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RESULTS SUMMARY

Company Name	:	Engineered Products & Services (M) Sdn Bhd
Address	:	No. 8, Jln Tabah 33/22, Taman Perindustrian Shah Alam, Seksyen 33, 40400 Shah Alam, Selangor

Your Ref No.	
SIRIM Ref. No.	ETC 237/16/906
Job No.	J 003/14
Report No.	R 016/14
Date of Issue	19/2/14
No. of pages	2

Request : Analysis of Kitchen Wastewater Samples.

SAMPLE DESCRIPTION
Five sets of "Kitchen wastewater" of Raw and Treated Wastewater using Automatic Oil & Grease Trap were sampled at Canteen Sek. Men. Assunta, Jln Changgai 9/5, 46000 Petaling Jaya, Selangor on 8/1/14, 15/1/14, 22/1/14, 29/1/14 and 5/2/14 by two SIRIM personnels. Ten (10) grab samples for every batch were collected and were composited into one sample prior to the analyses.

TEST METHOD

1. Measurement of pH according to APHA 4500-H^+.
2. Determination of BOD_5 according to APHA 5210B (1998).
3. Determination of COD according to APHA 5220D (1998).
4. Determination of TSS according to APHA 2540D (1998).
5. Determination of Oil and Grease according to APHA 5520B (1998).

RESULTS
Refer to page 2.

INFERENCE
Not Applicable
(The inferences expressed herein are outside the scope of accreditation).

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RESULTS

Table 1: Performance Summary on 8th January 2014

No.	Parameter	Unit	Inlet	Outlet
1.	pH	-	5.62	6.08
2.	BOD_5	mg/L	2855	15
3.	COD	mg/L	5025	49
4.	TSS	mg/L	2680	18
5.	O&G	mg/L	4280	4

Note: *All figures are obtained at an average flow rate of 10.0L/min*

Table 2: Performance Summary on 15th January 2014

No.	Parameter	Unit	Inlet	Outlet
1.	pH	-	5.25	5.71
2.	BOD_5	mg/L	3419	17
3.	COD	mg/L	6800	63
4.	TSS	mg/L	1980	13
5.	O&G	mg/L	5439	7

Note: *All figures are obtained at an average flow rate of 8.33L/min*

Table 3: Performance Summary on 22nd January 2014

No.	Parameter	Unit	Inlet	Outlet
1.	pH	-	4.58	5.83
2.	BOD_5	mg/L	2504	14
3.	COD	mg/L	4856	41
4.	TSS	mg/L	2870	15
5.	O&G	mg/L	1980	2

Note: *All figures are obtained at an average flow rate of 8.67L/min*

Table 4: Performance Summary on 29th January 2014

No.	Parameter	Unit	Inlet	Outlet
1.	pH	-	4.74	5.91
2.	BOD_5	mg/L	2340	14
3.	COD	mg/L	4575	35
4.	TSS	mg/L	1895	10
5.	O&G	mg/L	4592	3

Note: *All figures are obtained at an average flow rate of 9.0L/min*

Table 5: Performance Summary on 5th February 2014

No.	Parameter	Unit	Inlet	Outlet
1.	pH	-	4.68	6.36
2.	BOD_5	mg/L	2325	16
3.	COD	mg/L	4351	40
4.	TSS	mg/L	2830	15
5.	O&G	mg/L	2871	3

Note: *All figures are obtained at an average flow rate of 8.83L/min*

ETC237/16/906 (R 016-1/14)

Technical Evaluation Report

On

Performance Evaluation of Automatic Grease Trap System

Requested by:

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February 2014

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Performance Evaluation of Automatic Grease Trap System

1) Introduction

Engineered Products & Services (M) Sdn Bhd has requested SIRIM Berhad (SIRIM) to carry out a performance evaluation of their automatic grease trap system. The evaluation was carried out on a automatic grease trap unit installed at Canteen Sek. Men. Assunta, Jln Changgai 9/5, 46000 Petaling Jaya, Selangor on 8/1/14, 15/1/14, 22/1/14, 29/1/14 and 5/2/14. Two SIRIM personnel conducted the sampling and flow rate measurements to establish the performance efficiency of the automatic grease trap system. SIRIM had proposed the following scope of services:

- To carry out a monitoring program that included sampling and flow rate measurements at stipulated points under normal working conditions.
- Analysis of samples for pre-determined parameters.
- To prepare a performance evaluation report.

