

**Compliance Assurance Monitoring Plan**

**PERMIT TO INSTALL**

67-22

**ISSUED TO**

Kawasaki Motors Corp., U.S.A.

**LOCATED AT**

5080 36th St. SE

Grand Rapids, Michigan 49512

**IN THE COUNTY OF**

Kent

**STATE REGISTRATION NUMBER**

P0677

**DRAFTED AUGUST 2023 BY**

Paul Marvin, Regulatory Compliance Engineer

**Background**

 Kawasaki Motors Corp., U.S.A. is a source subject to the CAM Rule pursuant to 40 CFR 64, due to our usage of the PCO described below and our potential to emit greater than 100 tons of CO per year.

**PCO**

* **Information:** The installed PCO designed by PCE Monarch described in permit 67-22 affects EU-TEST1 through EU-TEST9.
* **Temperature**: Temperature is measured by a thermocouple placed just before the catalyst. The installed PCO maintains a minimum operating temperature of 600°F and a maximum operating temperature of 850°F. If the temperature of the PCO falls outside of this range, engine operation will be stopped and prevented until the operating temperature is corrected. An installed interlock built into the PCE Monarch computer system ensures this operation, and the main screen operator can view the temperature at any time. During engine testing, the PCO temperature is always visible to the main screen operator. warnings sound at 660°F and 800°F.
* **Pressure:** Pressure is measured at the inlet duct. The installed PCO maintains a minimum pressure of -5.0”Wc and a maximum pressure of 0.0”Wc. If the pressure within the PCO falls outside of this range, engine operation will be stopped and prevented until the pressure is corrected. An installed interlock built into the PCE Monarch computer system ensures this operation. Alarm warnings sound at -4.5”Wc and -0.1”Wc.
* **Maintenance:** Catalyst cleaning is performed every 6 months to ensure effective operation. The thermocouple used to monitor temperature is calibrated semi-annually. The pressure drop gauges are also calibrated semi-annually. The PCO is designed to need no other preventative maintenance. Given this, Kawasaki deems it necessary to stock one spare thermocouple and multiple fuses in case of an unexpected malfunction. Any other malfunction would be handled by an outside service that specializes in PCO systems. No other spare parts are kept on hand for this reason. Alarms are installed to monitor the dampers, and any random faults are dealt with on an individual basis.
* **Testing:** Testing is performed every 5 years to ensure a minimum control efficiency of 90% for CO and 95% for VOCs.

**Allowances**

In addition to the allowances described above, Kawasaki Motors Corp., U.S.A. is also subject to a fuel usage limit of 190,000 gal/yr. The fuel usage total and emissions totals are monitored on a rolling basis. The table below is descriptive of our allowances per emissions type.



**Emissions Units**

 The table below describes the emissions units located at Kawasaki Motors Corp., U.S.A. that utilize the PCO and are there for applicable to this CAM plan.



**Stack Description**

The information listed below describes the stack that is responsible for the ventilation of the emissions units listed above. It is the only stack at Kawasaki Motors Corp., U.S.A. that is applicable to this CAM plan.



**Monitoring**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Indicator | Low Shutoff | Low Alarm | High Alarm  | High Shutoff |
| Inlet Temp (deg. F) | 600 | 650 | 800 | 850 |
| Pressure Drop ("Wc) | -5.0 | -4.5 | -0.1 | 0.0 |

Pursuant to 40 CFR 64.6(c)(1)(i) and (ii), the permittee shall continuously monitor inlet temperature to the catalyst bed and record every 15 minutes as an indicator of proper operation of the PCO. The temperature range indicative of proper operation is 600°F minimum and 850°F maximum. An alarm will sound at 650°F minimum and 800°F maximum to indicate the operator of a potential failure. Records of these temperatures will be maintained for a minimum of 5 years.

In addition to this, Kawasaki Motors Corp., U.S.A. will also monitor pressure drop across the catalyst bed and record every 15 minutes as an indicator of proper operation of the PCO. The system is designed to operate with a minimum pressure of -5.0”Wc and a maximum pressure of 0.0”Wc. An alarm will sound at a minimum pressure of -4.5”Wc and a maximum pressure of -0.1”Wc to indicate the operator of a potential failure. Records of these pressures will be maintained for a minimum of 5 years.

**Justification**

The PCO used at Kawasaki Motors Corp., U.S.A. was professionally designed for our application by PCE Monarch. The indicators and associated ranges listed above were determined, based on our design and application, to minimize the amount of CO and VOC emitted into the atmosphere.

 Stack testing was performed at our facility on September 19th, 2023 by Montrose Air Quality Services. During this testing, PCO temperature at the catalyst inlet was monitored and determined to be a minimum of 650°F. Given this parameter, testing confirmed that the removal efficiency of CO was 91% and the removal efficiency of VOC was 98%.

**Contact**

|  |  |  |
| --- | --- | --- |
| **Name** | **Title** | **Email** |
| Paul Marvin | Regulatory Compliance Engineer | paul.marvin@kmc-usa.com |
| Kevin Kline | Senior Supervisor, Testing | kevin.kline@kmc-usa.com |