

**Technical Report
In-house training activity on
SME Timber Industry**

**Venue : District of Ciamis
Time : 11-13 May 2016**

**By :
Mr. Kim Sae Yung
Dr. Hiras P. Sidabutar**

Sponsored by: Proyek ITTO TFL-PD 033/13 Rev.2 (M)

Jakarta, 30 May 2016

In-house Training SME Timber Industry Ciamis, 11-13 May 2016

I. Introduction

The most determined factor of the industry competitiveness, including the timber industry, are: the efficiency of raw materials processing, quality of processed products, technology innovation and response to the market or consumer. These four factors are known as “building blocks of competitive advantage” in the strategic management literature (Hill & Jones, 1998). The first two factors are efficiency and quality which becoming the main focus of in-house training activity in Ciamis.

1.1. Efficiency

A company is a tool to transform inputs into outputs. Inputs are labor, land, capital, management and technical knowledge. Outputs are the goods and services produced by the company. The simplest measurement tools of efficiency is the amount of inputs used to produce a product, or $\text{efficiency} = \text{outputs} / \text{inputs}$, expressed in monetary value. The more efficient a company is, the less the value of inputs used to produce a product. For example, if company A requires 30 working hours to produce 4 m³ of sawn wood while Company B need only 25 working hours, then company B is referred to as more efficient than Company A, *ceteris paribus*, as Company B will have lower structure of production costs than Company A. The most important component of efficiency is the productivity of employees who are usually measured by the results or output per employee. By holding all other factors of production constant (*ceteris paribus*), the company with the highest productivity will have the lowest production cost structure, and will have the most powerful competitiveness. One key factor productivity is a skill; therefore skills training is very relevant and important in building competitiveness. One method to improve skills is through in-house or in-factory training.

1.2. Quality

High quality goods or service is a reliable products, this means that the product can do “task” properly in conformity with what is desired when the product is designed. The impact of the quality level upon competitiveness occurs through two factors.

Firstly, the good quality products increase product value in the eyes of consumers in order to sell their products at a higher price; Secondly, high quality products produced through efficient production process or lower cost structure because there is no time wasted on making defective products, less time is used to fix the error, which means higher productivity or lower production cost. Therefore, training skills are particularly relevant and important in building competitiveness. One of training way is in the form of in-house or in-factory training.

1.3. Goal and Objectives

Ciamis District Forestry Service reports the presence of approximately 300 units of the timber industry, mostly Small-Medium Enterprises/SMEs, with their following common characteristics such as:

- Utilized wood from community plantation forest as raw material
- Mostly have no official permission/licenses to operate
- A small percentage attended SVLK's training
- In general market orientation is for local or domestic market
- Very high processing waste due to utilize out-of-date technology, low skilled labor and narrow range variety of production (product line) coverage
- Low competitiveness due to high production cost structure as a result of low processing estimation and low product quality

The aims of the implementation of in-house training in Ciamis is to introduce a method of in-house or in-factory training that emphasize skills enhancement to implement an efficient wood processing to produce good quality timber products. Target to be achieved are:

- To increase skills of participants in detecting and resolving problems of processing operations
- To increase the understanding of the meaning of processing efficiency and product quality in building competitiveness through lower production cost structure

- The company owners and employees are motivated to make the principles of efficiency and quality as the operating philosophy of wood utilization, which is a gift of The Almighty God

II. Methodology

2.1. Definition of In-house Training

In-house training is a training format where the knowledge and skills of employees is enhanced through direct involvement in detecting technical problems, operational and managerial, as well as in solving problems (trouble shooting) with the help of professional practitioners in the field of wood industry. As reflected in its title "in-house or in-factory training", the training is intended to improve the ability to recognize (detecting) and address (solving) the various problems faced by the industry. It is clear that in-house training is "a problem-solving oriented training" according to the conditions and needs of the industry which is the training focus.

Some of advantages of in-house training compare to conventional training format is:

- Use very little time for learning in the classroom or minimized class lecturing
- Can accommodate large numbers of participants from different levels (owners, executives, managers, operators, technicians, etc.)
- The training cost per participant low due to the large number of participants and implemented in the factory
- Identification of the problem, the discussion of causation and troubleshooting can be performed directly on the spot, where the problem occurs
- The work program of the training can be easily prepared according to the problems and needs of different industries between the factory with each other

2.2. In-house Training Approach

Steps for the training process are as follows:

- i. The initial meeting
 - An explanation of the purpose, objectives and expected outcomes of the training
 - Introduction of between trainees and trainers

- ii. A short visit on the production stock and wood waste
 - To obtain an initial picture of the level of efficiency and product quality
 - To detect the source of inefficiency and major defects
- iii. Visits to the processing value chains
 - To identify technical operation problems
 - To discuss the issue of cause and effect
 - To demonstrate and explain how to fix the problem
- iv. Final meetings
 - To explain the findings
 - To conduct 'Question and Answers' (Q&A) session with the participants
 - To hear feedback from the participants
 - To provide conclusions and recommendations