In order to investigate the removal of oil and grease, settleable solids and also biological degradation activities, SIRIM proposed 5 test parameters to be monitored. The parameters are pH, Biological Oxygen Demand (BOD_5), Chemical Oxygen Demand (COD), Total Suspended Solid (TSS) and Oil & Grease (O&G).

2) Experimental procedure

2.1 Installation of "Grease Trap" system

The grease trap system with automatic oil & grease removal wheel that was installed at Canteen Sek. Men. Assunta, Jln Changgai 9/5, 46000 Petaling Jaya, Selangor consisted of the following components and specifications;

1) Model : FAT-BUSTA
2) Overall dimension: 640mm (L) x 340mm(W) x 330mm(H)
3) A/B Inlet/Outlet No. Hub : 150mm(inlet)/ 150mm(outlet)
4) Casing material : 16 Gauge, 304 stainless Steel, Bright Finish
5) Flow Rate : 12 GPM
6) Height to Center of Inlet/Outlet : 225mm from floor

2.2 Sampling and Analysis

The sampling procedures were carried out using the recommended method from the APHA Handbook for Sampling and Sample Preservation of Water and Wastewater, 20th Edition (2000). SIRIM personnel collected the composite samples once a week for 5 weeks between 11.00 a.m to 12.30 p.m. Samples taken at the inlet and outlet of the grease interceptor were transported to SIRIM Environmental Technology Research Centre Laboratory, and refrigerated at 4°C prior to analysis. The samples were analysed for the parameters listed in Table 1 of this report.

2.3 Laboratory Findings

The performance of the "Automatic Grease Trap" system is summarized in Table 1. Details of the laboratory analysis were appended in "Results Summary R016/14".

Table 1: Performance Summary of Automatic Grease Trap System Over 5 Weeks Monitoring

Parameter	*Inlet (mg/L)		Outlet (mg/L)		Removal efficiency (%)	
	Range	Average	Range	Average	Range	Average
pH	4.58 – 5.62	4.97	5.71 – 6.36	5.98	-	-
BOD_5	2325 - 3419	2689	14 - 17	15.5	99.3 – 99.5	99.42
COD	4351 - 6800	5121	35 - 63	46	99.0 – 99.2	99.11
TSS	1895 - 2870	2451	10 - 18	14.2	99.3 – 99.5	99.42
O&G	1980 - 5439	3832	2 - 7	3.8	99.8 – 99.9	99.90

Note: *1) The values represent those of composite samples collected at average flowrate of 8.97 L/min.*
*2) *Other than pH*

The removal rates varied depending on the parameters as shown in Table 1 and also illustrated by the graphs as shown in Figures 1 to 5 (Appendix B). The flowrate measured ranges between a minimum of 8.33 L/min to a maximum of 10.0 L/min throughout the whole monitoring period.

The results obtained for the pH for both the inlet and outlet showed that the samples were slightly acidic in nature with some increasing of value. The analysis of BOD_5, COD, O&G and TSS showed that the best removal efficiency was found during the all the five weeks of monitoring.

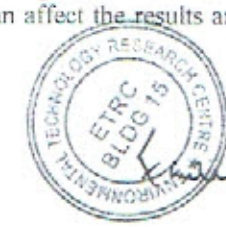
3) Discussion

The monitoring exercise has shown that automatic grease trap system with the automatic oil & grease removal wheel is capable of removing COD & BOD_5 at the average of ~99.27%, TSS at average of ~99.4% and O&G at average of~99.9%.

The results shown here are representative only of the specific grease interceptor installed at the Canteen Sek. Men. Assunta, Jln Changgai 9/5, 46000 Petaling Jaya, Selangor on 8/1/14, 15/1/14, 22/1/14, 29/1/14 and 5/2/14 . Therefore any deviation of discharge quality and/or quantity could alter the system's performance installed elsewhere.

4) Conclusion

The grease trap system with automatic oil & grease removal wheel installed at the Canteen Sek. Men. Assunta, Jln Changgai 9/5, 46000 Petaling Jaya, Selangor has average performance in retaining Oil & Grease and TSS at 99.9% and 99.4% respectively. The consistency of Oil & Grease removal during all weeks of monitoring showed how critical it is for the system to be well maintained, as in regular cleaning of the sieve basket and removal of the grease trap-oil to prevent potential blockage and emission of malodorous gases. From the results obtained, it showed that the daily maintainance in the system can affect the results and give better removal efficiency.



