HOT WEATHER TESTING

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Whether stuck in highway traffic jams in mid-summer, parked in the midday sun, or driving along roads in a hot country, c**ars must be able to withstand extreme heat.** It should not, however, affect its handling or its comfort.

PHILIPPE STROPPA

Safety

Environment

Life on board

Mobility

Competitiveness

BASIC FACTS

The consequences of high temperatures on a vehicle are multiple. In the first place, of course, the engine cooling system must be efficient enough to dispel the heat it generates even at full throttle. But many other parts can be affected by high temperatures. Vapour locks, for example, tends to form in the fuel lines which can pose problems for the injector pump. Similarly the efficiency of dampers is impaired.

Travelling comfort, too, can be affected by extreme weather conditions. A vehicle's air-conditioning should be checked to ensure it has sufficient cooling capacity for very high temperatures. It is also important to assess how equipment and systems like the radiator cooling fan impact on the noise levels and general comfort in the cabin. Finally driving comfort and a car's overall performance should be maintained even at high speed. In order to carry out wide-ranging tests without having to wait for the appropriate weather conditions, Renault uses two test facilities. The Lardy Technical Centre has the facilities to simulate difficult traffic conditions like jams on the highway or congestion in the city in hot weather. To simulate a high speed journey in a hot country the Aubevoye Technical Centre

IN SHORT

HOT WEATHER TESTS ARE DESIGNED TO RECREATE POOR TRAFFIC CONDITIONS IN HIGH TEMPERATURES LIKE HIGHWAY TRAFFIC JAMS IN THE HEIGHT OF SUMMER AND TOURING ON THE ROADS OF A HOT COUNTRY. THE TESTS ENSURE THAT A CAR AND ITS SYSTEMS MAINTAIN THEIR LEVELS OF PERFORMANCE IN EVEN THE HOTTEST WEATHER.

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has a wind tunnel that can reproduce driving conditions in extremely hot weather in temperatures up to 45 °C and in winds blowing up to 200kph. Finally life-size tests in particularly high temperatures are conducted for final approval of the technology solutions adopted by Renault in a car.

HOW DOES IT WORK?

Hot weather tests take place at the technical centres of Lardy and Aubevoye. Each has facilities that are dedicated to particular types of test.
Lardy simulates a city route or a highway journey during which the car is regularly brought to a standstill for ten minutes at a time, before moving off again. Arrays of infrared lamps drive the temperature of the car body up to 40, 45, and 50 °C. Phenomena like fuel percolation and vapour lock upstream from the fuel pump are closely watched as is the efficiency of the engine block cooling system at low speed.
In a special wind tunnel on the Aubevoye site cars undergo temperatures of 50 °C and winds of up to 200kph. To simulate exposure to the sun, arrays of very powerful spotlights beam 1000 watts of light energy per square metre on to the car's bodywork.
At the same time the car stands on a roller bench that reproduces a road speed of 200kph. In this way it is possible to verify that even at full throttle the engine has maintained its performance levels and the cooling system works efficiently. Wind speed in the wind tunnel is equal to the speed measured on the rollers in order to reproduce real-life driving conditions as faithfully as possible.
This is also the ideal opportunity to ensure that the air-conditioning system is working efficiently and that there is no flaw in the behaviour of the dampers, for example.
These tests gain final approval at private road test sessions carried out on "cars in disguise" in Southern Europe, particularly in Spain.

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