

Virtual Wind Tunnel

STEM Racing VWT Analysis Software MK8



CONTACT THE TEAM



Easily Analyse the Aerodynamics



Monitor Downforce & Drag

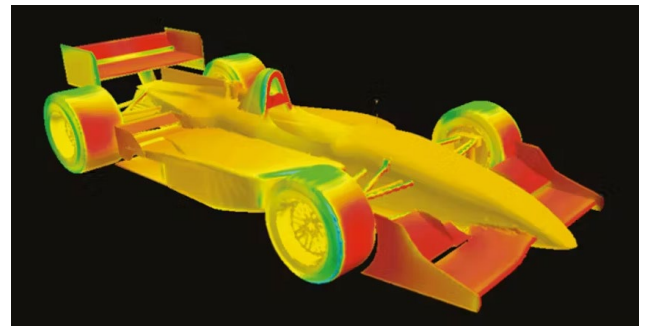


Simulated CO2 Exhaust Gas

Analyse the aerodynamics of a STEM Racing car using CFD

VWT Mk8 is a Virtual Wind Tunnel Software, which allows students to easily analyse the aerodynamic characteristics of their car design, using Computational Fluid Dynamics (CFD), which is an integral part of the design process for racing car manufacturers and teams.

It is used to streamline the car's shape by predicting its levels of drag and downforce, which can then be optimised to ensure aerodynamic efficiency and that all 4 wheels remain firmly on the ground!

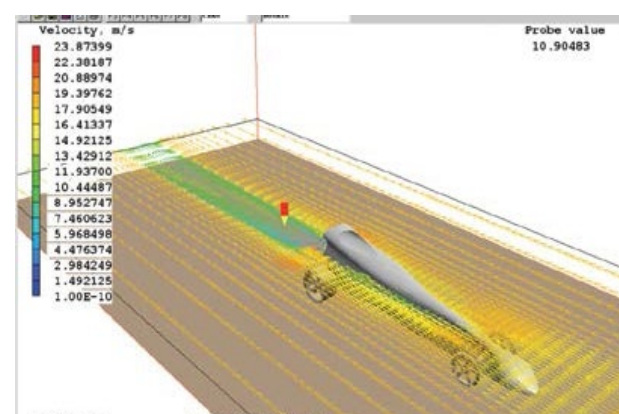
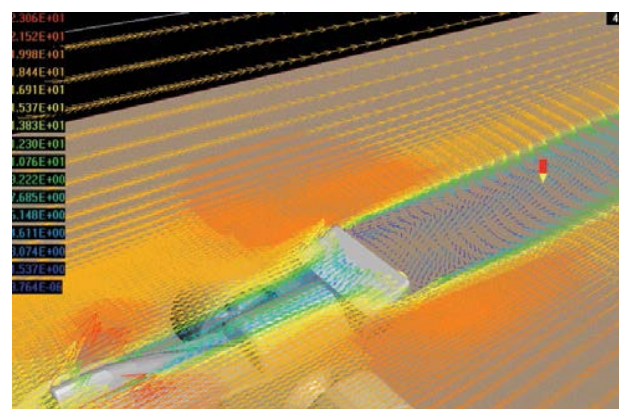
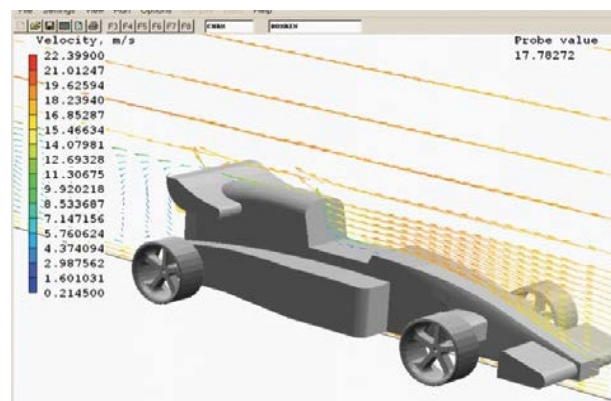


VIRTUAL WIND TUNNEL

For those involved in STEM Racing, the process is simple - students design their car with 3D CAD software such as Autodesk and then export the STL file into the Virtual Wind Tunnel software. The design is then displayed on-screen, allowing students to begin testing the designs for velocities, pressures, areas of turbulence, lift and drag by using vector plots, contour plots, streamlines and isosurfaces.

The Virtual Wind Tunnel Software uses a process called Computational Fluid Dynamics or CFD. This is basically the prediction of processes involving fluid flow, heat and mass transfer, chemical reaction and/or combustion. Anything that involves fluid flow can be simulated using these techniques, with varying degrees of accuracy. CFD is based upon the laws of physics, of conservation of mass, momentum and energy. The equations are embodied within a mathematical model and solved using a grid superimposed on the region of interest.

For STEM Racing, this will be the "Analyse" stage of your team's Design, Analyse, Make, Test and Race process - towards racing success!



Technical information

Programmable Features

- ▶ Downforce and drag on the body of your car
- ▶ Data graphs of the whole 3D simulation are ready to export
- ▶ Velocity / pressure contour and vector plots, surface contours, iso-surfaces and streamlines

Recommended System Requirements

- ▶ Any standard Windows PC: 7, 8, 10 & 11
- ▶ The software is both CPU- and RAM-intensive, but 8GB RAM should suffice. The more RAM, the better the performance
- ▶ 2GHz processor speed [minimum], four cores
- ▶ No special graphics requirements
- ▶ The software will run on both 32bit and 64bit PCs