GREASE TRAP SYSTEM WITH AUTOMATIC OIL & GREASE REMOVAL PERFORMANCE RESULTS

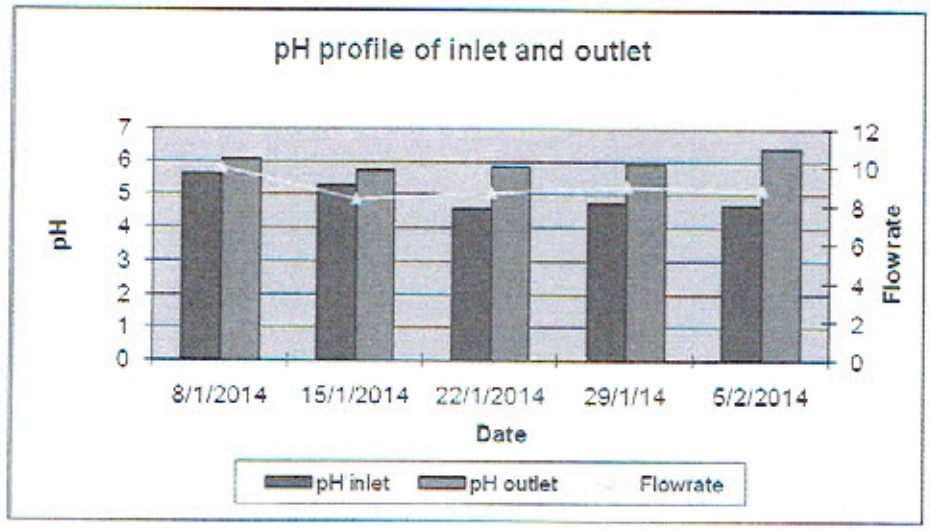


Figure 1: pH profile of Inlet and Outlet

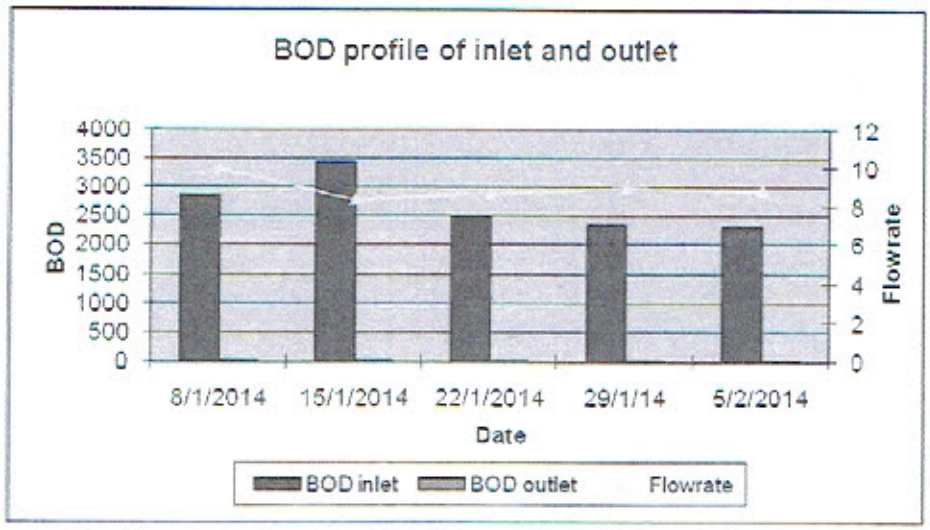


Figure 2: BOD profile of Inlet and Outlet

