



Industry – Mining Equipment Generation Manufacturer

Location	Johannesburg, South Africa
Client	Confidential
Year	2020
Application	Dissolved oil removal
Contaminants	TSS, SS, Oil & Grease
Solution	Hydramix and Hydraspin



Synopsis

During the wash process where various engines and parts are cleaned before they are refurbished a strong degreasing agent is used. The effluent then flows to a collection pit from where it is pumped into gravity separators with a centrifugal pump. The rotating impeller of the centrifugal pump causes further emulsion and oil droplet breakdown. Through the use of our Hydraspin water oil separator technology we managed to remove all the free and emulsified oil down to 20 microns. Oil droplets smaller than 20 microns are considered to be dissolved oil. The Hydramix system was used to remove the remaining dissolved oil.

Experimental work

Samples were taken from the site and then lab tests were done to ensure that the Hydramix system was set up correctly for the demonstration that was done on site. Figure 1 shows the water before treatment, prior to sludge removal (middle) and after treatment, this was done with the full scale Hydramix demo unit. Figure 2 shows the water before being treated in the lab vs. post lab treatment. demo unit.



Figure 1: Before treatment, sludge removal and after removal.

Results

The raw and post treated water samples from the onsite demo was handed in to be analysed. The results were as follows:

Table 1: Results of Analysis

RESULTS			
Analysis [mg/l]	Raw	Final	% Reduction
pH	11.6	9.8	16
Total Dissolved Solids	5150	764	85
Suspended Solids	950	8.9	99
Chemical Oxygen Demand	7410	622	92
Oil & Grease	765	17	98




Figure 2: Before vs. After (Lab test).


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Table 2: Official Waterlab Report




WATERLAB

WATERLAB (Pty) Ltd
Reg. No.: 1983/009165/07 V.A.T. No.: 4130107891

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 Meiring Naudé Drive
 Pretoria

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 Tel: +2712 - 349 - 1066
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T0391

CERTIFICATE OF ANALYSES

GENERAL WATER QUALITY PARAMETERS

Date received: 2020-06-05
Project number: 1000

Report number: 92102

Date completed: 2020-06-12
Order number:

Client name: African Horizon Technologies
Address: Postnet Suite 394, Private Bag X10, Elarduspark, 0047
Telephone: 012 940 8474

Contact person: Mr. J. Steyn
e-mail: jsteyn@ahtech.co.za
Mobile: 082 781 9870

Analyses in mg/l (Unless specified otherwise)		Method Identification	Sample Identification: Cummins	
			Raw	Final
Sample Number			096319	096320
Date/Time Sampled			N/A	N/A
pH - Value @ 25 °C	A	WLAB065	11.6	9.8
Total Dissolved Solids @ 180°C	A	WLAB003	5150	764
Suspended Solids at 105°C	A	WLAB004	950	8.9
Chemical Oxygen Demand as O ₂ (Total)	A	WLAB018	7410	622
Oil & Grease	N	WLAB034	765	17

Conclusion

From the results on the previous page, the pH of the raw water was very high. This is due to the degreaser that is used in the wash process; however, the pH was dropped to 9.8 which is a 16% reduction in pH. There was an 85% drop in total dissolved solids and a 99% reduction in suspended solids. Chemical oxygen demand was reduced by 92%. The most important reduction was that of the oil and grease which was reduced from 765 mg/l to 17 mg/l. This is a 98% reduction in oil and grease which renders the water safe to discharge into the sewer and the client will be compliant with all discharge regulations.

***Lab results are not indicative of what the system does, only the reduction from the bench test, as an illustration as per a client request.**