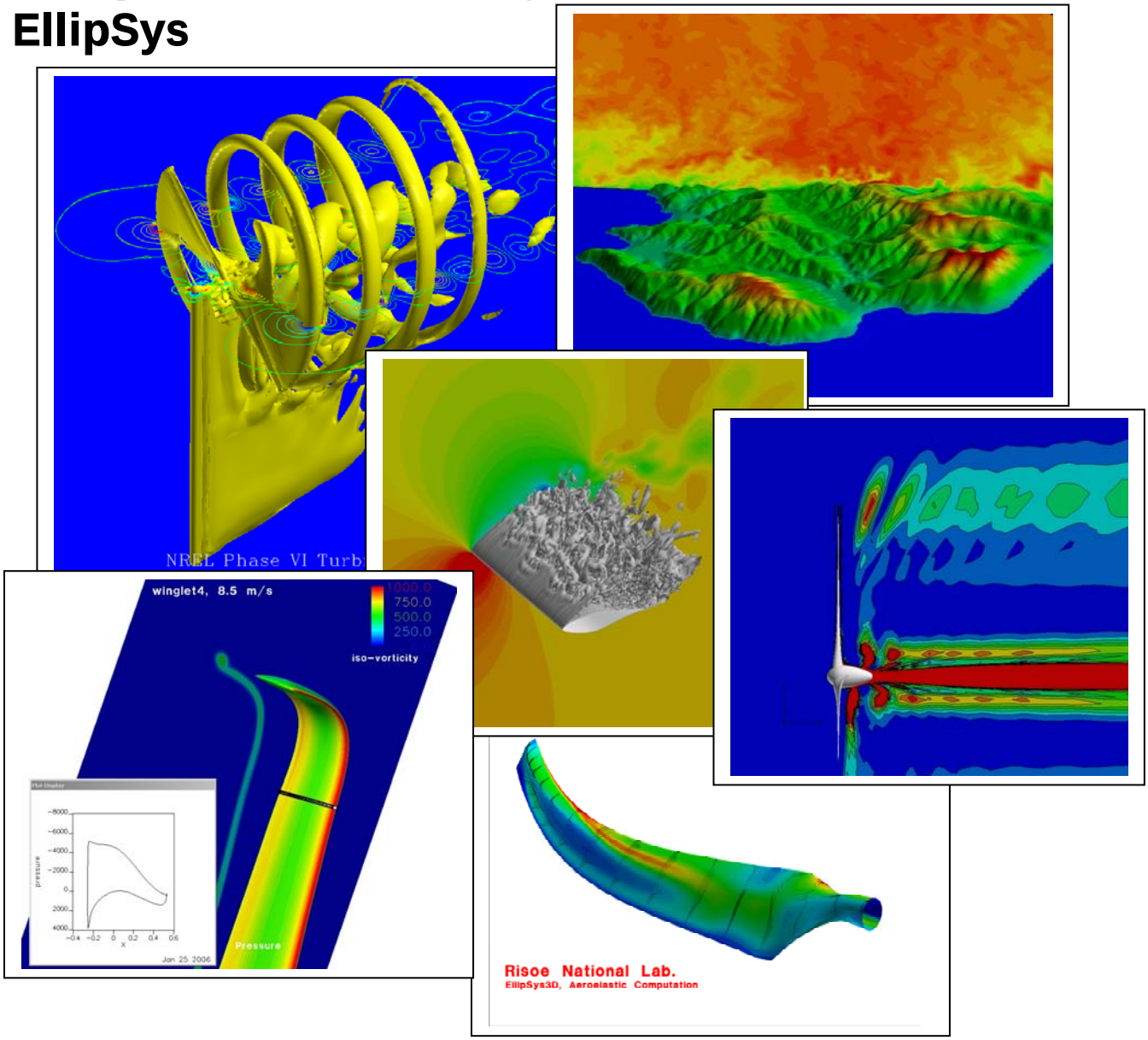
Computational Fluid Dynamics
EllipSys



A variety of pictures showing examples of CFD computations using EllipSys3D.

EllipSys2D/3D
The general purpose incompressible Navier-Stokes solver EllipSys2D/3D is developed by the Aeroelastic Design group at Risø National Laboratory in a close cooperation with the Technical University of Denmark. The code is applied for solving various flow problems.

2D airfoil aerodynamics
In airfoil design EllipSys2D is used to verify the new airfoils together with experimental verification in the wind tunnel. Airfoil characteristics as well as pressure and skinfriction distributions are determined. The analysis includes the effect of laminar to turbulent transition as well as surface roughness.

For more information, please visit our web-page:
http://www.risoe.dk/vea-aed/numwind/index.htm.

3D rotor aerodynamics
To verify wind turbine rotor designs the entire rotor geometry is modeled and only the operational conditions are needed as input for a full analysis. Global parameters such as power and thrust are computed as well as local distributions of forces and moments. Additionally, special features such as e.g. rotor/tower interaction, 3D airfoil characteristics, tip and root design changes can be evaluated.

Terrain aerodynamics
The atmospheric flow in complex terrain is computed using RANS, Detached or Large Eddy Simulation for analysis of local wind speed and turbulence.

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