

CHAPTER I INTRODUCTION

I.1. Background

The economy and development of a country are directly proportional to the development of the industrial sector. The industrial sector is required to be able to meet the ever-increasing global demand and at the same time, the standards required by consumers. Therefore, an industry has to continuously innovate to improve its performance by employing the latest technology. In addition, human resource development is also important to support the sustainability of the industry itself.

PT. Riau Andalan Pulp & Paper (RAPP) is an industry that is engaged in the production of pulp & paper and is also a part of the Asia Pacific Resources International Limited group, known as APRIL. APRIL itself is part of the Royal Golden Eagle (RGE) group which was founded by Sukanto Tanoto in 1973. APRIL Group and its subsidiaries implement the 5C principle believed by Mr. Sukanto Tanoto, to create a business practice good for the Community, the Country, Climate, Customer, and ultimately good for the Company.

The most well-known product produced by PT. RAPP is PaperOneTM. This product is a premium quality paper that produced from sustainably managed plantations and forests with Programme for the Endorsement of Forest Certification (PEFC). With the design capacity of 2.8 million tonnes of pulp and 1.15 million tonnes of paper, PT. RAPP is classified as one of the most efficient pulp & paper manufacturer in the world.

An industry is always related to waste disposal, e.g., solid, liquid and gas waste. Direct discharge of wastewater into the environment may cause damage in ecosystem, namely eutrophication, water pollution, etc. Therefore, the government has issued various regulations and governing standards of wastewater allowed to be discharged to the environment. Several procedures commonly used by industry in handling their wastewater include (1) internally process their wastewater by installing a waste treatment unit and (2) externally through a third party.



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As a responsibility to the environment, APRIL has its own wastewater treatment unit which is under the Re-Causticizing, Kiln, and Effluent (RKE) Department. One of the divisions in this department, the Effluent or Effluent Treatment Plant (ETP) division, has a responsibility to process waste from all business units owned by the APRIL group until it meets the standards required by the government prior discharge to the Kampar River.

In this internship, the author is given the opportunity to be placed in the ETP division of RKE Department to study the wastewater treatment of PT. Asia Pacific Rayon (APR). This report is only focused on the APR wastewater treatment.

I.2. Location and Plant Layout

PT. RAPP is located at Jalan Lintas Timur, Pangkalan Kerinci, Pelalawan Regency, Riau 28300, Indonesia. From the total 1 million hectares that APRIL had, APRIL Group manages 480,000 hectares that are used for plantations, while the remaining 51% is used for conservation, community lands, and infrastructure development. The area and plant layout of APRIL can be seen in **Fig. I.1 and Fig. I.2** respectively. Several considerations in the selection of a factory location are as follows:

- 1. Area with low precipitation. The lowest rainfall occurs in June while the highest rainfall occurs in November (Source: PT. RAPP, 2010 2013).
- 2. Close to several rivers within the Pelalawan estate area, e.g., the Pelalawan River, the Selampaya Kanan River and the Selampaya Kiri River. Those rivers are connected to the Kampar River which is in the south of the Pelalawan Estate.
- 3. The product can be transported through the Kampar River because this river is directly connected to international waters.
- 4. Relatively close to the source of the raw material for wood.
- 5. Treated wastewater can be directly discharged to the Kampar River.
- 6. There is a lot of vacant land that can be used for expansion in the future.







Fig. I.1. Area of APRIL











I.3. Business Activity

There are several types of paper from PaperOneTM that produced by PT. RAPP. Each type of the product has different characteristic and function. Following are the types of paper by PaperOneTM.

1. PaperOneTM All Purpose (**Fig I.3**)



Fig. I.3. PaperOneTM All Purpose

Detailed specifications of PaperOneTM All Purpose can be seen in the following table.

Properties (unit)	Method	Tolerance	Target	
Grammage (g/m ²)	ISO 536	± 4	80	
Thickness (µm)	ISO 534	± 3	110	
Roughness (mL/min)	ISO 8791-2	± 40	140	
ISO Brightness (%)	ISO 2470	± 2	99	
ISO Opacity (%)	ISO 2471	± 2	95	
CIE Whiteness (#)	ISO 11475	± 2	167	

Table I.1. Specifications of PaperOneTM All Purpose

2. PaperOneTM Copier (**Fig. I.4**)



Fig. I.4. PaperOneTM Copier



Detailed specifications of PaperOneTM Copier can be seen in the following table.

Properties (unit)	Method	Tolerance	Target		;
Grammage (g/m ²)	ISO 536	± 4	70	75	80
Thickness (µm)	ISO 534	± 3	100	103	107
Roughness (mL/min)	ISO 8791-2	± 40	180	190	190
ISO Brightness (%)	ISO 2470	± 2	96	96	96
ISO Opacity (%)	ISO 2471	± 2	93	94	95
CIE Whiteness (#)	ISO 11475	± 2	160	160	160

Table I.2. Specifications of PaperOne TM Copier

3. PaperOneTM Digital (**Fig. I.5**)



Fig. I.5. PaperOneTM Digital

Detailed specifications of PaperOneTM Digital can be seen in the following table.

Table I.3. Specifications of PaperOneTM Digital

Properties (unit)	Method	Tolerance	Targ	get
Grammage (g/m ²)	ISO 536	± 4	85	100
Thickness (µm)	ISO 534	± 3	110	120
Roughness (mL/min)	ISO 8791-2	± 40	60	100
ISO Brightness (%)	ISO 2470	± 2	100	100
ISO Opacity (%)	ISO 2471	± 2	96	97
CIE Whiteness (#)	ISO 11475	± 2	170	170





4. PaperOneTM Offset (**Fig. I.6**)



Fig. I.6. PaperOneTM Offset

Detailed specifications of PaperOneTM Offset can be seen in the following table.

Properties (unit)	Method	Target							
Grammage (g/m ²)	ISO 536	55	60	70	75	80	90	100	120
Thickness (µm)	ISO 534	68	77	87	94	99	111	121	143
Roughness (mL/min)	ISO 8791-2					140			
ISO Brightness (%)	ISO 2470	94							
ISO Opacity (%)	ISO 2471	84	88	92	93	94	94	96	97
CIE Whiteness (#)	ISO 11475					158			
Moisture	ISO 287	6							

Table I.4. Specifications of PaperOneTM Offset

I.4. Marketing

The market area of product manufactured by PT. RAPP, i.e., PaperOneTM and pulp, includes both domestic and international market. PT. RAPP exports their product to more than 70 countries (e.g., Singapore, Malaysia, China, Macau, Middle East, Australia, New Zealand, etc) in the world. The product is delivered via ground shipping for domestic market, and ocean freight for international market.