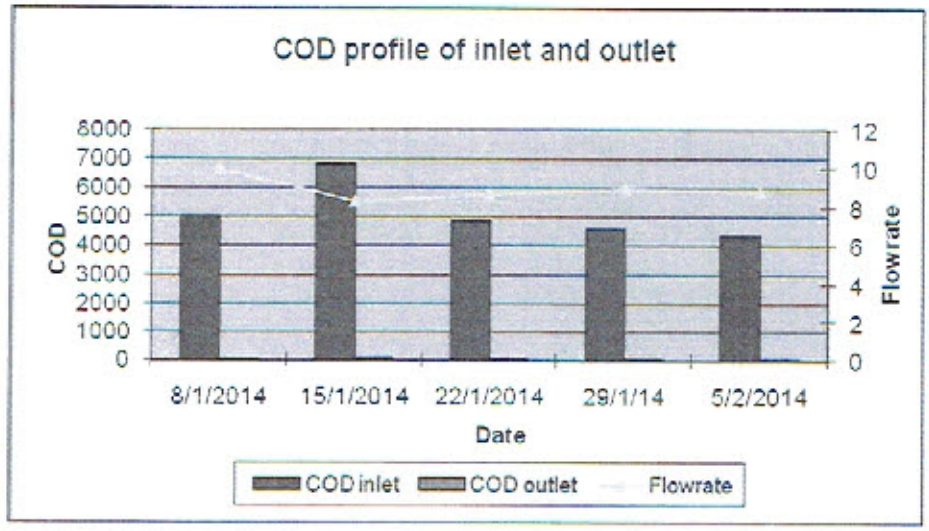


Figure 3: COD profile of Inlet and Outlet.

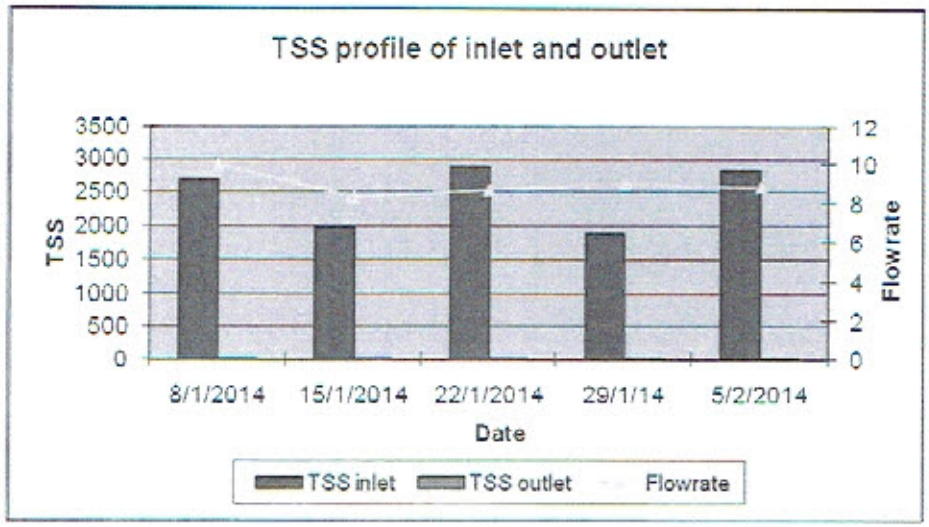


Figure 4: TSS profile of Inlet and Outlet.

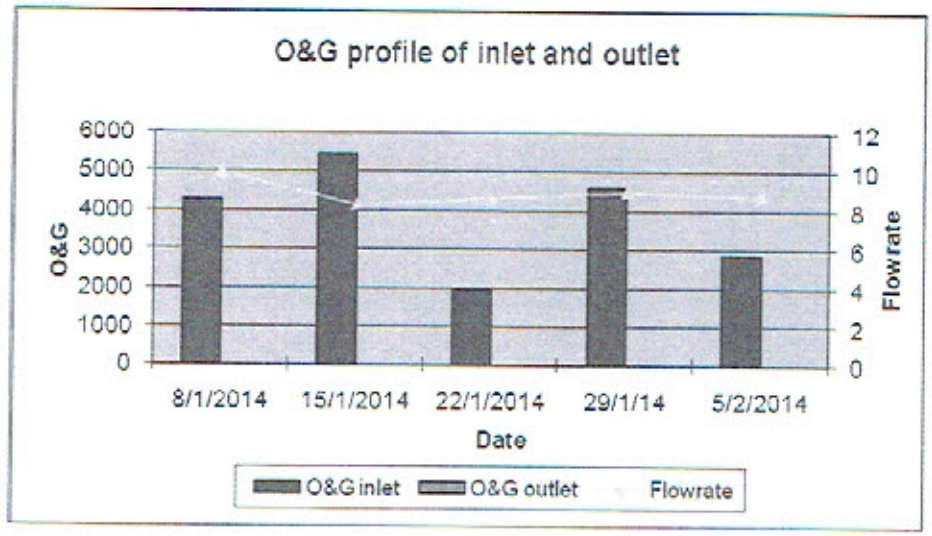


Figure 5: Oil and Grease (O&G) of Inlet and Outlet.