

DIESEL FUEL PREHEATER DEVICE

This invention relates to a fuel preheater device for use with diesel engines, to reduce smoke emission from the exhaust

Background to the invention

Smoke emission in the exhaust from diesel engines is a continual problem. In general the emission consists of unburnt or partially burnt fuel and means for improving the fuel combustion would not only reduce exhaust smoke but would also prove economically desirable by reducing fuel consumption.

It has been proposed in US Patent No 5649515 to preheat the fuel supplied to a diesel engine by means of a combination of an electric heater and a heat exchanger comprising a fuel-carrying coil located in the cooling water system of the engine.

This arrangement is extremely complicated and the electric heater consumes a considerable amount of power, which has to be derived from the engine.

Summary of the invention

This invention provides a very simple diesel fuel preheater device comprising a tubular sleeve of metal or other material of high thermal conductivity which can be inserted into the top water cooling hose of the engine and has at or towards each end a portion of increased diameter to retain a fixing clip, such as a jubilee clip, and surrounding said sleeve, a jacket having an inlet and an outlet for connection in the fuel line of the engine.

The inlet and outlet are preferably at opposite ends and sides of the jacket so that the fuel has to pass over the longest possible path through the jacket to achieve maximum residence time in the jacket.

The length of the tubular sleeve will normally be of the order of 100 to 150mm, for example, 105 to 125 mm and its diameter will depend on where it is to be attached. Typically the diameter for a device to be inserted in a cooling water hose will be between 35 and 70mm, for example, 40 to 66mm depending on the external diameter of the hose.

The jacket will normally occupy between 50 and 60 percent of the length of the sleeve and will normally have a diameter that is between 4 and 12 mm larger than the external diameter of the sleeve depending on the fuel capacity that is required.

The use of the device in a diesel engine preheats the fuel passing through the jacket thus promoting improved fuel combustion and hence reducing the amount of unburnt or partially burnt fuel passing through the exhaust of the engine. The amount of smoke emitted by the engine is therefore reduced with great benefits to the environment. In addition improved fuel combustion reduces fuel consumption with economic advantages.

Description of preferred embodiment

The invention will now be described in greater detail by way of example, with reference to the drawings, in which:

Figure 1 is a longitudinal section through one form of the exhaust smoke reducing device; and

Figure 2 is a section on line 2-2 in Figure 1.

As shown in the drawings, the device comprises a tubular sleeve 1 of stainless steel or other metal. Towards each end of sleeve 1 is a ridge 2 defining a part of increased diameter so that the sleeve can be inserted into a hose (not shown) of a diesel engine cooling water system and held in position with a clip (not shown), such as a jubilee clip.

Extending over about 60% of the length of sleeve 1 is a jacket 3 having a fuel inlet 4 and a fuel outlet 5, the inlet 4 and the outlet 5 being formed such as to be connected in to the fuel line of a diesel engine. The inlet 4 and the outlet 5 are positioned at opposite ends of jacket 3 and extend on opposite sides thereof thus causing the fuel entering inlet 4 to travel the length and half the circumference of the jacket 3 before reaching the outlet 5 so that the maximum heating effect can be achieved.



Claims

- 1) A diesel fuel preheater device for reducing smoke emission comprising a tubular sleeve (1) of metal or other material of high thermal conductivity which can be inserted into one of the water cooling hoses of the engine and which has at or towards each end a portion (2) of increased diameter to retain a fixing clip, such as a jubilee clip, and surrounding said sleeve (1), a jacket (3) having an inlet (4) and an outlet (5) for connection in the fuel line of the engine.
- 2) A device according to claim 1, wherein the inlet (4) and outlet (5) are on opposite sides and ends of the jacket (3).