



Ongoing Monitoring / Preventative Maintenance Plan For Catalytic Converter Control of Gasoline Fired Test Cells

CONTROL DEVICE: Catalytic converters serving dynamometer gasoline fired test cells.

REQUIREMENT 1: Uncontrolled gasoline usage for FG-TESTCELLS shall not exceed 34,500 gallons per 12-month rolling time period.

MONITORING PLAN: AVL monitors usage of gasoline for all testing. The usage of gasoline on both controlled and uncontrolled engines is recorded. If the uncontrolled gasoline usage limit of 34,500 gallons per 12 month rolling period is reached, AVL will not conduct any gasoline fired engine testing unless a catalyst system is installed and operated as indicated in "Requirement 2".

REQUIREMENT 2: Ensure proper operation of catalyst bed.

MONITORING PLAN: Proper operation of the catalysts requires minimum inlet temperatures of 350 °C. Engine exhaust alone may provide sufficient inlet temperatures for proper operation of the catalysts. However, should the engine exhaust temperature not generate the minimum required operating temperature for the catalyst and to ensure that proper minimum inlet temperatures are achieved; a process heater will be used to heat the inlet stream to the catalyst. A thermocouple will continuously monitor the temperature of the inlet, and will provide feedback via the facility's PLC system to adjust the process heater output as necessary.

Proper operation (control efficiency) of the catalysts while combusting gasoline in a test cell for permit required purposes will be monitored parametrically by monitoring the temperature rise across the catalyst. Two (2) thermocouples (1 located at the catalyst inlet duct, 1 located at the catalyst exit duct) will be used to obtain temperature data. As an additional measure to ensure the catalyst is operating at the proper efficiency exhaust sample probes will be located before and after the catalyst. These probes will be plumbed in to an AVL emissions bench and monitored for catalyst control efficiency of at least 90%.

Temperatures will be monitored continuously during operation of the gasoline fired dynamometer test cells. Proper operation is indicated by a temperature rise between 100 and 150 °C during operation.

If a catalyst fails to demonstrate the proper operating temperature rise or control efficiency, it will be removed from service. Records will be maintained for a period of at least 5 years of the installation and removal date for all catalysts.

As a QA/QC procedure, all thermocouples will be calibrated on an annual basis and the emissions bench will be calibrated on a monthly basis.