explore the use of automated shape optimization algorithms in the yachting industry.
- EXPERIENCE** **Doyle Sailmakers** Salem, MA
Director of *Engineering & Sail Designer* Dec 2004 -present
- Design and manage in-house and customer based R&D projects related to structural membrane engineering and inflatable structures.
 - Design racing sails for yachts ranging from Olympic dinghy's to 300ft Mega-yachts.
 - Coordinate sailing yacht wind tunnel testing programs and data analysis
 - Active research using RANS based turbulent flow CFD and advanced 3d parametric modeling for sail shape and rig tune optimization
- Selected R&D Projects**
- Rig and Sail design for the 285ft Maltese Falcon June 2001 - April 2006
- Designed sails for world's largest private sailing vessel
 - Combined research done at Stanford and data from 5 years of prototype testing to design and construct sails for the 3 innovative free-standing carbon fiber rigs on the Maltase Falcon.
- Sail Design and Sail Handling Systems for 245ft Mirabella V July 2000- Feb 2004
- Designed and optimized sail plan for the world's largest sloop rigged sailboat
 - Designed segmented mainsail/batten system to handle the world's largest mainsail
 - Designed automated tension release systems for mainsail battens to handle extreme loads.
- High Altitude and Conventional Airship Design Dec 2004 - Jan 2008
- Designed and built prototype helium filled High Altitude Airship.
 - Designed load patches for use on Lockheed High Altitude Airship program.
 - Worked on prototype design of an autonomous conventional hull airship.
- Computational Sail Shape and Sail Plan Optimization Dec 2008 - present

Current R&D Projects Include:

- Stress-strain composite FEA modeling of sails for use in determining optimum fiber and panel layouts in sails.
- Automated shape optimization of sails by coupling RANS CFD, velocity prediction programs VPP's and automated optimization procedures.
- Provide yacht designers with wind tunnel like aerodynamic data for use in parametric studies and VPP analysis.
- Coupled fluid-structure calculations used to calculate true flying shapes of sails.

Wind Turbine Configuration and Blade Optimization

Aug 2009 - present

Current R&D Projects Include:

- RANS CFD based shape optimization of a structure that accelerates flow into vertical axis wind turbines.
- RANS CFD modeling and optimization of Savonius type vertical axis wind turbine blades.
- Wind Turbine site flow prediction using RANS CFD models to model flow around both isolated structures and interacting structures like down town urban environments.

SELECTED PUBLICATIONS

1. "Improving the Design of Sails Using CFD and Optimization Algorithms", High Performance Yacht Design Conference, Auckland NZ, 4-6 December, 2002.
2. "Towards sail-shape optimization of a modern clipper ship", Center for Turbulence Research Annual Research Briefs 2002.
3. "Optimization of Yard Sectional Shape and Configuration for a Modern Clipper Ship", HISWA Conference, Amsterdam, 2002.