



Development of Auto Ordering System (AOS) and Online Complaint System (E-Complaint)

Auto Ordering System (AOS): In order to efficiently receive oil orders from service stations and be able to plan for a timely transportation, the company has developed an automatic oil ordering system for dealers. The service station can calculate oil sales and the amount of oil remaining in the tank each day, create automatic oil orders and deliver to the company regularly and to service stations operated by Bangchak Green Net Co., Ltd. of more than 200 stations nationwide, allowing service stations to manage sufficient oil reserves for sales together with transportation plans and vehicle volumes more efficiently.

Online complaint system (E-Complaint): The company has developed an online complaint system which would enable the company to track the problem solving process and close the complaint effectively. In addition, this online complaint system is now linking to the transportation payment system through SAP system to enable the company to calculate the automatic fines in case the transportation contractors receive complaint on the incident affecting the company's image. This is one of the measures to help maintain transportation service standards as there is a clear penalty for the offense.



Future Plans



Installing equipment to prevent drivers from dozing off in oil tanker trucks to reduce chance of doze off and serious accident during the course of transportation



Expanding oil delivery service from Pichitr depot (in Pichitr province) to cover more service stations in the Northern region and to help shorten delivery distance, increase customer satisfaction and lower accident opportunity

Environmental Cost Accounting

Bangchak has prepared and developed Environmental Cost Accounting, embracing oil refining processes, Bangchak Oil Depot, and Bang Pa-In Oil Depot. Such accounting has been publicized to external agencies and investors through its quarterly MD&A articles and IR Newsletters. In addition, knowledge of it has been constantly transferred to students and other interested agencies.

Total environmental cost in 2019 decreased from 2018 by approximately THB 384.90 million (-0.37% YoY) mainly due to Material Cost of Product Output which was lower by THB 373.98 million, with respect to the crude cost which declined by 11% from last year. Nonetheless, the company decided to increase the crude run from 102.39 KBD in 2018 to 112.62

KBD in 2019. Material Costs of Non-Product Outputs was lower by THB 43.29 million, in accordance with the decrease of products that were below quality standard.

Waste and Emission Control Costs along with Prevention and Other Environmental Management Costs increased by THB 32.37 million, primarily from depreciation of the pollution control equipment increased by THB 33.73 million, monitoring and measurement cost increased by THB 7.26 million, and effluent treatment cost increased by THB 2.08 million. On the other hand, environmental equipment maintenance cost and waste disposal cost decreased by THB 4.00 million, and THB 6.92 million, respectively.

Benefits from by-products and waste recycling increased by THB 2.75 Million (+17.59% YoY), mostly due to the amount of sellable liquid sulfur which increased.

(Unit : million THB)

Environmental Cost Accounting	Y2017	Y2018	Y2019
Material costs of product outputs			
Crude feed	80,433.78	89,862.78	89,112.83
Ethanol	7,648.60	7,562.06	7,127.70
Bio-Diesel (B100)	4,607.19	4,000.11	4,308.22
Bio-Diesel (B100)-Premium	28.37	42.62	36.36
Bio-Diesel (B100)-HI PURE TYPE2	-	-	582.10
Used cooking oil	6.37	1.48	0.76
Chemicals	162.45	168.07	171.83
Process water	26.52	20.82	28.35
Process energy	2,068.72	1,893.77	1,809.57
Material costs of non-product outputs			
Slop oil	81.68	100.36	57.60
Oil sludge from crude/fuel oil tanks	-	-	-
Effluent	11.20	11.38	10.93
Excess chemicals from neutralizing pond	0.31	0.13	0.11
Low-quality sulfur	-	0.07	-
Waste and emission control costs			
Environmental equipment maintenance	26.65	28.29	24.29
Depreciation of pollution control equipment	233.90	267.28	301.02
Effluent treatment	8.15	7.63	9.71
Waste disposal	10.48	12.27	5.35
Environmental fees and taxes	N.A.	N.A.	N.A.
Fines	-	-	-
Prevention and other environmental management costs			
Monitoring and measurement	10.20	7.68	14.94
Depreciation of waste storage area	0.13	0.11	0.03
Management system operation	2.57	1.59	1.89
Environmental equipment maintenance	0.04	-	0.01
Benefits of by-products and recycling			
Liquid sulfur	(10.63)	(9.86)	(14.19)
Glycerine	(0.16)	(0.05)	0.00
Iron and aluminum scrap	(1.47)	(5.70)	(4.17)
Paper	-	-	-