



A plant hire company has a fleet of Compact Excavators. A contractor is hiring one of these excavators and this particular application calls for the equipment to be used underground. As all parties are concerned about the emissions of the equipment in a confined space, it is vital to remove as much of the black smoke at start-up and during operation to protect the operator and surrounding work force from harmful particulate matter (PM).

PM has been identified by health experts as contributing to a variety of lung related illnesses, exposure has been linked with acute short-term symptoms such as headache, nausea, and irritation of the eyes, nose and throat. Long-term exposure can lead to chronic, more serious health problems such as cardiovascular disease and lung cancer.

The most effective way to reduce emissions is to use a system designed to deal with PM, this system is known as a *Diesel Particulate Filter (DPF)*.

In order to specify which filter type and size is best for the application, it is essential to know the exact engine make, model and power rating. It is also essential to know the expected usage of the equipment.

This particular excavator is powered by a 3-cylinder water-cooled diesel engine with a gross power rating of 20kW (27.2hp) at 2800 r/min.

The contract is expected to last for 6 months and the excavator is estimated to be working for 6 hours per day 5 days per week.

Based on the engine details and as the expected contract length is relatively short, the most suitable and cost effective solution is to fit a non-regenerative diesel particulate filter, in this case a UGET 3 D40.

A non-regenerative DPF collects up to 85% of the PM in the exhaust stream by means of physical filtration and operates from start-up. The filter element itself is constructed from steel and fibreglass matting, housed in a steel canister. The filter element has a finite capacity and when full must be removed, discarded and replaced with a new one. Failure to do so will cause the filter to block, which in turn can cause damage to the engine due to increased backpressure.

The filter element needs to be changed every 300-350 hours or at a 3 month service intervals. For this application, based on the estimated contract length of 6 months, one replacement element will be required.

An optional warning system can be installed to alert the operator when the backpressure increases.

The filter can be mounted to the equipment body and connected to the existing exhaust outlet via flexible hose. There is a heat shield attached as standard to protect from burns.

Once the contract has been fulfilled the DPF can be removed from the equipment. The filter can be re-used for future applications on any other diesel equipment of a similar power rating.

Overall costs for complete system:

UGET 3 D40 DPF	£820.00
Replacement filter element	£165.00
Stainless steel flexible hose & clamps	£40.00
Total ex. VAT and Delivery	£1025.00

For more detailed information regarding non-regenerative diesel particulate filters visit www.genecat.co.uk/dpf

Catalytic Converters

Catalytic converters are separate systems that reduce carbon monoxide (CO), unburned hydrocarbons (HC) and aldehydes. These exhaust emissions are responsible for irritation to the eyes and respiratory system, they also cause nausea and tiredness. As operators and workforces in enclosed spaces are particularly affected, it is worth considering a catalytic converter for this application. For further information visit www.genecat.co.uk/catalysts