

AERO 101

This is another segment requested by our followers. This week, we will cover two very important devices for understanding airflow over the car: flow visualization paints and pitot tubes.

Flow visualization paint, or flo-viz, is composed mainly of paraffin (kerosene) with fluorescent powder suspended in it. The paint is applied with a spray bottle or brush to the area that needs testing while the car is in the pits. Then, the car will go out and do a few test laps, at certain speeds, around certain parts of the track. As the car gets up to speed, the paint will move over the bodywork. The paraffin is light and will be easily influenced by airflow. Once the car slows down, the powder trails will stay in position. When the car is in the pits, the engineers evaluate the flow lines.



So how does this help? Well, areas heavy with very straight lines show attached airflow. Detached areas will have no paint at all, and this may indicate turbulent flow, decreased downforce, or drag.

Now we can move onto pitot tubes. First, we have to understand how a pitot tube works. A pitot tube is an L-shaped tube pointed in the direction of oncoming air. The tip is open, and there is a ring of holes around the horizontal section of the tube. The hole in the tip is subject to total pressure, due to the car moving through the air, and the ring of holes is subject to static pressure. The difference between these two pressures is dynamic pressure. How is this information used? The dynamic pressure can be used to estimate downforce and aero balance.

