

### Finite Element Analysis

Neo Avanti has adopted Ansys® as the Finite Element analysis (FEA) software. Ansys® has full non-linear capabilities (nonlinear geometry, contacts and materials) for state-of-the-art mechanical simulations. Ansys® has more capabilities than non-linear analysis and Neo Avanti use the software to its fullest. Neo Avanti is capable of solving the following analyses:

- Fatigue analysis
- Implicit Dynamic analyses (Transient Mechanical, Modal, Spectrum and PSD)
- Explicit Dynamic analysis (with AutoDyn)
- Topology Optimization
- Thermal analysis (Static and Transient)

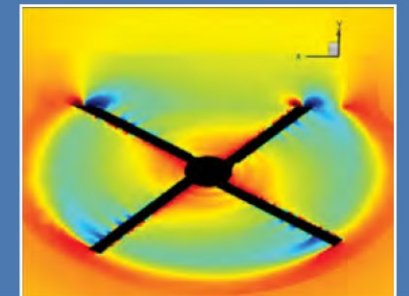
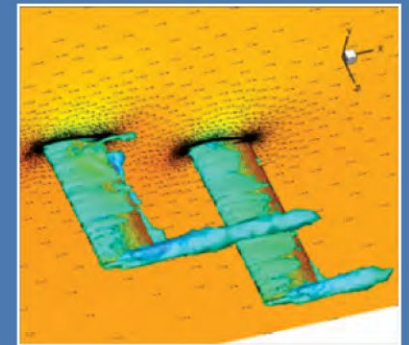
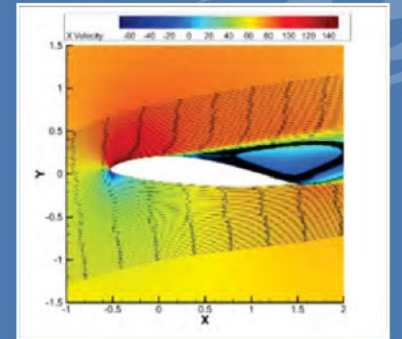
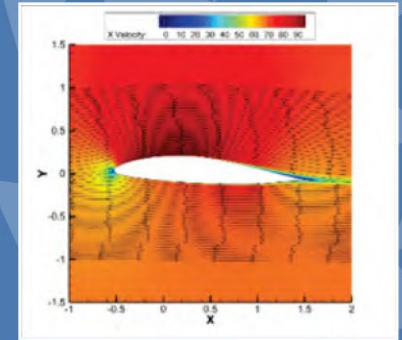
Our FEA expert is our Chief Engineer (Mr F. Pietra). He has more than 15 years of experience in using the software and simulating the behaviour of complex mechanical design. In the last few years, Mr Pietra and the FEA team have been involved in mechanical and fatigue simulations for all the main dynamic components of a Helicopter: Main Rotor, Tail Rotor and Swashplate. They also work on the Landing Gear of the Helicopter (explicit dynamic and mechanical simulations) and on full-frame Helicopter modal analyses to solve vibration problem.

### Computational Fluid Dynamics

Neo-Avanti has adopted Ansys® Fluent as the Computational Fluid Dynamics (CFD) software. Ansys® Fluent has a wide range of simulation capabilities in fluid mechanics and aerodynamics. It can be coupled with Ansys® FEA for enhanced fluid and structural interaction simulations. Ansys® Fluent has multiple capabilities allowing the full generation of data required to extensively study flow fields. The data that is calculated becomes even more valuable when combined with the specialised CFD postprocessing visualisation software, Tecplot 360.

This provides Neo-Avanti with not only the means to provide accurate fluid simulation data but present it in an insightful and professional manner by using the two sets of software in tandem. We are capable of solving and are not limited to the following analyses:

- Steady or transient (time dependent) interactions and motion effects.
- Aerodynamic interference and design parameter studies.
- Rotorcraft specific applications such as main rotor and downwash analyses.
- General flow field analyses ranging from the flight of subsonic aircraft to the study of shock wave propagation.
- Providing the necessary aerodynamic data for the optimisation of Flightlab models.



Tel: +27 12 807 0600  
Email: brahm.hattingh@neoavanti.com

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