Claims

1. A DPF system for an engine generator that carries out a recovery process on a filter (DPF) provided to remove particulate matter generated by combustion of fuel for an engine when an amount of the particulate matter attached to the DPF exceeds a predetermined value, the engine generator carrying out the recovery process by performing an automatic recovery operation to raise a temperature of exhaust gas from the engine to burn the particulate matter, characterized in that the DPF system comprises:

a dummy load connected to the engine generator when necessary; and

control device for allowing the engine to perform an automatic recovery preparation operation in such a manner that, once the amount of the particulate matter exceeds the predetermined value, the automatic recovery operation is performed when the temperature of exhaust gas reaches an automatic recovery reference temperature, and the dummy load is connected to the generator to raise the temperature of exhaust gas when the temperature of exhaust gas does not reach the automatic recovery reference temperature.

2. The DPF system for the engine generator according to claim 1, wherein the control device

measures a change in load after the automatic recovery preparation operation is started, and

cuts off the dummy load when the load increases rapidly.

3. The DPF system for the engine generator according to claim 1, wherein the control device

measures a change in load after the automatic recovery preparation operation is started, and

cuts off the dummy load when the load exceeds a predetermined value, once a predetermined time has elapsed.

4. The DPF system for the engine generator according to claim 3, wherein the control device

measures a change in load after the automatic recovery preparation operation is started, and

after the load exceeds a predetermined value and then decreases below the predetermined value again within a predetermined time, continues the automatic recovery preparation operation.

5. The DPF system for the engine generator according to claim 1, wherein, during the automatic recovery operation, the control device cuts off the dummy load when the load exceeds the predetermined value or increases rapidly while the dummy load is applied, and applies the dummy load when the dummy load is not applied and the load does not exceed the predetermined value, and suspends imposition of the dummy load when the load increases rapidly even if the dummy load is not applied and the load does not exceed the predetermined value.

Claims

1. A Diesel Particulate Filter (DPF) recovery system for an engine which drives a generator, having a particulate matter amount measuring device which detects an amount of particulate matter attached to the DPF, and a temperature measuring device which detects a temperature of exhaust gas of the engine so as to carry out a recovery process of the DPF to remove the particulate matter generated by combustion of fuel for the engine when the amount of the particulate matter attached to the DPF exceeds a predetermined value, by performing an automatic recovery operation to raise the temperature of the exhaust gas so as to burn the particulate matter, the DPF recovery system comprising:

a dummy load connectable to the generator; and

a control device, including an engine control unit and an engine controlling additional unit, for allowing the engine to perform the automatic recovery operation by cooperation of the engine control unit and the engine controlling additional unit according to detected signals from the particulate matter amount measuring device and from the temperature measuring device;

the control device operates the engine in such a manner that, when the amount of the particulate matter exceeds the predetermined value, the control device immediately allows the automatic recovery operation when the temperature of the exhaust gas reaches an automatic recovery reference temperature, and the control device connects the dummy load to the generator when the temperature of the exhaust gas does not reach the automatic recovery reference temperature to raise the temperature of the exhaust gas so as to carry out the automatic recovery operation;

wherein the control device further comprises: a first timer for setting a retention time which is required for raising the temperature of the exhaust gas to reach the automatic recovery reference temperature since connecting the dummy load, and

the control device

judges whether the temperature of the exhaust gas exceeds the automatic recovery reference temperature,

carries out the automatic recovery operation immediately when the temperature of the exhaust gas exceeds the automatic recovery reference temperature,

connects the dummy load to the generator when the temperature of the exhaust gas does not exceed the automatic recovery reference temperature,

judges whether the temperature of the exhaust gas exceeds the automatic recovery reference temperature after the retention time of the first timer has passed,

carries out the automatic recovery operation when the temperature of the exhaust gas exceeds the automatic recovery reference temperature,

disconnects the dummy load when the temperature of the exhaust gas does not exceed the automatic recovery reference temperature, and

judges whether the amount of the particulate matter exceeds a manual recovery reference amount,

so as to generate a manual recovery request if the amount of the particulate matter exceeds the manual recovery reference amount, or to carry out a normal operation of the engine if the amount of the particulate matter does not exceed the manual recovery reference amount.

2. The DPF recovery system for the engine according to claim 1, wherein the control device comprises:

a second timer for producing an output, when a predetermined time for disconnecting the dummy load has passed,

the control device

measures amount of the load of the generator,

judges whether the amount of the load exceeds a manual recovery reference load,

disconnects the dummy load when the load of the generator does not exceed the reference load but increases rapidly,

disconnects the dummy load after the retention time of the second timer has passed when the load of the generator does not exceed the reference load but increases rapidly,

does not disconnect the dummy load and returns to a state after connecting the dummy load when the load of the generator decreases below the reference load during the retention time of the second timer.

3. The DPF recovery system for the engine according to claim 1, wherein the control device:

measures an amount of the load connected to the generator,

judges whether the amount of the load of the generator exceeds a predetermined reference value,

in the case the dummy load is connected under the automatic recovery operation disconnects the dummy load when the amount of the load of the generator exceeds the predetermined reference value, or when the amount of the load of the generator does not exceed the reference value but increases rapidly,

in the case the dummy load is not connected under the automatic recovery operation, connects the dummy loud when the load of the generator does not exceed the reference value,

measures the amount of the particulate matter,

terminates the automatic recover operation if the reference for ending the automatic recovery operation is satisfied,

measures the temperature of the exhaust gas by the temperature measuring device,

continuously carries out the automatic recovery operation when the temperature of the exhaust gas exceeds the automatic recovery reference temperature,

judges whether the dummy load is connected, and

connects the dummy load if disconnected so as to restart preparation for the automatic recovery operation.

4. The DPF recovery system for the engine according to claim 1, wherein the control device

judges whether the dummy load is connected to the generator after terminating the automatic recovery operation, and

disconnects the dummy load if the dummy load is connected.

5. The DPF recovery system for the engine according to claim 1, wherein the dummy load is built to be switchable in relation to the output voltage of the generator.