

### CASE STUDY 1 - HOW CLEAN IS YOUR "FILTERED" FUEL, EVEN AFTER THE BULK TANK FILTERS?

Subject: Test results for cleanliness of diesel taken from a 62 cubic meter Tank Tanker.  
Flow rate: 200l per minute & 250,000l per month on a Coal mine installation.

**OBJECTIVE:** To test cleanliness levels and possible water and particle contamination pertaining to the subject Tank Tanker.

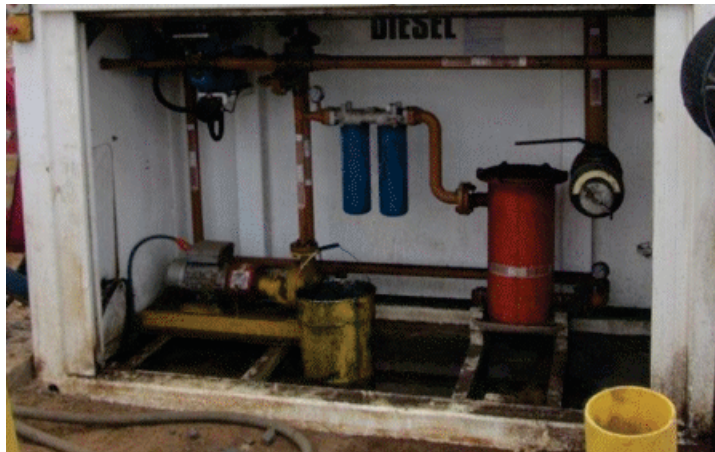
**METHOD:** Parker ACM20 as per ISO4406 – Aviation approved.

#### RESULTS:

The results reflected on the information reel to the right pertain to the subject test.

The ISO results obtained were 20/17/14 which is the minimum reputable level of cleanliness expected from a bulk tank supplied by a reputable fuel company.

The fuel tested reflects 34% in the 6-14 micron range and 30% in 4-6 micron range.



Note: Expert opinion is that the most damaging contaminants are normally between 6 - 14 microns.

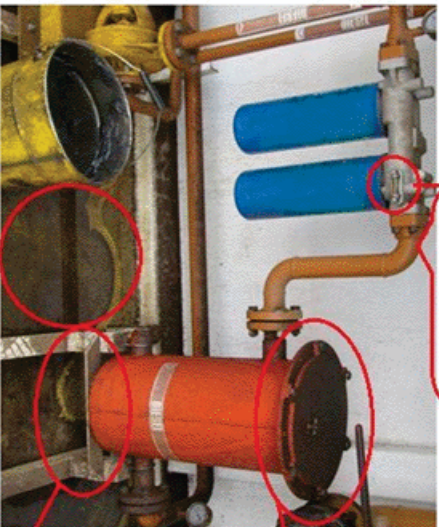
The picture below represents a typical mining site where active cleanliness levels are not monitored at the nozzle. This practice has a direct effect on mine productivity of equipment and associated increase on maintenance costs.

Parker: ACM20  
On Line  
Test Number 156  
ACM20 2024 EUR  
FH84028L MTD  
Date 15/10/13  
Time 15:16  
ISO: 20/17/14

Counts/ml		
>4 $\mu$	20	7853.5
>6 $\mu$	17	1019.6
>14 $\mu$	14	80.4
>21 $\mu$	12	31.9
>25 $\mu$	11	19.6
>30 $\mu$	10	10.0

% by Volume	
4-6 $\mu$ (c)	30%
6-14 $\mu$ (c)	34%
14-21 $\mu$ (c)	9%
21-25 $\mu$ (c)	5%
25-30 $\mu$ (c)	7%
>30 $\mu$ (c)	15%



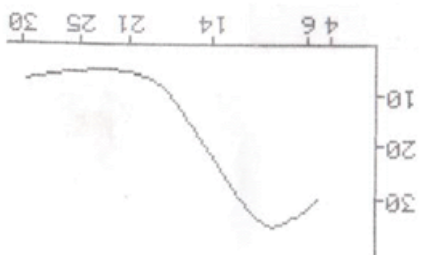
1. Gauge: "GREEN" indicating that it is still well within operating specification

2. What was the last date of inspection?  
3. When was this unit last opened and, was there any replacement?

4. Firstly there is a space problem/restriction.

5. How successful can water 'dump' take place?

6. Water and/or Diesel accumulation on ground surface. This may be "Blind draining". Also, tidiness is questionable.



**CONCLUSION:**

**Particle contamination:**

The filter indicator is solid within the green band indicating that the filter cartridges are operating well within their operating specification. However, ISO count sampling as per above clearly indicates that the filter integrity is in total compromise due to the fact that 15% by volume is 30 Micron plus particles. The filtration therefore on this 4 micron filter has long surpassed acceptable fuel cleanliness levels. Therefore cleanliness levels has basically long surpassed to delivery cleanliness level from the fuel supplier.

**Free Water:**

The question is raised in this application whether this filter is removing free water adequately including how and when one knows to drain the water and at what quantity, as there is no indication. It is clear that the 'nut' had not been opened for months. Accessibility to the 'nut' allowing the dump is constricted as well. (Note 60% of current samples tested at Wearcheck fail due to water contamination).

**IcerMax™ SOLUTION:**

Offers the complete solution to address bulk tank contamination (both particle and water). It does so cost effectively with long maintenance intervals, low running costs and easy installation. You achieve 100% sustainable filtration and condition monitoring due to the inherent characteristics of Wondersone ceramic depth filtration medium.

IcerMax™ ceramic filters extend your economical lifecycle of engines and equipment. Ceramics by its filtration characteristics do not flex, unload, tear, form channels nor will the medium compromise whatsoever.

Water Coalesce removes free water from fuel that passes through IcerMax™ systems effectively. In addition it does not require maintenance and cartridges due to the application of the 'Coalesce Principle':

Inspection of the fuel color i.e. 'amber'; 'black diesel' (paraffin/oil additive mixture) etc. can be done easily and successfully.

