Technical Bulletin

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TWO PHASE CLEANING OF ENGINE PARTS

Cast iron cylinder heads, steel valves, aluminium casings and pistons are very critical engine parts. These are cleaned throughout the world on a daily basis for, among others, repair and overhaul.
Their contamination consists mainly of encrusted and burnt-in oils and greases. Both alkaline and solvent based detergents are used to relieve the parts to be cleaned, whether or not with the aid of industrial washing machines, ultrasonic equipment and sometimes even vapour degreasing installations, of this mineral oil contamination. Although this often seems to be satisfactory, parts often require mechanical post-treatment.

Engine parts

INTERMEZZO

The combustion of fuel in gas engines is a process that operates at a combustion temperature of ca. 700 °C.
Diesel engines have a combustion temperature of ca. 500 °C.

During the combustion process the engines also use lubricants. And it is precisely this lubricant that contains calcium-containing additives that cause calcium deposits.
These deposits build up in layers with the areas of contamination encapsulating each other. This is why it was originally believed that the deposit could be removed only by mechanical procedures.

When a repair workshop confronted one of our representatives with this, this provided the impulse to investigate together with our R&D-team the possibilities for replacing this mechanical post-treatment too with a suitable chemical cleaning procedure.

The deposit that had to be mechanically removed from particularly valves and valve seats appeared on first sight to consist of an insoluble substance that was finally seen after further investigation to be caused by the deposition of fuel additives at high temperature.

After investigation by the R&D-team a method was found that involves cleaning in two phases:
(1) The first phase of the cleaning requires degreasing with a safe alkaline detergent, such as the Vecom product ULTRASONIC MULTI CLEANER.
(2) The second phase involves the removal of the underlying calcium deposit with an effective descaling agent, such as the Vecom product DESCALANT NF-LIQUID/BA-70 or TIX NF-74.

Valve before and after cleaning

The solution above has significant advantages. Mechanical removal is labour-intensive and therefore very expensive, while an immersion method can be synchronized with other activities. The method can moreover be employed in the washing machines or ultrasonic baths that are already there.

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