Applications of Fluid Mechanics on Cars and Wings

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The project itself is a wind tunnel which is a facility used for testing aerodynamic forces around a particular object. It follows the Bernoulli principle as the basic principle on which it is designed along with the Venturi principle. Wind tunnels usually consist of three main parts; Contraction, Test section and Diffuser. Keeping the Bernoulli principle in mind, the air which enters the wind tunnel first goes through the contraction zone which drops the pressure and speeds up the velocity of molecules, these molecules then go through a straightening grid which makes the air flow laminar i.e. Undisturbed air. This air is then used on the object used in the test section. Then the air enters the diffuser where it expands and gains pressure while reducing velocity. Finally a fan sucks the air out, however in some wind tunnels air is blown with the help of a fan. We use various objects of different shapes inside it and project smoke to see how that smoke is behaving around that object. There are also sensors to track down numerical data from the object to help us in designing and efficient object. The tunnel is scaled down to reduce costs and make sure it's more accessible to smaller companies. It is used in many real life situations e.g. mechanical engineering, aeronautical and aerospace engineering as well as civil engineering.

Awards Won: