INDUSTRIAL PRACTICE REPORT

PT. RIAU ANDALAN PULP AND PAPER: INVENTORY & WAREHOUSE REPLACEMENT

JUDE SEPTAYANA

16 14 08788

INTERNATIONAL INDUSTRIAL ENGINEERING PROGRAM

FACULTY OF INDUSTRIAL TECHNOLOGY

UNIVERSITAS ATMA JAYA YOGYAKARTA

2019

LEGALIZATION PAGE

Industrial Practice Report that held at PT. Riau Andalan Pulp and Paper started from July 1st 2019 untill August 9th 2019 arranged by:

Name	: Jude Septayana
NPM	: 16 14 08788
Program	: International Industrial Engineering
Faculty	: Industrial Technology

Has been examined and approved by mentor and Supervisor Industry Practice Lecture

Riau, August 10th 2019

Mentor

(a.n. Edy)

Supervisor Lecturer

(Ir. Bernadus Kristyanto, M.Eng., Ph.D.)

PT. Riau Andalan Pulp and Paper
Mill Office:
Jl. Lintas Timur, Pangkalan Kerinci
Kabupaten Pelalawan
Riau 28300, Indonesia
Tel: +62 761 491 000
Fax: +62 761 491 846

INTERNSHIP CERTIFICATE OF COMPLETION
No. 129/RAPP/TM/INT/VIII/2019

This is to certify that :

Name	**: Jude Septayana**
Place/ Birth Date	**: Rantau Panjang, 29th of September, 1998**
Institution	**: Faculty of Engineering, Atmajaya University**

has successfully completed internship program at **PPIC Department, PT. Riau Andalan Pulp and Paper**, from **July 1st, 2019 to August 9th, 2019.**

We wish him all the success for his future.

Pangkalan Kerinci, August 9th, 2019

Muhammad Yamin
Talent Management Coordinator

PREFACE

Thanks for the presence of God Almighty, for the abundance of Grace and Grace and His Guidance the author can complete practical work and complete reports on practical work at PT. Riau Andalan Pulp and Paper which was held on December 17, 2018 to February 1, 2019.

In carrying out practical work activities and completing reports of practical work, the authors get a lot of help, guidance, and support from various parties. For this reason the authors also thank::

1. Mr. Edy as the main mentor who always provides explanations while undergoing practical work.
2. Mr. Ir. Bernadus Kristyanto, M.Eng., Ph.D. as a practical work supervisor who has assisted and guided the author during compiling the Job Training Report.
3. Mr Edward as the field supervisor during practical work.
4. Families who always support the writer both in the implementation of Job Training and preparation of Job Training Reports.
5. My co-workers in the Production Planning and Inventory Control Department who provide explanations and assistance during the preparation of practical work reports.
6. Associate apprentice writers while undergoing practical work activities.
7. All parties who have assisted directly or indirectly in carrying out practical work activities and in preparing practical work reports

The author realizes that this report still has many shortcomings. Nevertheless, the authors hope that this Job Training Report can be useful for readers

.

Pangkalan Kerinci, August 10th 2019

(Jude Septayana)

TABLE OF CONTENT

CHAPTER	TITLE	PAGE
	TITLE PAGE	i
	LEGALIZATION PAGE	ii
	TABLE OF CONTENT	iii
	LIST OF FIGURES	v
	LIST OF TABLE	vii
1	INTRODUCTION	1
	1.1. Background of Industrial Practice	1
	1.2. Purpose of Industrial Practice	1
	1.3. Place and Time of Industrial Practice Held	2
2	COMPANY PROFILE	3
	2.1. History of Company	3
	2.2. Organization Structure	9
	2.3. Company Management	13
3	**COMPANY SYSTEM REVIEW**	17
	3.1. Bisuness Process of Company	17
	3.2. Company Product	20
	3.3. Production Process	23
	3.4. Production Facility	29
4	**REVIEW OF STUDENT WORK**	31
	4.1. Work Area	31
	4.2. Responsibility	31
	4.3. Methodology	32
	4.4. Result	36

5 **FINALE** 39

5.1. Work Area 39

5.2. Solution and Recommendation 39

REFERENCES 40

ATTACHMENT 41

LIST OF FIGURE

Figure 2.1. Company Structure ..4
Figure 2.2. Product of PT. Riau Andalan Pulp and Paper ..5
Figure 2.3. Frontier Product of PT. Riau Andalan Pulp and Paper ..5
Figure 2.4. PEFC Certificate ..6
Figure 2.5. OHSAS 18001 Certificate ..7
Figure 2.6. ISO 9001 Certificate ..8
Figure 2.7. ISO 14001 Certificate ..8
Figure 2.8. PTHL Certificate ..9
Figure 2.9. Organization Structure of PPIC Department ..10
Figure 2.10. Company Marketing System ..14
Figure 2.11. Company International Commercial Terms ..15
Figure 3.1. Bisuness Process ..19
Figure 3.2. PaperOne™ All Purpose ..20
Figure 3.3. PaperOne™ Copier ..21
Figure 3.4. PaperOne™ Digital ..22
Figure 3.5. Folio ..22
Figure 3.6. Costumer Roll ..23
Figure 3.7. Pulp Production ..24
Figure 3.8. Paper Production ..27
Figure 4.1. Flowchart of Industrial Practice ..32
Figure 4.2. Flow Process of Production Activity ..33
Figure 4.3. Exmill Schedule ..34
Figure 4.4. *Fishbone* Analysis ..36
Figure 5.1. Product Placement Suggestion ..39

LIST OF TABLE

Table 3.1. PaperOne™ All purpose Specification..... 21
Table 3.2. PaperOne™ Copier Specification..... 21
Table 3.3. PaperOne™ Digital Specification 22
Table 3.4. Folio Specification..... 23

serviens in lumine veritatis

CHAPTER 1
INTRODUCTION

1.1. Background of Industrial Practice

Industrial Engineering Program from Faculty of Industrial Technology of Universitas Atma Jaya Yogyakarta (PSTI) obligue for all student to do Industrial Practice based on Curriculum of PSTI UAJY. PSTI UAJY view the Industry Practice as facilitate for student to recognize the situation of work at Industry also to grow, improve and develop the profesional ethic work as prospective of Industrial Engineering Graduate

Internship program could say as simulation event student of Indutrial Engineering profession. Paradigm that must be plant is that during Industrial Practice student work at company that he/she already choosen. Work, including activities of planning, designing, repairing, implementation and problem solving. Because of that, students activity during internship are:

1. Recognize company scope
2. Following work process at company continously
3. Do and implement task that given from supervisor, or mentor
4. Observing system behaviour
5. Compile reports in written form
6. Do Internship

1.2. Purpose of Industrial Practice

Several things that want to archive

1. Practicing discipline
2. Practicing skill of communication skill between subordinates, colleagues and the company superiors
3. Practicing skill of adaptation on work environment
4. Observing directly company activity on production activity and business process
5. Completing the theory that obtained in lectures with existing practices in the company

6, Adding the knowledge about production system and business system.

1.3. Place and Time of Industrial Practice Held

Industrial Practice was started from July 1st 2019 untill August 9th 2019 at PT Riau Andalan Pulp and Paper, Jalan Lintas Timur, Sub-District Pangkalan Kerinci, District Pelalawan, Riau 28654. Work Time of each department is different, writer was placed in PPIC Department (*Production Planning and Inventory Control*) at RAK Office that the work time of Monday untill Friday was started at 07.00 WIB untill 16.00 WIB with recess 11.30 WIB untill 13.00 WIB and Saturday from 07.00 WIB untill 11.00 WIB. At the last or end of period Industrial Practice will held the presentation and arrangement of full report of Industrial Practice full activity

CHAPTER 2
COMPANY PROFILE

2.1. History of Company

PT. Riau Andalan Pulp and Paper (RAPP) is one of biggest pulp and paper company in Asia, and PT. Riau Andalan Pulp and Paper (RAPP) is child or move under management of Asia Pacific Resources International Holdings Ltd (APRIL) that also concentrate in pulp and paper industry. Asia Pacific Resources International Holdings Ltd (APRIL) is the member of Royal Golden Eagle (RGE) group that established by Sukanto Tanaoto (CEO) on 1973 which is this group now has more than 80 child companies that's biggest in Indonesia or Multinational.

CEO and the founder Mr. Sukanto Tanoto was born on December 29th 1949 as the oldest chld from 7 childs. He started the business from 1967, he joined the family company as spare part supplier of motorcycle from Japan. In 1973 he built *Plywood* Industry that has been named RGM (Raja Garuda Mas) that now has known RGE (Royal Golden Eagle). He also built palm oil company that has been named Asian Agri on 1979. On 1983 he built *dissolving pulp* mill at Porsea, North Sumatra that being named Indorayon (now become Toba *Pulp* Lestari) that was start operation in 1988.

PT. Riau Andalan Pulp and Paper (RAPP) located at Pangkalan Kerinci, Sub-District Langgam, Pelalawan District, about 75 km far from capital of Riau Province, Pekanbaru, then the main office and administration also cooperation located at Jl Teluk Betung No.31 Jakarta 10230. PT Riau Andalan Pulp and Paper is locate in strategic location because Pangkalan Kerinci is the nearest resources with perfect clime that fit for tree development that would be as main raw material of Pulp and Paper. PT Riau Andalan Pulp and Paper (RAPP) fully start operation at third quartal of 1996, when that time average production per day are about 200 tons pulp, and on 2004-2006 target was increaseing, for pulp increase about 2.000.000 ton and paper about 5.500 ton per day.

APRIL itself now has several paper company, beside Indonesia APRIL laso had the office at Singapore, Macau and China. To make easier the understanding of the structural, below is the company structure

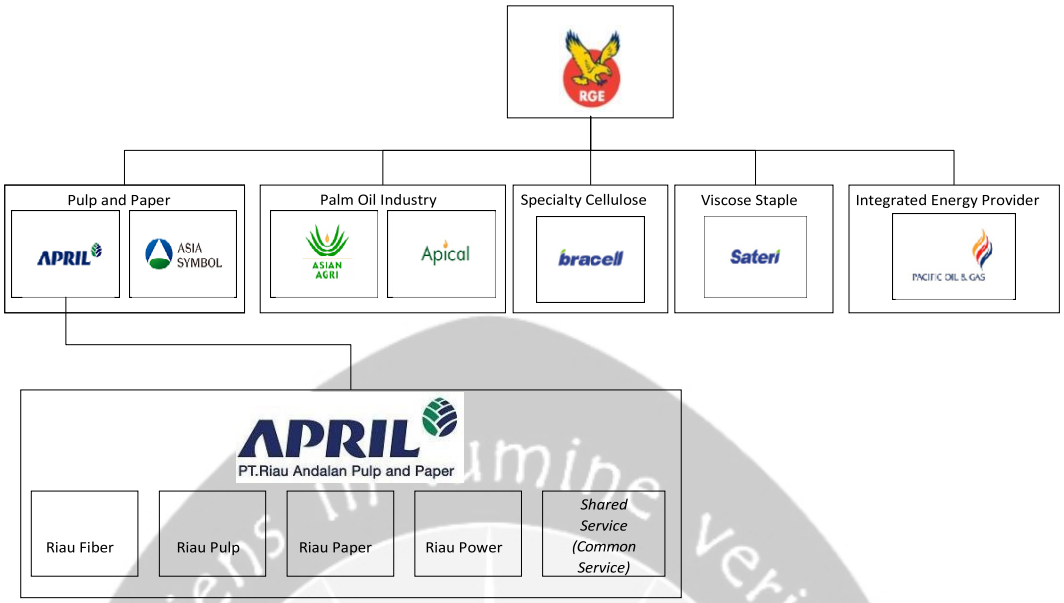


Figure 2.1. Company Structure

From Picture 2.1. show that PT Riau Andalan Pulp and Paper (RAPP) has mangae their several part of company, there area:

a. Riau Fiber: responsible to create wood from seed treatment, plantation, nursery and harvesting to become main material production and development of type of tree seeds
b. Riau Pulp: Responsible to produce pulp with wood material from Riau Fiber
c. Riau paper: Responsible to produce paper with pulp as material from Riau Pulp
d. Riau Power: Responsible to manage the energy, that is electricity generation and reuse the *liquor*, water and chemical material
e. Shared Service (Common service); Responsible to manage the overall sevice and logistic, there are Supply Chain Management, Finance, Human Resources Department and Accounting

Besides four above, there is also construction sector that construct company, road and the other facilities that manage by PT Pec-Tech then for owner and creator for all industry site is manage by PT Kawasan Industri Kamper (PT KIK). Riau Power has 535 MW production capacity that distribute electricity to all mill area with facilities and infrastructure that include at PT RAPP and also distribute to Kerinci district. Riau Paper start operated at April 1998 producing various brand of paper

Product that has bee produce by PT. Riau Andalan Pulp and Paper (RAPP) is *Bleahed Acacia Kraft Pulp* and *Uncoated Wood Free Paper* that ussually for us to printing and photo copy from 55 gsm untill 150 gsm. Brand Paper that produced are Dunia Mas, Copy & Laser, Ixora, Lazer IT, ZAP, ZAP Premium, PPLite, PP White, Perfect Print, Excellent Copy Paper, BMO (*Bright White Multi Purpose Office*) that shown on Picture 2.2. (April Group,2019). Besides brand paper above, there's also top paper brand from PT. RAPP that is PaperOne™ that shown on Picture 2.3. (April Group, 2019)

Figure 2.2. Product of Riau Andalan Pulp and Paper Company

Figure 2.3. Frontier Product of Riau Andalan Pulp and Paper Company

2.1.1. Company Certificate

To make continous improvement with product and guarantee process for costumer, bankir, and government need certificate as part from commitment form company. PT. Riau Andalan Pulp and Paper (RAPP) has gotten various

certificate from national and also International that could give the overall guarantee to decide final quality of product. Those certificate are:

a. Programme for the Endorsement of Forest Certification (PEFC)

PEFC is an international non-profit, non-governmental organization, and the world largest forest certification system. Forest certification ensure sustainable forest management by monitoring forestries, tracing and labeling forest products, and certifying that they meet certain standards. This certicicate was company got in December 2014, with that company can guarantee that the company take the legal material that shown in Figure 2.4.

Figure 2.4. PEFC Certificate

With PEFC sertification, company could make sure to costumer that material use to produce paper is legal, and paper also prioritize important aspect such as environment, social and economy with tree as the resources that will always produce continue and safe and keep the tree and environment safe

b. OHSAS 18001 : 2007

OHSAS 18001:2007 or Occupational Health and Safety Management Certification is the International Standard to provides the identity, control, and decrease the risk with health and safety standard in workplace, the cerificate shown in Figure 2.5. By gathered this certificate company could ensure the guarantee of work safety and health is safe so costumer will believe the product is the good quality.

Figure 2.5. OHSAS 18001 Certificate

c. ISO 9001

This certificate is the standards that deals with the fundamentals of quality management system including seven quality management principles, the certificate shown in Figure 2.6.

Figure 2.6. ISO 9001 Certificate

d. ISO 14001

ISO 14001 is the standard the related to enviromental management that could minimize the operation that could effect the environment badly, create applicable laws, regulations, and other environmental oriented requirement and continue to improving all the actions that state before to fullfill the commitment that product is made and safe for tree and environment, the certificate shown in Figure 2.7.

Figure 2.7. ISO 14001 Certificate

e. Sustainable Plantation Forest Management (PHTL)

Sustainable Plantation Forest Management (PHTL) is activity which is do to produce forest tree that could guarantee the continue of production, ecology, social and obey governmnent regulatuion under LEI (Ekolabel Institut Indonesia), and this certificate were gathered by company in 2006.

Figure 2.8. PHTL Certificate

f. Sustainable Production Forest Management and Timber Legality Verification (PHPL-SVLK)

PHPL-SVLK is a certification system for sustainable production forest management and timber legality verification for all forestry manufacturing and operational facilities that aim to ensure that the factory can only receive and use legal timber and its existence can be verified. The company received the SVLK PHPL certification in October 2012 which has been developed by the European Union with the Indonesian government

2.2. Organization Structure

2.2.1. Organization Structure

Company of Riau Andalan Pulp & Paper (RAPP) has very wide organizational strcture, one of it is *Production Planning and Inventory Control* department that have task to plan the production and controlling product inventory in half finish or finish. Below Organizational structure of *Production Planning and Inventory Control* department.

.

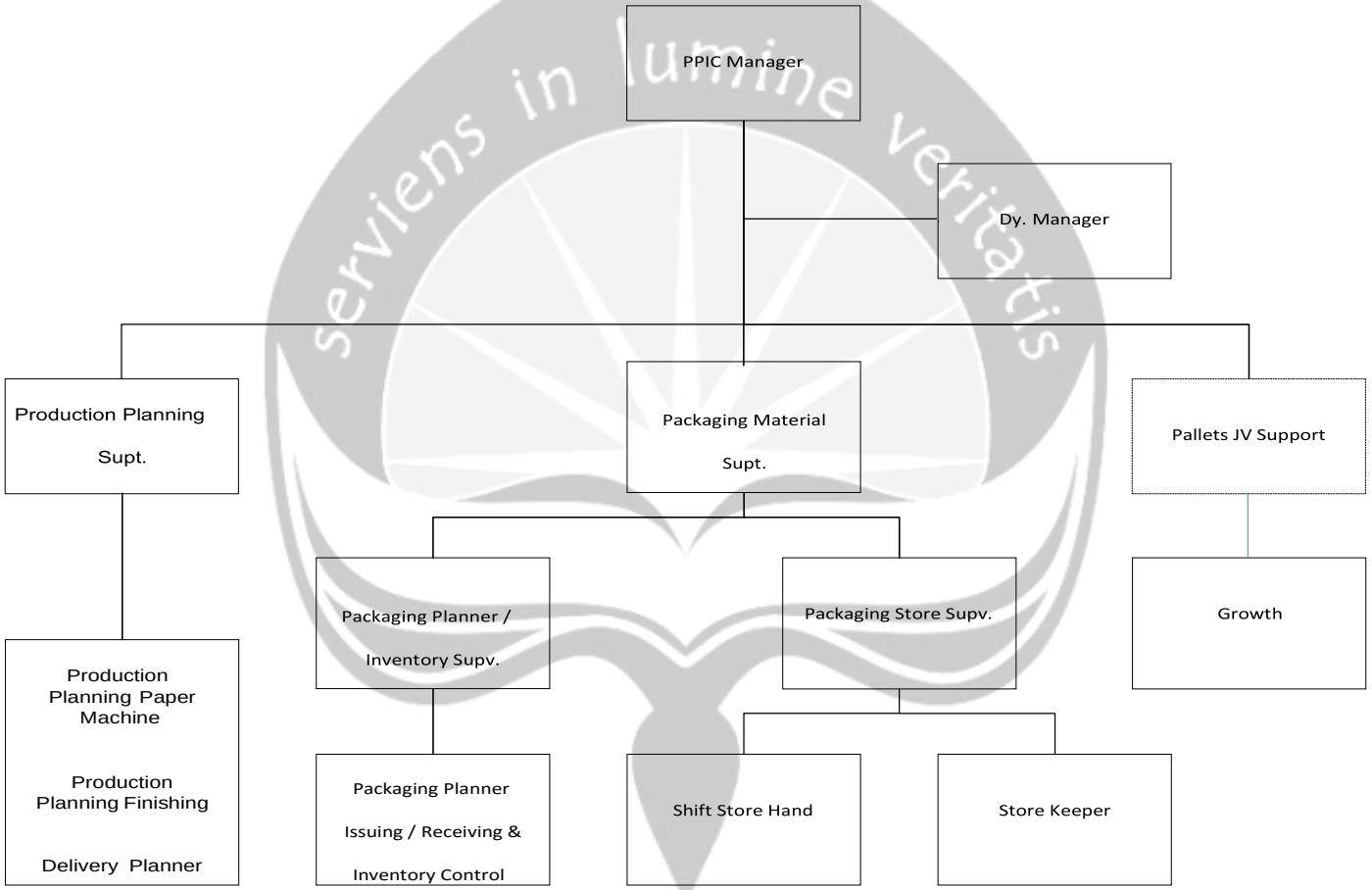


Figure 2.9. Organization Structure of PPIC Department

2.2.2. Job Description

Writer is placed at *production planning and inventory control* department and the list of job description shown below:

a. PPIC *Manager*

PPIC *Manager* responsible for operation of *production planning.*.

b. Deputy Manager

Deputy Manager responsible to help PPIC manager for operation of *production planning. Deputy Manager* also commanding *Supports* member, those are *Production Planning, Packaging Material Support, and Pallet JV*

c. Production Planning Support

Production Planning Support responsible to make schedule of production. *Production Planning Support* commanding *Production Planning Paper machine, Production Planning Finishing, and Delivery Planner,* also *Production Planning Support* responsible to report all paper and work situation to *Deputy Manager*.

d. Packaging Material Support

Packaging Material Support responsible for packaging procurement. This department commanding

e. Pallets JV Support

Pallets JV Support responsible for the pallet availability.

f. Packaging Planner / Inventory Supervisor

Packaging Planner / Inventory Supervisor responsible for the opartions of packaging planning with *Issuing / Receiving & Inventory Control*.

g. Packaging Store Supervisor

Packaging Store Supervisor responsible for the opartions of *Shift Store Hand* and *Keeper*.

h. Productions Planning of *Paper Machine*

Productions Planning Paper Machine responsible for the operations for production schedule at paper machine.

i. Production Planning Finishing

Production Planning Finishing responsible for the operations for production schedule on *cut size* and *folio sheet* machine.

j. Delivery Planner

Delivery Planner responsible for the operations for delivery schedule to costumer.

k. Inventory Control

Inventory Control responsible for the operations of inventory control of company

l. Packaging Planner

Packaging Planner responsible for the operations of order schedule of materials' packaging

m. Issuing / Receiving & Inventory Control

Issuing / Receiving & Inventory Control responsible for the operations of in and out material packaging and control the invntory packaging.

n. Shifts' Store Hand

Shifts' Store Hand responsible for everything that could happen at store.

o. Store Keeper

Store Keeper responsible to keep the store.

2.3. Company Management

2.3.1. Vision & Mission of Company

As company Asia Pacific Resources International Holdings Ltd (APRIL) has vision to become International Class of Pulp and Paper company with management and best performance, most profitable and continue, also become first choice of costumer and employee. And Mission APRIL to gather the vision are:

- Generate suistanable growth
- Be the leader in each industry and market segment we compete in
- Maximize return to stakeholders while contributing to local and regional socio-economic development
- Create value through modern technology and leverage on our industry knowledge, premium assets, networks and human resources base

2.3.2. Company Value

Value of PT Riau Andalan Pulp and Paper (RAPP) has the same value with the main group (RGE), with short name TOPICC, there are:

a. Complementary **T**eam

Company unites on the same goal and completing each other on the teamwork

b. **O**wnership

Company keep their own desire to always achieve the best value anytime

c.**P**eople

Company develop the human resources to grow together.

d. **I**ntegrity

Company act with full of integrity

e. **C**ostumer

Company understand and give the best for costumer

f. **C**ontinous Improvement

Company do not satisfy and always keep to seek the improvement

2.3.3. Employment

Total employee at PT Riau Andalan Pulp & Paper (RAPP) is around 6000 employees. For PPIC (*Production Plannnig & Inventory Control*) has 8 employess that responsible for planning of paper. Work time general at this company divide in 3 shift with 24 hours to support company and mill operational, but at PPIC office for Monday untill Friday at 07.00 until 16.00 with rest time at 11.30 untill 13.00 and Saturday at 07.00 until 11.00, but most of them do overtime to control the planning of paper production and maintain the order.

2.3.4. Marketing

Riau Andalan Pulp and Paper company marketing products domestically and abroad. All product marketing is carried out by trading agents located in Singapore and Malaysia. The company's marketing system can be shown in figure 2.10.

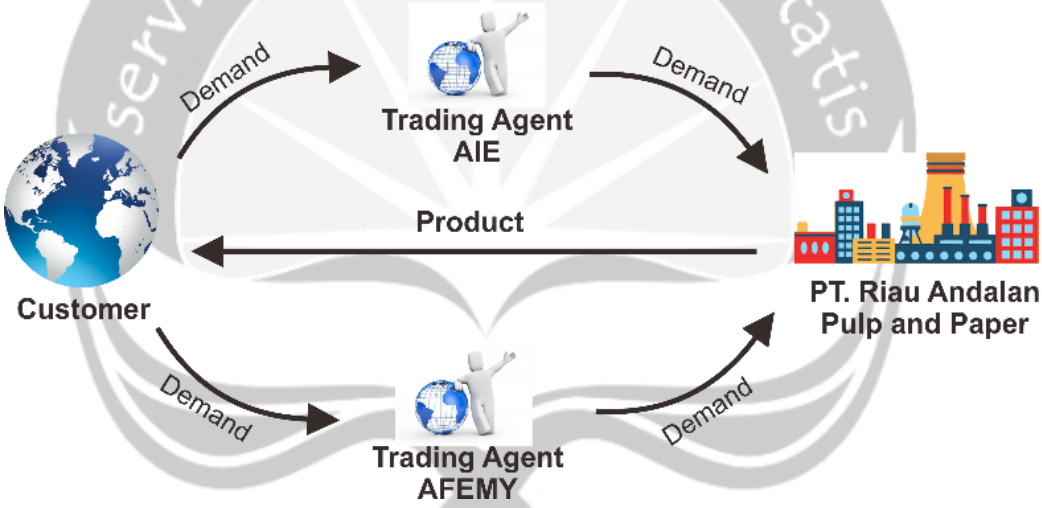


Figure 2.10. Company Marketing System

From Figure 2.10. indicates that the company has two trading agents, namely April International Enterprise (AIE) located in Singapore responsible for purchases from India, Cambodia, Myanmar, Malaysia, Philippines, Singapore, Thailand, Vietnam, Africa and the Middle East and April Far East Malaysia (AFEMY) located in Malaysia is responsible for purchases from Australia, China, Hong Kong, Indonesia, Japan, Korea, New Zealand, Turkey, Taiwan, USA, Canada, Europe and Pacific Island. The number of products exported is more than the number of products marketed domestically (75% of the products produced are used to fulfill international market demand). The company aims to export more than 70 countries. By using the make-to-order system, PT. Riau Andalan Pulp and Paper produces according to customer needs.

Marketing process at PT. Riau Andalan Pulp and Paper (RAPP) uses sea (ship) and land transportation (truck) transportation. PT. Riau Andalan Pulp and Paper (RAPP) has two ports namely Artificial Port and Futong Port. Artificial Port is used for transportation of pulp and paper products both in domestic shipping and overseas shipping using containers. Futong Port is used to transport pulp products with overseas shipping using break bulks. Company also uses the International Commercial Terms (Incoterms) system agreed upon with customers. Examples of the company's International Commercial Terms (Incoterms) system can be shown in **Figure 2.11.**

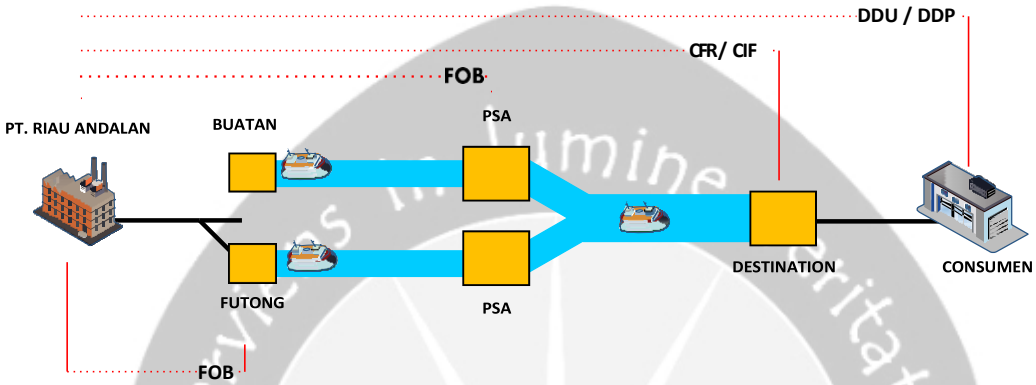


Figure 2.11. Company International Commercial Terms

The International Commercial Terms (Incoterms) system is a system used between sellers and buyers to explain the rights and obligations of shipping goods in the international trading system. These rights and obligations include the process of shipping, the person in charge of export and import, the person in charge of costs, and the risk management of goods when there is a change in the condition of the goods. The International Commercial Terms (Incoterms) system used by companies is FOB, CFR, CIF, DDU, and DDP.

FOB (Free On Board)is a part of the term that delivers goods on board a ship in a certain place that has an impact on the buyer must bear all costs and risks that occur in loss or damage to goods starting from that place and the seller is obliged to take care of export formalities. FOB port at this company has two places, namely the Futong Port and Singapore Port (PSA) which transport goods from Artificial Ports. Cost on Freight (CFR) and Cost, Insurance, and Freight (CIF) are destination destinations. Cost on Freight (CFR) is a term that delivers goods carried out on a ship to the destination port and the seller must take care of export formalities. After that, the risks and additional costs will be transferred to the buyer. Cost, Insurance, and Freight (CIF) is a term that delivers goods carried out on the ship to the destination port and the seller must take care of export formalities and have insurance against the risk of purchasing goods.

Delivery Duty Unpaid (DDU) and Delivery Duty Paid (DDP) for companies are carried out until the company warehouse and use of this system are usually carried out in domestic (domestic) activities. Delivery Duty Paid (DDP) is a term that delivers goods to the destination country and the seller must bear all costs and risks including customs, taxes and other levies.

Domestic shipping destinations from Artificial Ports namely Tanjung Priok Port in Jakarta, Tanjung Mas Port in Semarang, and Tanjung Perak Port in Surabaya. Tanjung Priok Port is a shipping center in several other local places, such as Kalimantan, Batam, and parts around West Java. Tanjung Perak Port is the second largest transit place after Tanjung Priok Port with lower shipping prices to be sent to other local places such as Makassar, Bali and surrounding areas. Artificial Port and Futong Port deliver 70 foreign destinations.

2.3.5. Facility

a. Housing

PT. Riau Andalan Pulp and Paper (RAPP) provide house for every employee including do the internship or industrial practical, company commit to serve the best for employee that one of it is to increase the comfort for the employee to increase the work productivity. Housing itself divide into 2 group, first group is for the employee that unmarried, so the employee can place at House that each room has their own roommate with 4 employee capacity, example is the house C34 that writer live at Industrial Practical period. For married employee can placed at *guest house* depend on the rank or position that employee achive.

b. Transportation

Area of PT. Riau Andalan Pulp and Paper (RAPP) is very wide, that's why the transportation is needed for every employee. Company provide two type of tranportation, these are Bus and Taxi Commuter. Employee ussually use the bus for their activity to their office, every bus has different destination and time also different, so the employee need to be aware for their bus, Taxi Commuter itself can use for the employee to go their office that ussually their late or bus is broke, Taxi commuter itself has their own time and and different destination in different time. Both transportation can deliver the employee at morning shift, break time, afternoon session and evening shift.

c. Foodcourt

Foodcourt also provide from company to fulfill the needed of company, the foodcourt consist of variance of food and drink, in foodcourt also provide the bakery and mini market to fulfill employee needed

d. Clinic

PT Riau Andalan Pulp and Paper (RAPP) also provide the clinic for employee for checking their health condition or first aid for employee or worker that got an accident.

e. Hotel

Company also provide Hotel or Unigraha Hotel to provide company guest or comer from various country to lodging for several days.

f. Sport Facility

Company also provide the needed of sport activity for employee or worker to use the facility that company provides. The facilities that company provide are Tennis court, football court, volley court, basketball court, pool, fitness center and golf course.

g. School

RAPP provide the school for the employee that has their children, and company provide three schools, these are Global Andalan School, Mutiara International School and Taruna Andalan.

h. Worship Facility

PT Riau Andalan Pulp and Paper provide the worship facility that consist mosque, church and cetiya inside the housing.

i. Additional Facility

Another facillity that given from company is the scholarship for oustanding childrean that want to continue higher education, example such as Tanoto Foundation.

CHAPTER 3
COMPANY SYSTEM REVIEW

3.1. Bisuness Process of Company

PT. Riau Andalan Pulp and Paper (RAPP) consist of many department and between it also *Production Planning and Inventory Control* department. PPIC department responsible as planner of Production and PPIC department also connected integrity. Bisuness Process overall consist of 9 part, there are Costumer, Sales, Internal Customer Service (ICS), Production Planning and Inventory Control (PPIC), Production, Finishing, Warehouse, Shipping and Carrier. First process start when Costumer order and Sales receive order and input it to SAP (*System Application & Products, and Data Processing*). SAP was use for PT Riau Andalan Pulp and Paper (RAPP) as interface application in each company division for sales transaction. Sales Department will input data using product code and quantity that costumer wanted. Then ICS (Internal Costumer Service) take the data from SAP to checking stock of production and inputing data of space availability on SAP. When checking happen, there are four possibilities that could happen.

First possibility is when sapce and stock of production available, then ICS department will give the information to Sales Department to give informantion for costumer and then product will deliver to costumer. Second possibility is when space unavailable and stock of production available, then ICS department will input the demand of space available in SAP and then Shipping department will take care the ship.Third possibility is when space is available but stock of production is unavailable, then ICS department will input total production data on SAP and then product will produce and continue by Shipping department to deliver the product. And last possibility is when both of them is unavailable, the ICS department will input the space of demand available and total production in SAP.

After *Production Planning and Invemtory Control* (PPIC) department will checking production needed in SAP and input total of production in PMIS (*Paper Machine Information System*). In this case *Planner* will create the planning schedule for production process with output that consist of *exmill* data that will input in SAP. *Exmill* data is data of schedule that consist of date estime that product is finish to produce, planner also will predict the deluvery plan and loading plan in PMIS. The next process is production department receive the data that already plan from *planner* and do the production with produce the *Jumbo Roll*, then cut in *Winder Machine* become *Sheeter Roll* and *Costumer Roll*. And then will enter the storage that divide into three division, SMC, AWA (RST 2) and RST 3. For *Costumer Roll* after finish produce will move to packaging and save in warehouse, for *Sheeter Roll* will cut again into paper that depend on the order that will

send into warehouse. After that *Warehouse* Department will save and arrange the pallet and input again into PMIS. When Container is ready, then *Warehouse* division will load the product based on order.

After that s*hipping* department will process the delivery of finished products by sea. Before shipping, finished products will be put into containers. Then the shipping department will input the number and size of containers which will then be included in the DHL system. The DHL system is a multinational company that cooperates with Riau Andalan Pulp & Paper to manage logistics of shipping goods and shipping routes. Then, the shipping department will check the availability of ships on the DHL system. When the ship is available, the finished product can be sent to the customer. When the ship is not available, the carrier department will look for alternative vessels available. There are several factors that can cause ships are not available, namely less space for finished products, there are ships that cannot be used due to national holidays, and ships that are under maintenance. After obtaining another alternative vessel, the carrier department will ship scheduling according to the number and size of containers seen on the DHL system. Ship schedule data will be received by the shipping department and provide information to customers. If the customer agrees with the ship's schedule, the product will be sent. If the customer disagrees with the ship's schedule, the carrier department will look for alternative vessels and end up in an agreement between the shipping department and the customer. After that the product will be sent. For business processes that occur in the *Production Planning and Inventory Control* department starting from *Internal Customer Service* (ICS) to the shipping.

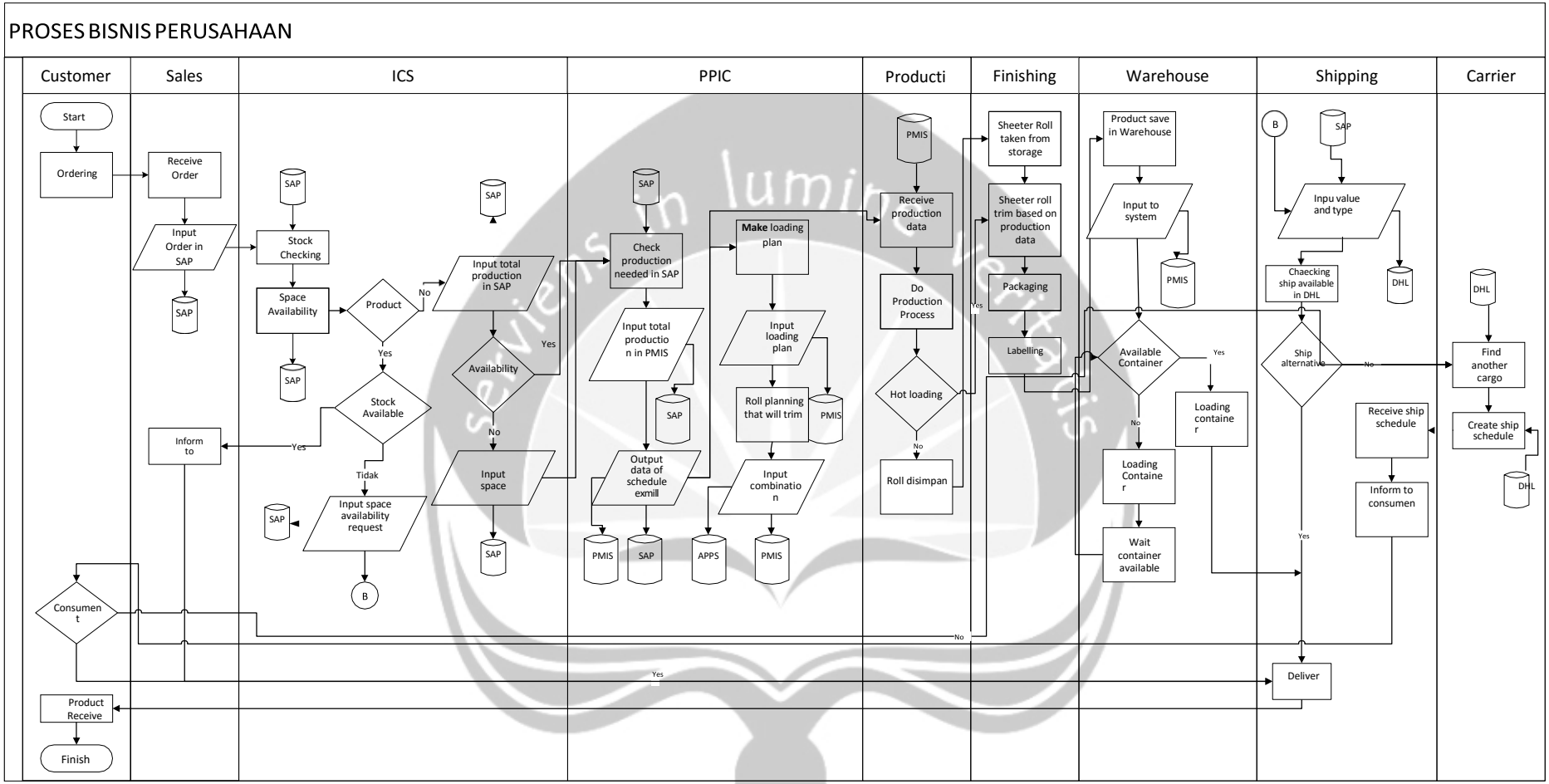


Figure 3.1. Bisuness Proses

3.2. Company Product

Company produce the two of main product, there are Pulp and Paper.

3.2.1. Pulp

Pulp is paper puree (almost like porridge) that produce as half finish product on paper making. There are two types that produce, sheet that will sell to costumer and pulp in still puree that company use for make the paper. Company also produce various type of pulp, there are normal pulp, High Strength (HS), Extra Prime (XP) and *Acacia Eucalyptus* (AE)

3.2.2. Paper

Paper is the main finish product that produce by this company. The paper is created from pulp that has been produce in pulp machine. Generarlly type of paper that produce, there are *Copy Paper* and *offset Paper*, in type of size, divide into 3 type, there are *cut size, customer roll, and Folio.*

a. *Cut Size*

Cut size is the ussual size that use in daily life, the size itself is Internatonal standard and ussually use for printing and fotocopy. Various size of *Cut Size* product are A4 with size 210 x 297 mm, Letter with size 216 x 279 mm, F4 with size 215 x 330 mm, A3 with 297 x 420 mm, B4 with size 257 x 364 mm, B5 with size182 x 257 mm, A4S with 215 x 297 mm, Quarto with 215 x 280 mm, etc.

PT Riau Andalan Pulp and Paper (RAPP) has their main paper product of *Cut Size*, there are PaperOne™ All Purpose , PaperOne™ Copier, dan PaperOne™ Digital

- PaperOne™ All Purpose

  This product is the type of paper product that use for all purpose of printing needed, this product could adapt with the printing machine and photocopy machine to give the good print.

Figure 3.2. PaperOne™ All Purpose

Table 3.1. PaperOne™Specification

Type (Unit)	Method	Tolerance	Quality Specification
Basis Weight (g/m2)	ISO 536	4%	80
Thickness (µm)	ISO 534	3	110
CIE Whiteness (#)	ISO 11475	2	167
ISO Brightness (%)	ISO 2470	2	99
ISO Opacity (%)	ISO 2471	2	95
Surface Roughness (ml/min)	ISO 8791-2	40	140

- PaperOne™ Copier

  This product is type of product paper that use for the need of printing on high prductive and high speed

Figure 3.3. PaperOne™ Copier

Table 3.2. PaperOne™Specification

Type (Unit)	Method	Tolerance	Quality Specification		
Basis Weight (g/m2)	ISO 536	4%	70	75	80
Thickness (µm)	ISO 534	3	100	103	107
CIE Whiteness (#)	ISO 11475	2	160	160	160
ISO Brightness (%)	ISO 2470	2	96	96	96
ISO Opacity (%)	ISO 2471	2	93	94	95
Surface Roughness (ml/min)	ISO 8791-2	40	190	190	190

- PaperOne™ Digital

  This type of product is use for printing with *digital printing* technology and only use for digital matter.

Figure 3.4. PaperOne™ Digital

Table 3.3. PaperOne™ Specification

Type (Unit)	Method	Tolerance	Quality Specification	
Basis Weight (g/m2)	ISO 536	± 4%	85	100
Thickness (µm)	ISO 534	± 3	110	120
CIE Whiteness (#)	ISO 11475	± 2	170	170
ISO Brightness (%)	ISO 2470	± 2	100	100
ISO Opacity (%)	ISO 2471	± 2	96	97
Surface Roughness (ml/min)	ISO 8791-2	± 40	100	60

b. Folio

Folio is the type of paper with bigger size than *Cut Size* that also could costumize based on costumer order, *Folio* itself also could use for primtimg matter. In delivering, *Folio* pacakge into two type, there are *Ream Wrap* that use the *Kraft* (Brown Paper) that shown in **Figure 3.5.** and *Bulk Order* and *Loose Fill* that means without any wrap, and the specification of Folio shown in **Table 3.4.**

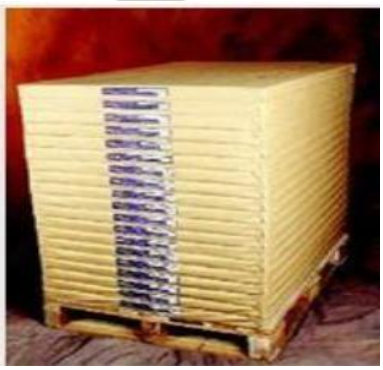


Figure 3.5. Folio

Table 3.4. Folio Specification

Type (Unit)	Method	Quality Specification							
Weight (g/m2)	ISO 536	55	60	70	75	80	90	100	120
Ketebalan (µm)	ISO 534	68	77	87	94	99	111	121	143
Moisture (%)	ISO 287	5	5	5	5	5	5	5	5
CIE Whiteness (#)	ISO 11475	158	158	158	158	158	158	158	158
ISO Brightness (%)	ISO 2470	94	94	94	94	94	94	94	94
ISO Opacity (%)	ISO 2471	84	88	92	93	94	94	96	97
Kekasaran (ml/min)	ISO 8791-2	140	140	140	140	140	140	140	140

c. *Costumer Roll*

This size based on the name itself, this product was determined by rhe costumer in the Roll shape and wrap with *kraft* (brown wrap), ussually this size was used in big industry

Figure 3.6. Costumer Roll

3.3. Production Process

3.3.1. Raw Materials

For starters, both of product (Paper and Pulp) generally has the same main material, there are woods and Chemical liquid as the support material. For the wood, company use two main type of wood, Acacia (*Acacia Mangium, Acacia Crassicarpa*) and Eucalyptus. These two woods need to develop at least 5 years to ready harvest with the height at least 30 meters with diameter 25-30 cm.

For chemical liquid, the chmical for pulp are O2 ,ClO2, NaOH ,H2O2, and SO2. O2 dan NaOH for decrease the *lignin* on pulp, then ClO2, NaOH, H2O2, and SO2 use for whitening to achieve the white type that wanted. For Paper the additional chemical are ASA (*Alkenyl Succinic Anhydrate*) to modify the paper on absorbing

the water, ABO (*Optical Brighteness Agent*) to set the bright of paper, and Bentonite to mix the resin.

3.3.2. Production Process

a. Pulp

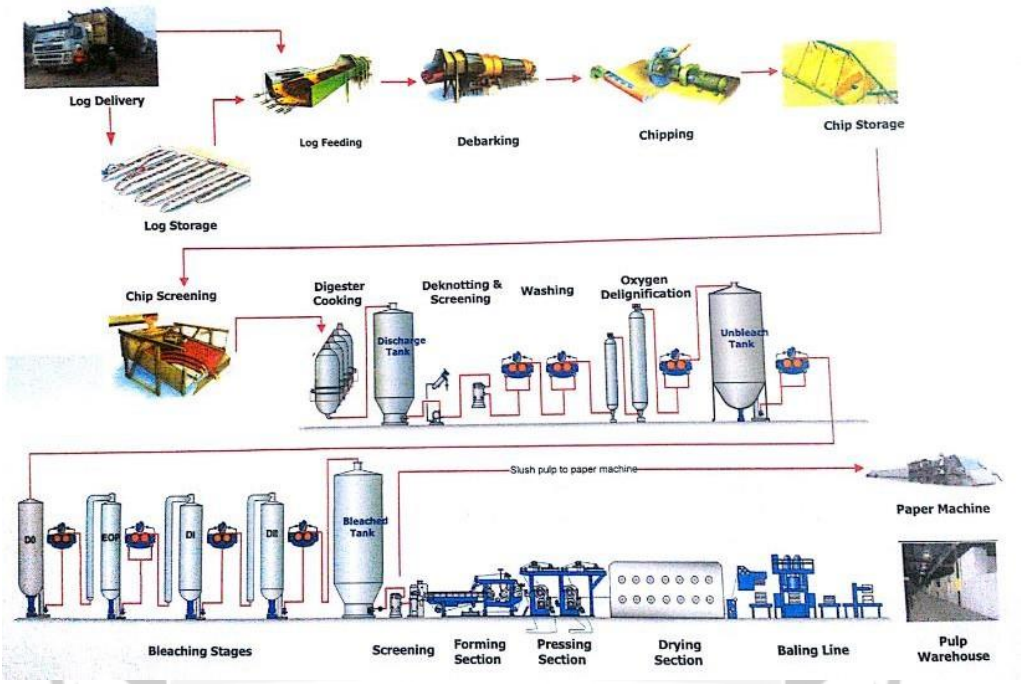


Figure 3.7. Pulp Production

Based on **Figure 3.7.**, the production process of pulp start from the wood that has been harvested and sent from Riau Fiber to Riau Pulp. There are two types of wood shipped, which are un-skinned wood and skinned wood. Un-skinned wood will enter log storage and be stacked and dried for one to two months to reduce levels of lignin contained in wood. Lignin is an outer layer of wood that binds to cellulose and hemicellulose fibers. The skinned wood will enter the log feeding process. Then, wood is transported to log feeding which is the conveyor line before entering the debarking process. The conveyor line is made so that when the wood is filled in the debarking process can take place well.

The debarking process is the process of stripping the bark because the bark is hard to cook into pulp and can leave black stains on the pulp. In the debarking process, wood will be inserted into the drum filled with a capacity of 50% of the total volume of the drum and the drum will rotate at a predetermined speed so that the wood in the drum will collide with each other and cause the bark to peel off. The bark will be used as fuel in the power boiler. After the debarking process is

complete, the wood will be sent to the chipping process. The shipping process uses a roller table and washing station equipped with a metal detector to detect iron which is still embedded in wood. The table roller is given serrations on each surface to peel the rest of the bark and washing station as a sprayer of water so that the wood is easier to chop and clean the remnants of the bark that is still attached to the wood.

Wood that has passed through the skinning process will enter the chipping process. The chipping process is a process of flaking so that wood is easy to cook in accordance with its specifications so that it can produce a uniform size. The chipping process has 7 lines which have a capacity of 30,000 tons of chips per day. After the chipping process is complete, the chip will be inserted into the storage chip. Storage chips serve to maintain the availability of chips before they are cooked in the digester. The storage chip in the company consists of two rectangular chip piles, one circular chip pile, and one pin pile chip. After that, the chip goes into the screening stage. Chip screening is the separation of small and large chips which aims to maintain uniformity in chip size

The wood received will be cooked using white liquor. The cooking digester process aims to destroy lignin in wood. To obtain cellulose and semicellulose fibers, lignin needs to be destroyed using a base solution. The active compound found in white liquor is 2 Na2S and NaOH

The cooked wood then enters the decnotting process. The decnotting process is the process of separating unripe pulp, usually in the form of large chips and wood eyes. Then the screening process is carried out by filtering based on differences in size and weight. Filtering is used as many as four levels in order to minimize reject and increase the pulp yield received. In the process screening will produce pure pulp containing fiber

Washing is the stage of cleaning the pulp after the cooking process by separating wood fibers from unwanted impurities in the pulp production process. The dirt found during the digester process is lignin, soda, and white liquor which has turned into black liquor. The washing process is carried out repeatedly so that dirt can be separated from the pulp so that the pulp is expected to contain more water than black liquor from the remaining cooking results.

The wood received will be cooked using white liquor. The cooking digester process aims to destroy *lignin* in wood. To obtain *cellulose* and *semicellulose* fibers, *lignin*

needs to be destroyed using a base solution. The active compound found in white liquor is 2 Na2S and NaOH

The cooked wood then enters the *decnotting* process. The *decnotting* process is the process of separating unripe pulp, usually in the form of large chips and wood eyes. Then the screening process is carried out by filtering based on differences in size and weight. Filtering is used as many as four levels in order to minimize reject and increase the pulp yield received. In the process screening will produce pure pulp containing fiber

Washing is the stage of cleaning the pulp after the cooking process by separating wood fibers from unwanted impurities in the pulp production process. The dirt found during the digester process is lignin, soda, and white liquor which has turned into black liquor. The washing process is carried out repeatedly so that dirt can be separated from the pulp so that the pulp is expected to contain more water than black liquor from the remaining cooking results.

Bleaching stages are a bleaching process that is carried out after the pulp is delignified and aims to remove the remaining lignin levels after the delignification process. Lignin can be removed by using a high-temperature reactor but the content of cellulose and hemicellulose fibers in wood is sensitive to high temperatures so it has to cut the cellulose and hemicellulose chains shorter. So the pulp has a short fiber

After the bleaching stages are complete, the pulp will be sent to the Pulp dryer, the last stage of the pulping process before being sold. Pulp dryer aims to separate water from pulp pulp and produce sheets of pulp with a moisture content of 10%. The Pulp dryer stage starts at the screening stage which aims to clean the pulp from the dirt before entering the formation stage. Pulp that has been cleaned will enter the forming section stage to be formed into a long (continuous) pulp sheet. Furthermore, the pulp that has been formed will be pressed so that the water content of the pulp will be reduced to 50% then the pulp will be dried on the drying section to produce a 10% moisture content. The dried pulp will enter the baling line (finishing) process, which is the process of cutting the pulp to facilitate the delivery of pulp

b. Paper

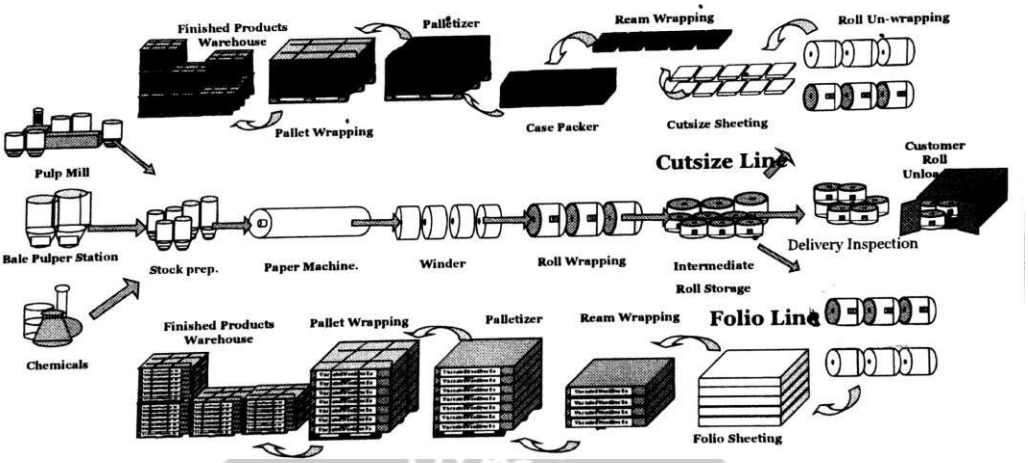


Figure 3.8. Paper Production

To make paper, first the pulp will enter the *Stock Preparation* by mix all mixing fiber and chemicals with suitable comparisons before being processed in a paper machine that serves as the supply of raw materials. To obtain the desired percentage of mixture, homogeneous mixing of pulp mill, pulp bales, and chemicals is carried out. Then the mixing will move to *Paper Machine*

The *paper machine* process is divided into 4 parts, forming, pressing, drying, and rolling. After the pulp is mixed in the stock preparation process, it will enter the forming process. Forming process is the process of forming pulp into sheets of paper that are in accordance with the size of the machine. The water content on the paper is 99% and the final consistency of paper products is due to the gravitational force of around 15-25% during the forming process. Pressing process is needed which aims to remove the moisture content by pressing the sheet of paper mechanically so that the water can come out by itself from paper fibers so that it will get the results of paper that has a low water content. The final consistency of paper products when pressing is 33-35%. Then, the paper will go through the drying evaporation process to dry the paper which aims to remove water from the sheet of paper without damaging the structure of the paper fibers that have been produced and make the final consistency of paper products at 92-95%. After the paper is dry, it will enter the rolling process. In the rolling process is also carried out the process of cutting uneven edges of paper which will produce a jumbo roll

After that, the *Jumbo Roll* wiil send to *Winder* process. *Winder* is the cutting process from the *Jumbo Roll* into smaller size based on planner and costumer need or become *Costumer Roll* and *Sheeter Roll.* After the small roll finish, the roll will send to *Saimatec* machine for checking, if the roll is the *Costumer Roll* then the roll wil automarically wrap using brown kraft and send to storage, but if the roll is *Sheeter Roll* then the roll will send to storage AWA or SMC to continue the cutting process. Another condition if *Saimatec* detect the defect of product, then the roll will send to *Rewinder* or *Guillotine* depend on type of defect.

For *Sheeter Roll*, after send to storage, the roll will send to their post depend on the type of *cut size* and the roll diamter on backstand of *Cut Size* machine.

a. *Cut Size*

By using *Sheeter Roll* it will deliver using conveyor and place into Backstand machine, for standard size like A4 it will need 6 backstands for ready to cut, and will wrap and package per ream, if there's any defect including the packaging, then the product will rework again. After that the product will send to Warehouse and ready to deliver to costumer

b. *Folio*

The process of *Folio* almost same with the *Cut Size*, but the machine is different, *Folio* using *Folio Sheeter* to cutting, after that wrap depend on the costumer country, and ready to send.

3.3.3. Quality Control

Quality control is needed to guarantee the quality of a product. Quality control at PT. Riau Andalan Pulp and Paper (RAPP) serves to control every paper product from every paper machine that has finished production. By using an automation system, samples are taken to check the quality with a sample of the width of the paper produced by jumbo roll. Checking on paper will be measured based on roughness, thickness, stiffness, color, dust, flexibility, and size. Each of these categories has a size with a predetermined tolerance limit. There is also a quality check with blotting that is done manually to determine absorption on paper. Paper samples will be taken and cut to the specified size. Then, the paper will be weighed and recorded the paper weight before blotting. After that, a absorption test is conducted by placing the top of the paper in a clamp container filled with water and will be counted for 45 seconds. Then, the water will be removed and the paper

will be taken from the clamp container and dried on the paper blot. After the blotting process is complete, the dried paper will be weighed again and recorded again

3.4. Production Facility

Besides the machine, there's also the facility to support the production such as Material handling, Safety, etc.

3.4.1. Material Handling

Material handling tools used by companies to help transport products

a. Screw Reclaimer

The screw reclaimer is a driving device for picking up chips (pieces of wood) from the pile chip and sending them to the conveyor. Each pile chip has two reclaimers that are a chip transportation tool.

b. Conveyor

Conveyor is a transportation engine that is used during the product manufacturing process. The conveyors used vary depending on the product transported in each process.

c. Forklift

Forklifts are a means of transportation used to transport pallets from one place to another, and are usually used when transferring pallets from products that are ready to be packaged to the warehouse and transferring pallets from the warehouse to the container.

d. Handlift

Handlift is a function for transporting pallets by using hydraulic pressure manually.

e. Pallet

Pallet is a tool made of wood that serves as a place to place products that are ready to pack and can facilitate the transportation of goods.

3.4.2. Safety Facilities

Facilities for personal protective equipment used in companies to guarantee the health and safety of workers, namely:

a. Shoes (Safety Shoes)

Shoes (safety shoes) are the main protective means of workers and must be used on workers who work in the area of the factory that will be given when the employee starts work. Safety shoes are equipped with iron mounted on the head of the shoe

that works so that the workers' feet can be protected from workplace accidents that can occur.

b. Ear plug or Ear Muff

Ear plug is a protective device provided by the company to each worker which functions to protect from noise caused by the sound of machines or factory tools.

c. Mask

Masks are protective facilities provided by the company to each worker which functions to protect from gas and dust that occur as a result of the production process.

d. Helmet

Helmets are a protective facility provided by the company to every worker that serves to protect from workplace accidents that have the risk of falling. The company has several helmet colors, which are white, yellow and red as markers. White helmets are used by workers, yellow helmets are used by visitors (visitors from outside), and red helmets are used by workers assigned to maintain safety.

e. Gloves

Gloves are a protective device provided by the company to factory area workers who function as hand protectors from work accidents that can occur and must be owned or used when conducting sampling or during maintenance.

f. Eyeglasses

Glasses are a protective device provided by the company to maintenance area workers who function as eye protection from workplace accidents that can occur that must be used when performing maintenance.

g. Body hardness

Body hardness is a protective device provided by the company to maintenance area workers who function as body protectors from workplace accidents that can occur and must be used when at a minimum height of 1.8 meters

CHAPTER 4
REVIEW OF STUDENT WORK

4.1. Work Area

Industrial Practical of writer held at PT Riau Andalan Pulp and Paper (RAPP) and placed in *Production Planning and Inventory Control* (PPIC) department, this department has responsibility and task to planning and controlling the production and inventory. Writer guide by Mr. Edy and as the manager of PPIC that always give the material and theory of what did need to learn and observe in PPIC department. There are also member of PPIC department that also guided writer in observation and discussion, they are:

a. Derryl Kianggoen, as the member of PPIC department that explaining the code of order, type of paper and the reference for problem and the solving

b. Jeffry Firmanto, as the member of PPIC department that explaining the job description of all PPIC department and invemtory control

c. Nico Saputra as the member of PPIC department, explaining the job of Folio Planner, give the reference, and showing the process of paper production.

d. Ronald Fitrasani, as the member of PPIC department, explaining about the paper machine, early production, trimming, exmill and problem idea.

4.2. Responsibility

On do the Industrial Practice, wrtiter give the responsibility to help them on production planning and inventoryh contol, to give additional knowledge and know the role of each member. To more specific on the period of this program, writer has three task, first is input the code number from sales into SAP, second was writer sort the data of order and seperate the incomplete product and complete product to loading, and make the summary data to know the performance production and create the report of exmill performance. Besides of these task, writer also do the discussion and development for writer problem solving and do the observation together of member of PPIC

4.3. Methodolgy

4.3.1. Flow of Industrial Practice

In the office, writer didn't get any special task so writer finding the problem based on writer observation, and discussion with mentor with the other PPIC member to find the solution from the problem that writer has found based on observation, to know scheme, writer cretae the flowchart

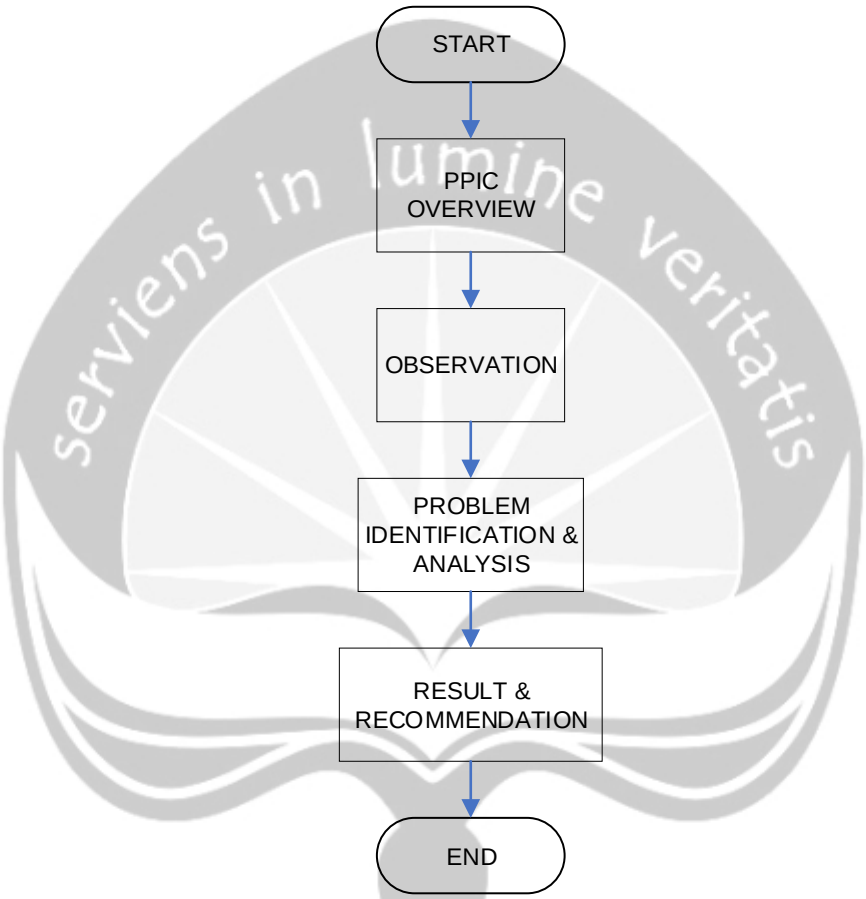


Figure 4.1. Flowchart of Industrial Practice

Based on the flowchart, first writer heard the job overall in PPIC staff, and after that writer do the observation for a week to know the system and find the problem that could writer bring to supervisor, after find the problem writer did the consultation about the problem, at this state supervisor was not allow to take the data because data that writer need to solve the problem, so supervisor gave the limitation to solve from the idea that was writer did based on the observation

a. PPIC Overview

Based on the name, PPIC stand for *Production, Planning, & Inventory Control*, the job of this department are responsible to create the schedule of production, and determine the forecast target demand to appraise the performance of production activity each month. At this company besides focusing on production scheduling and Inventory Control, PPIC at this company also responsible on making the load plan of the paper whenever the paper product ready to shipped.

b. Observation

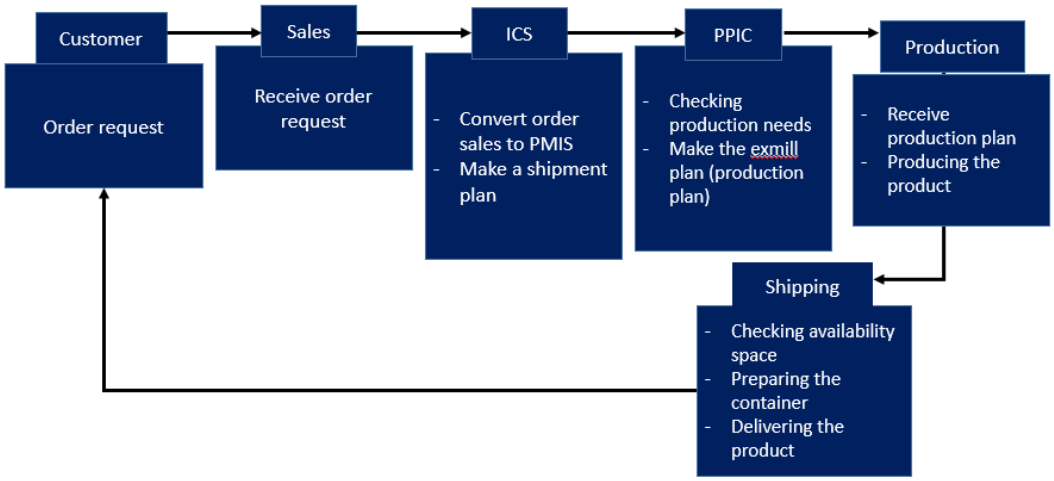


Figure 4.2. Flow Process of Production Activity

On the general based on the flow process that shown at **Figure 4.2.**, the first flow come from customer request to Sales as the order request, then the order request will convert to PMIS and SAP by ICS (*Internal Costumer Service*), then PPIC will receive the order and creating the plan and schedule to make sure production process until shipping will arrive to costumer in time.

To create the production planning, after PPIC receive the order request from ICS, PPIC will create the exmill schedule that shown in **Figure 4.3** because company itself has regulation to shipped the order 2 weeks before ETA (*Estimate Time Arrival*).

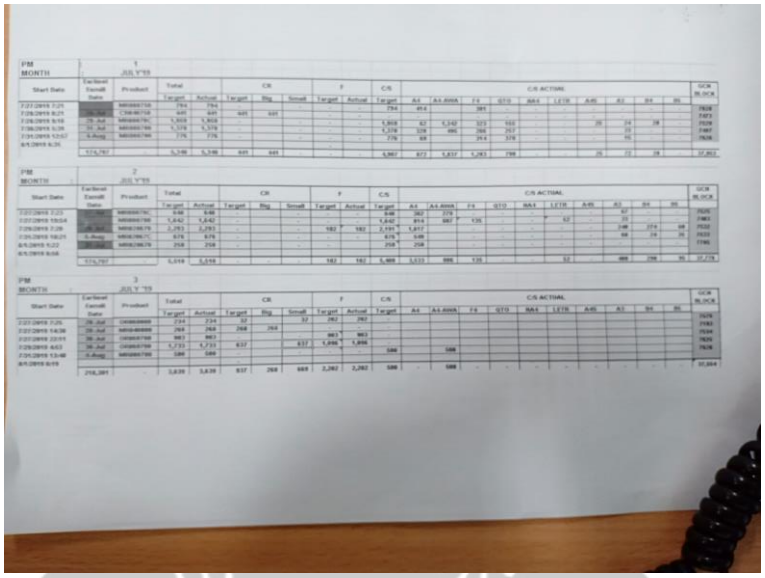


Figure 4.3. Exmill Schedule

c. Problem Identification

After the each member of PPIC department explaining all of job description, and visiting the production floor, writer observe the work condition overall specially in the office and production floor and observe their behaviour, after that writer try to find the problem that happen in the system of PT Riau Andalan Pulp and Paper (RAPP) and do interviews and discussion with mentor and member of PPIC. The problem found that the main problem are mainly from the early production that cause the production become overload and warehouse full with the product that far from the date target of the exmill and solution improve is excess warehouse, .Warehouse in the period of writer observe face the overcapacity that make the other finish product placed in packaging and labeling floor, it could slow the loading process and make delivery time to costumer be late cause of it, but actually planner has already make the target of finish production and ready for shipped out or Exmill. It's make the consideration for writer to find the main cause of the problem and give the solution and recommendation to finish the problem. On this observation writer was given the asumption and problem limitation are writer just state based on the observation from July 1st 2019 – August 9th 2019 and just could give the recommendation for department.

d. Result and Recommendation

This stage is the result of identification after the analysis and discussion done, for further analysis will be state at **4.4. Result.**

4.3.2. Literature Study

Excess Warehouse also consider as the waste. Definition of waste based on Industrial point is the waste that produced by Industry activity which includes any material that's consider useless during manufacturing process that may be in shape of solid or liquid. The waste also divide into 8 type of waste based on famous Toyota Production System (TPS) that was created by Sakichi Toyoda, Kiichiro Toyoda and Taiichi Ohno, and Ohno develop the theory again with the system major precursor *lean Manufacturing*. They are:

1. OverProduction : Focus on overproduction that are made in greater proportion than what the market requests or for which it has not requested. Overproduction means having more facilities with considerable increase of resources needed and have a very efficient logistic that can cause them to fall into another waste.
2. Wait : The waste that cause any delay or expextation that may end up impacting for costumer and also occur internally in the production environment, the other cause also of bottleneck in the process and lack of human resources, machines, material and information.
3. Transport: Mean the unnecessary movement of materials, product and information from one place to another due to poor design or planning such as inefficeint flow
4. Process incorrectly: Comes from complex process in which unnecessary taks and redunant steps that do not add value to the final result from the prespective that means that there's the extra processing occur that actually no needed in that process
5. Inventory : the waste that accumulates before or after a process that isn't achieved becaue lack of balance in work flow, forcing invnetory building up between process
6. Motion: The waste that refer to excessive movement in performance task. The movement focused on the people and displacement example like to much walk that unnecessary in Warehouse or storage without any specific purpose.
7. Defect : the waste cause by lack of information, non functional process or inadequate services that make the product reaches to the costumer incomplete that cause costumer satisfaction decrease
8. Talent: waste of intellectual characer and implies ignorance and lack of utilization of the talents, skills, knowledge and experience that's available among the company employee or worker or staff that will lead to discouragement because the

person doesn't feel appreciated in the work environment that cause company will loses of a suggestion and opinion in the future.

To help and identify the cause from 8 waste's, writer using *Fishbone Diagram* cause effect to help writer. *Fishbone diagram* or Ishikawa Diagram is the visualization tool for categorizing the potential cause of a problem in order to identify the roots causes and usefull in brainstroming as the facilitator to find the potential cause. The design of *Fishbone Diagram* looks much like a skeleton of the fish or bone to branching out to include smaller bones to containing more detail and the head as the main problem, once all the cause bee identified, manager or problem solver can start to looking the solution to ensure problem doesn't become recurring one.

4.4. Result

4.4.1. Data Analysis

Based on writer observation and discussion, like writer stated before, the main problem that writer got is the excess product in warehouse, to make clear writer do the analysis using *Fishbone Diagram Analysis* and the result shown in **Figure 4.2**.

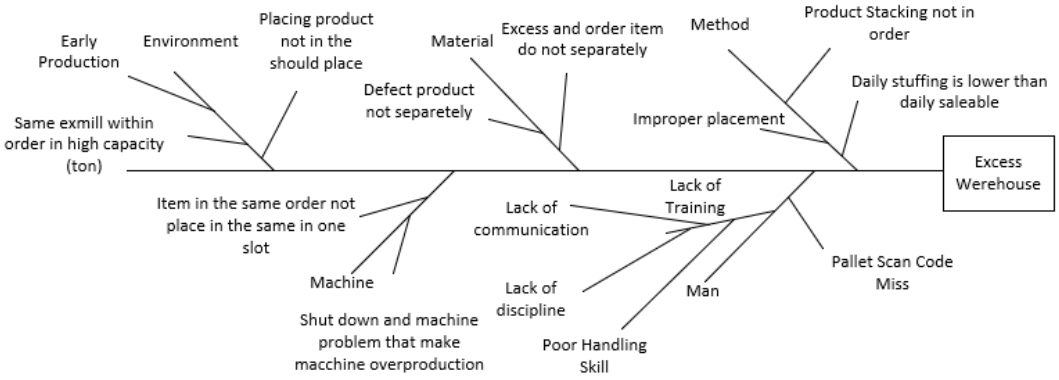


Figure 4.4. *Fishbone* Analysis

Based on discussion with mentor and member of PPIC, the cause of excess warehouse that writer can take 5 main point that cause of excess warehouse, there are Environment, Machine, Material, man and method based on analysis that writer done. From the Waste point, writer found several waste that effecting the warehouse was excess, those are *waiting, overproduction, Inventory*.

Waiting on product cause of the Container didn't arrive on time that cause product must wait and can't further to loading process, the other cause of wait also create cause of incomplete order that the same order didn't place in the same block or process that cause several product in the order is ready but several didn't ready, and the ready poduct for product from any other must wait until product complete. *Overproduction* can be known from the first planning until product is shipping, the waste of production cause of capability machine that can't suddenly change the grade of gsm paper that make planner must mix the various order to minimize the defect of product and minimize the machine will broke and lead them into warehouse that excess with product. *Inventory* of product also become waste because there are excess production from various reason like cancel order, hold product and defect product that didn't update in the PMIS that cause many product left with unnotice order that lead the product to become defect, taking the floor space and didn't take any action further to next process the product which is to re production or sell to sales division.

After writer find the problem, writer do the deeper activity such as observation, interview and discussion with mentor and member of PPIC and do the analysis using *Fishbone Diagram* to help writer to visualize the cause of Excess Product in warehouse, writer state five parts that effecting the main problem, those are man, machine, material, method and environment. In man power, writer found three main problem that heaviliy cause of this point, those are lack of training so the worker often miss the scan pallet so the location of order will unknown and hard to find it and because of lack of training worker also difficult to communicate between them and the planner that make sometime misunderstand also could happen,the other also happen when worker pause the loading process because of shift change that make period of waiting is long that could lead it to excess in Warehouse and possibility of order arrive on time also decrease.

From the method, loading process need to take long because of impropriate location evethough the order of product has been update and scan in PMIS but sometime the lost order happen that cause take long time to find it, also placing the product not in the order become the issue of warehouse become excess and loading product is smaller than saleable of daily.

From the point of Material, excess happen because when loading container happen, sometimes there are some products that can't fit to the container with the

term and condition depend on the costumer that cause excess happen and must take the space in warehouse, and the because the excess product and the other product with various condition such as hold product and no order product with detect or undetect in PMIS take the space in warehouse mix with the order that ready to loading causing more excess in warehouse and must be allocated in other room such as sorting room.

From the point Machine based on writer's view, machine is the unavoidable problem in this matter referring to capability of machine itself, because the *Paper Machine* can't finishing the process based on order directly and must be produce within sequence to decrease the defect and minimize the waste any further, and the other reason is because *Paper Machine* must shutdown and sometime need to move sequence order to other *Paper Machine* so writer's make a view that machine isn't really realated to the excess problem directly

In the environment point, writer could state three critiacal cause, those are early production, same exmill in high capacity, and how orderig the order in warehouse floor, writer observe that early production and order of product in same exmill that make distance of date will be in longer and quantity of order make warehouse on overcapacity before ready to load and make hard to move, and the other because lack of disclipine that cause placing the order product not in order besides of that the other reason warehouse can't re arrange the postion or block of order product because of order that receive from ICS is higher that make warehouse can't arrange the product in place that should be place.

4.4.2. Solution Recommendation

To anticipated the overcapity production that would lead to excess in warehouse, then writer could make the recommendation and suggestion as the purpose to build the awareness for employee for next production, the recommendation are:

1. Planner should design the schedule slot not far from the exmill target
2. Designing and controlling the quantity in slot
3. Updating the actual skid floor in PMIS
4. Evaluate every 2 weeks or month to detect the aging product
5. Seperate the loading order with excess order
6. Excess order can be offer to sales to wide the space of warehouse
7. Product location seperate based on color

CHAPTER 5
FINALE

5.1. Conclusion

Based on the analysis, gain the conclusion that:

1. Problem of excess warehouse and overcapacity production based on observation was caused by the early production
2. The limitation machine because capability machine that can't directly fit to the order
3. Early production that can't be avoid because order condition

5.2. Solution and Recommendation

1. Planner should design the schedule slot not far from the exmill target
2. Designing and controlling the quantity in slot
3. Updating the actual skid floor in PMIS
4. Evaluate every 2 weeks or month to detect the aging product
5. Seperate the loading order with excess order
6. Excess order can be offer to sales to wide the space of warehouse
7. Product location seperate based on color to help warehouse staff shipped the product to container, like has been proposed in **Figure 5.1.**

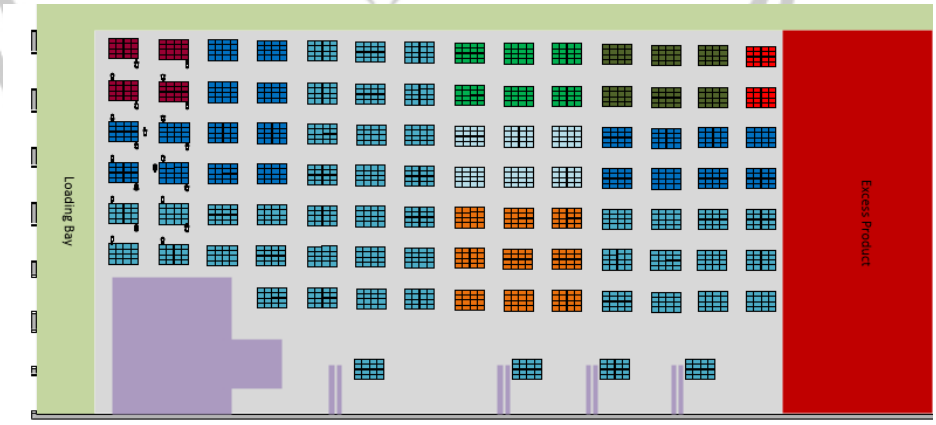


Figure 5.1. Product Placement Suggestion

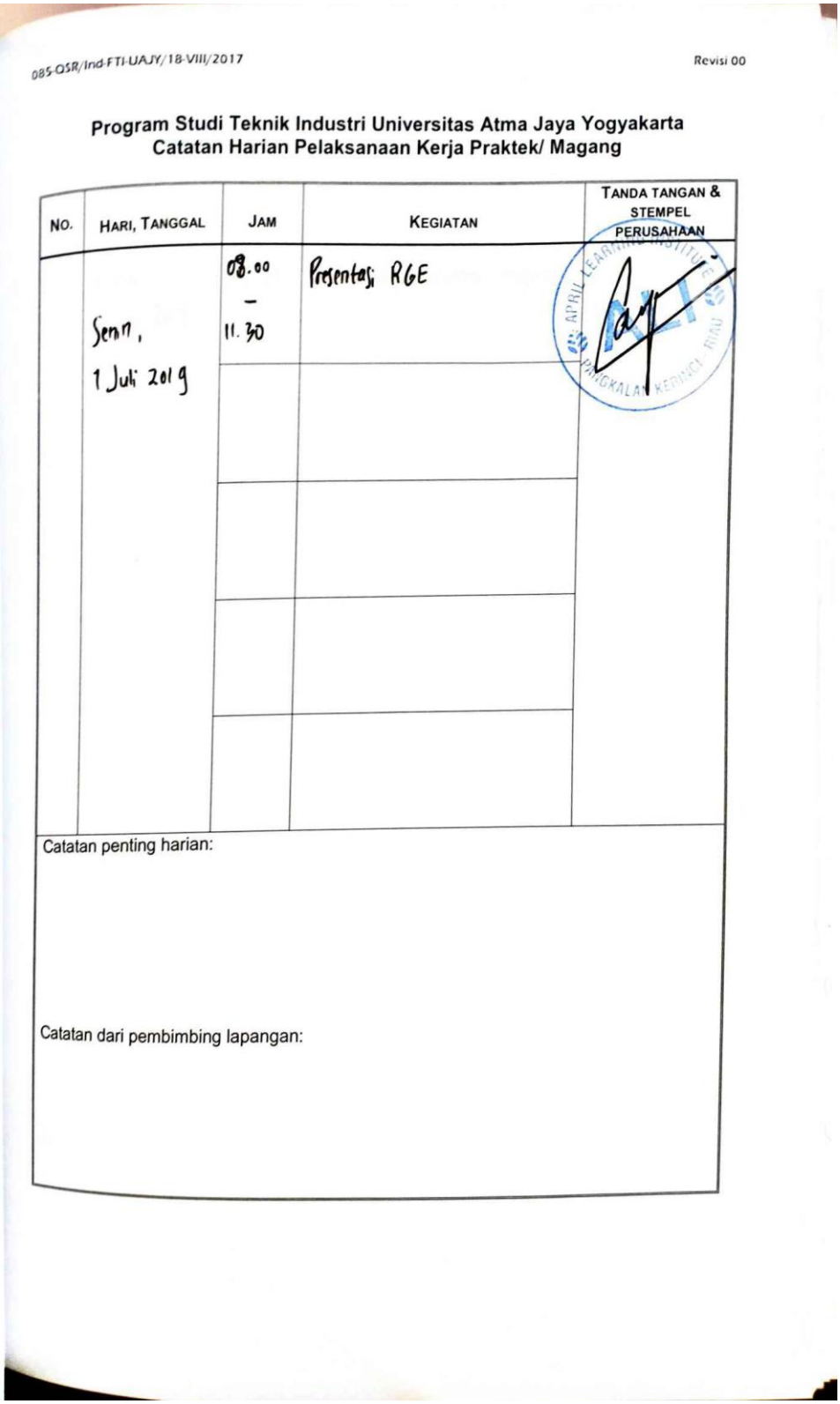
References

Asia Pacific Resources International Holdings Ltd (2015). Acces at 8 July 2019 from http://www.aprilasia.com/id/tentang- april

Ohno, T. (1988). Toyota production system: Beyond larga-scale production. Cambridge: Productivity Press

Gasperz, Vincent. (1998). Production Planning and Inventory Control. PT SUN: Jakarta

Lampiran



085-QSR/Ind-FTI-UAJY/18-VIII/2017 Revisi 00

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Senin, 1 Juli 2019	08.00 – 11.30	Presentasi RGE	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Selasa, 2 Juli 2019	09.00 - 11.00	Tanda tangan kontrak magang	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Rabu, 3 Juli 2019	08.00 - 11.30	Safety Induction. oleh Pak Junaidi	Ismail Junaidi
		15.00 - 16.30	Pengenalan PPIC dibimbing oleh Pak Eduard	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Kamis, 07/04-2019	07.00 - 11.30	Mempelajari Metode Peramalan (Forecasting) & observasi Proses Flowchart	Sutomo. Sjahang
			RTC	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Jumat, 07/05 - 2019 (July)	07.00 - 11.30	Mempelajari Production Planning & Inventory Control beserta spesifikasi dan kode produk	
		13.30 - 16.30	Melanjutkan informasi (observasi) serta mencari ide masalah	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Senin, 8 Juli 2019	07.00 - 11.30	Mempelajari planning pada Folio, Costumer roll serta spesifikasi	
		13.30 - 16.30	Mengenal kode produk dari order	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Selasa, 9 Juli 2019	07.00 - 11.30	Melanjutkan pencarian masalah dan laporan	
		13.30 - 16.30	Berkeliling melihat proses produksi dari mesin PM sampai Packaging	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Rabu, 10 Juli 2019	07.00 - 11.30	Konsultasi Problem yang akan diselesaikan dengan Pak edy & melanjutkan pembuatan laporan	
		13.30 - 16.30	Melanjutkan observasi dan diskusi mengenai problem yang didapatkan dari Pak edy.	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Kamis, 11 Juli 2019	07.00 - 11.30	Diskusi & pembelajaran mengenai ex-mill performance & diskusi Perencanaan masalah dengan Pak Edy.	
		13.30 - 16.30	Melanjutkan pembuatan laporan	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	~~Kamis~~, Jumat 12 Juli 2019.	07.00 – 11.30	Membuat laporan, keliling ke bagian produksi & mereview proses produksi kertas.	
		13.30 – 16.30	Melanjutkan membuat laporan, dan diskusi mengenai kasus yang akan diteliti	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Sabtu 13 Juli 2019	07.00 - 11.30	Melanjutkan membuat laporan dan diskusi dengan rekan kerja	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Senin, 15 Juli 2019	07.00 – 11.30	Melanjutkan pembuatan laporan dan observasi	
		13.30 – 17.00	Mengamati & diskusi mengenai load plan dengan Pak Beryl	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Selasa 16 Juli 2019.	07.00 - 11.30	Melanjutkan pembuatan laporan, Melihat proses produksi dengan Pak Nico	
		13.30 - 16.30	Diskusi mengenai penyelesaian masalah yang akan diselesaikan.	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Rabu 17 Juli 2019	07.00 - 11.30	Diskusi mengenai pergantian masalah yang akan diselesaikan, & melanjutkan pembuatan laporan	
		13.30 - 16.30	Penjelasan mengenai Sales Conformation dan Proses kerjanya pada SAP oleh Pak Derry I.	

Catatan penting harian:

Catatan dari pembimbing lapangan:

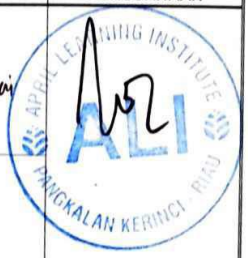
Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Kamis, 18 Juli 2019.	07.00 – 11.30	Melanjutkan membuat laporan dan turun ke lantai produksi untuk melihat Warehouse	
		13.30 – 16.30	Diskusi dengan mentor mengenai warehouse, dan grade-grade produk MOB	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Jum'at, 19 Juli 2019	07.00 - 11.30	Melanjutkan membuat laporan, dan mengumpulkan informasi mengenai Warehouse & penyebab excess	
		13.30 - 16.00	Diskusi mengenai ide rekomendasi Mengenai permasalahan dengan Pak Ronald.	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Senin, 22 Juli 2019.	07.00 – 11.30	Belajar mengenai cara menyusun load plan, beserta spesifikasi Pallet yang biasa digunakan	
		13.30 – 16.00	Melanjutkan observasi dan diskusi mengenai PPIC dengan rekan-rekan kerja.	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Selasa, 23 Juli 2019	07.00 - 11.30	~~Diskusi~~ Melanjutkan pembuatan solusi dan meminta saran dari rekan kerja.	
		13.30 - 16.00	Melanjutkan pembuatan laporan & mencari ide dibantu rekan kerja	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Rabu, 24 Juli 2019	07.00 - 11.30	Diskusi untuk merencanakan ide rekomendasi & membantu pekerjaan	
		13.30 -	Melanjutkan pembuatan laporan.	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Kamis, 25 Juli 2019.	07.00 – 11.30	Melanjutkan pembuatan laporan	
		13.30 –	Melanjutkan pembuatan laporan & diskusi dengan rekan kerja	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Jumat, 26 Juli 2019	07.00 - 11.30	Menentukan waktu presentasi dengan mentor dan melanjutkan diskusi dengan rekan kerja	
		13.30 - 16.00	Melanjutkan pembuatan laporan.	

Catatan penting harian:

Catatan dari pembimbing lapangan:

085.OSR/Ind-FTI-UAJY/18-VIII/2017

Revisi 00

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Senin, 29 Juli 2019	07.00 - 11.30	Konsultasi dengan rekan kerja mengenai Presentasi	
		13.30 - 16.00	Melanjutkan membuat laporan dan Slide Presentasi	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Selasa, 30 Juli 2019	07.00 - 16.00	Membuat Slide Presentasi	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Rabu, 31 Jul 2019	07.00 - 11.30	Konsultasi mengenai isi Presentasi (Slide)	
		13.30 - 16.00	Me-Revisi Slide Presentasi	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Kamis, 1 Agustus 2019	07.00 - 11.30	Melaksanakan presentasi di ALI dengan Panelis ALI	
		13.30 - 16.00	Me-revisi laporan dari hasil presentasi di ALI sebelumnya.	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Jumat, 2 Agustus 2019	07.00 - 11.30	Melanjutkan me-revisi laporan	
		13.30 - 16.00	Me-print laporan dan konsul dengan rekan kerja ~~mengenai laporan~~	

Catatan penting harian:

Catatan dari pembimbing lapangan:

SR/Ind-FTI-UAJY/18-VIII/2017

Revisi 00

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Jeam, 5 Agustus 2019	07.00 – 16.00	Sharing dengan alumni & rekan ~~kerja~~ kerja	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Selasa, 6 Agustus 2019	07.00 - 11.30	Sharing dengan alumni & pekan kerja	
		13.30 - 14.21	Mengurus check out form	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Rabu, 7 Agustus 2019	07.00 - 11.00	tanda tangan laporan, dan menyerahkan laporan ke mentor & ALI	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Catatan Harian Pelaksanaan Kerja Praktek/ Magang

NO.	HARI, TANGGAL	JAM	KEGIATAN	TANDA TANGAN & STEMPEL PERUSAHAAN
	Kamis, 8 Agustus 2019	07.00 - 11.00	Mengembalikan alat-alat perlengkapan dari perusahaan.	

Catatan penting harian:

Catatan dari pembimbing lapangan:

Lampiran 2. Lembar Bimbingan Pelaksanaan dan Penyusunan Laporan Kerja Praktek (QSR No. 086-QSR/Ind-FTI-UAJY/18-VIII/2017)

Program Studi Teknik Industri Universitas Atma Jaya Yogyakarta
Lembar Bimbingan Pelaksanaan dan Penyusunan
Laporan Kerja Praktek/ Magang

Nama Mahasiswa : Jude Septayana
NPM : 161408188
Perusahaan tempat KP : PT Riau Pulp and Paper
Tanggal pelaksanaan KP : 1 Juli - 9 Agustus 2019
Dosen Pembimbing : Ir. B. Kristyanto, M.Eng., Ph.D

No	Tanggal	Agenda	Tanda Tangan Dosen Pembimbing
1	21 Mei 2019.	Penyerahan surat pembimbingan dan Konsultasi persiapan Kerja Praktek	
2	~~20 Mei 2019~~ 20 Agustus 2019	Laporan atau konsultasi penugasan dari perusahaan	
	20/~~08~~-2019	Laporan pertama setelah pelaksanaan Kerja Praktek dan konsultasi penyusunan laporan	
	20/~~08~~-2019	Penyerahan draft laporan Kerja Praktek untuk pertama kali	
	25 Oktober 2019	Pengesahan laporan Kerja Praktek	

PENILAIAN KERJA PRAKTEK OLEH PEMBIMBING/SUPERVISOR LAPANGAN
KERJA PRAKTEK PROGRAM STUDI TEKNIK INDUSTRI
UNIVERSITAS ATMA JAYA YOGYAKARTA

Nama Mahasiswa	:	Jude Septayana
No. Mahasiswa	:	161408788
Perusahaan Tempat Kerja Praktek	:	PT. Riau Andalan Pulp & Paper
Divisi/Departemen/Area Kerja	:	PPIC
Waktu Pelaksanaan	:	1 Juli 2019 - 9 Agustus 2019.

Mohon Bapak/Ibu pembimbing lapangan memberikan penilaian atas prestasi mahasiswa peserta kerja praktek sesuai dengan aspek penilaian di bawah ini. **Nilai terendah adalah 10 dan nilai tertinggi adalah 100.**

No.	Aspek Penilaian		Nilai (10 – 100)
1.	Kedisiplinan	:	90
2.	Motivasi kerja	:	90
3.	Tanggung jawab	:	92
4.	Kerjasama dengan rekan sekerja	:	92
5.	Sopan santun dan tata krama	:	92
6.	Daya tangkap dan pemahaman terhadap tugas yang diberikan	:	92
7.	Kemampuan melaksanakan dan menyelesaikan tugas	:	92
8.	Keterampilan dalam menggunakan peralatan kerja	:	90
9.	Perawatan terhadap peralatan kerja	:	90
10.	Perhatian terhadap keselamatan kerja	:	92

Pangkalan Kerinci, 7 Agustus 2019

Pembimbing/Supervisor Lapangan,

(RONALD FITRASANI)

Catatan:
- Nilai pada setiap aspek dikategorikan dalam peringkat **sangat baik** (nilai nominal: 90–100), **baik** (70-80), **cukup** (50-60), **kurang** (30-40), dan **sangat kurang** (10-20).
- Pembimbing/Supervisor Lapangan dimohon mengisi blanko penilaian ini apabila mahasiswa yang bersangkutan telah menyelesaikan Laporan Kerja Praktek di Perusahaan.
- Mahasiswa yang tidak menyerahkan blanko nilai yang sudah terisi oleh pembimbing lapangan tidak akan menerima nilai akhir Mata Kuliah Kerja Praktek.

APRIL

Certificate of Accomplishment

This is to certify that

Jude Septayana

has successfully accomplished a
Internship Program
Held in
Dept. PPIC, PT. Riau Andalan Pulp and Paper
from July 1st 2019 to August 9th 2019

Muhammad Yamin
Talent Management Coordinat