2.3. In-house Training Participants

Due to limited time, there were only 3 companies invited as in-house training participants as follows:

i. CV. PK KAINDO

- Location : Dusun Nyalindung, Desa Lumbung, Ciamis
- Product : Raw Sawn Timber (RST)
- Capacity (intake) : 1,800 m³ logs per year
- Production (realization) : 1,500 m³ RST per year
- Raw material : Mixed planted timber (Albasia, Mahoni, Afrika, etc)
- Market destination : Java based on the orderings
- Operation scale : Mini industry in which utilizing only 1 unit bandsaw

ii. PT. KBN Indonesia

- Location : Lingkar Selatan, Desa Bojong Mengger, Ciamis
- Product : Bare core
- Capacity (intake) : 105,000 m³ per year
- Production (realization) : 60,000 m³ per year
- Raw material : Mixed planted timber (Albasia, Mesopsis, etc)

- Market destination : Export to Asian countries with contractual basis
- Operation scale : Medium industry – utilizing several bandsaw units

iii. **PT. Berkat Karunia Surya (PT BKS)**

- Location : District of Banjar
- Product : Plywood

2.4. **Trainers**

- **Mr. Kim Sae Yung**

- Extensive work experience in the timber industry for more than 40 years in Indonesia.
- Organizing in-house trainings in 150 timber processing industries in five provinces in Indonesia and in the dozens of industries in other countries in Asia, Africa and Latin America.

- **Dr. Hiras Sidabutar**

- He is an observer and an analyst of timber industry management.
- Has been following the implementation of in-house training at several factories in Indonesia.

2.5. **Schedule**

- Day 1 : CV PK KAINDO
- Day 2 : PT KBN Indonesia and PT BKS
- Day 3 : Discussion with the training participants including the officials from Forest Service and Industry Service District of Ciamis

III. **In-house Training Output**

3.1. **CV PK KAINDO**

Sources of inefficiency are found is in the maintenance logs in log yards, the process of sawing logs, sawn timber produced maintenance and operator skills are low.

i. **Log Maintenance in the Logyard**

Inefficiency Sources

- Logs direct staked above the ground making part of logs rotten and useless
- Logs under heat and rain with inadequate protection result in broken or cracked.
- Logs are cracked or broken is not fitted with spikes S.

Photo (1) shows logs are stacked without protection. Photos (2 & 3) shows rotting logs as stacked directly on the ground for a long time.



Photo (1)



Photo (2)



Photo (3)

Problem Solving

- Piled logs on a cushion of durable wood that is not in direct contact with the ground. Using coconut wood as pads are highly recommended because there many available coconut wood surrounding the industry.

- Provide protection on a pile of logs in the form of tarpaulins and or flush with water at certain times to reduce the cracked and broken.
- Install a nail S on logs cracked or broken in order to prevent the enlargement of the cracked/broken logs.

ii. **Sawn Logs Processing**

Sources of inefficiency

- Table for sawing (sawing table) is not installed elbow to the back of the logs (stopper) lead to cuts that are not angled.
- Flying wheels) above and below are not mounted symmetrically result in leaf blade (band saw) is not perpendicular to the sawing table and the results are not sawn elbow.
- The size and shape of the blade is not in accordance cause great waste, saws easily broken and defects in the sawn timber.
- inadequate bearing lubrication resulted in excessive high temperature on leaf saws so easily broken.
- The speed saws (RPM) is too low may result in defects in the sawn timber in the form of the appearance of the wood fibers.

Problem Solving

- Re-install the table, stopper and a flying wheel in order to measure sawed wood can be precise or elbow and reduce waste.
- Establish a saw blade with the help of special equipment to measure the depth and shape of the eye.
- Give the lubricant in the bearing flywheel each will start production.
- Increase the speed of the flywheel until it reaches 1,800-2,200 RPM



Photo (4): Band Saw and table saws installed elbow



Photo (5): saw blade and gullet shape does not fit



Photo (6): Engine RPM too low may result filamentous timber

iii. Sawntimber Maintenance

Sources of inefficiency

- Sawn timber stacked less true that dry air is not evenly distributed.
- Sawn timber stacked too long without treatment so susceptible to pests and diseases.

Problem Solving

- Pile of sawn timber such that the air flow evenly into each sortimen.
- Spray the wood with anti-pest and disease regularly.

iv. Saw Operator Skills

Sources of inefficiency

- The operators do not have the background sawmill training so that they work and at the same time they are studying as well.
- The operators do not understand about the chainsaw maintenance.

Solving problem

- Provide training of operators on the basic techniques of sawmills.
- Provide training operators on bandsaw maintenance including saw leaf and blade.

3.2. PT. KBN Indonesia

Some disadvantages are a source of inefficiency is the buildup of leaves, packing and gluing.

Sources in-inefficiency

i. Stacking wood (timber piling)

- Wood goes into the kitchen dryers are not stacked properly, resulting in uneven wood dryness.



(7)



(8)

Photos (7) and (8) show inappropriate sawn timber piles resulting uneven dry out for the sawn timber

i. Packing (Packaging)

- Materials are from good timber.
- Packing technique ensures strength but it uses less plastic tape that is somewhat exaggerated.

ii. Gluing (Gumming)

- Consumption of glue is somewhat exaggerated for wood surfaces uneven.

Problem Solving

- Improved techniques in order to compose sortimen air flow reaches evenly wood and dry wood together.
- Using waste wood for pallets and plastic wrapping tape wear efficiently.
- Prevents saw marks to glue consumption efficiency.

3.3. PT. Berkas Karunia Surya (PT. BKS)

During the training found several operational and managerial weaknesses as summarized below:

Sources Inefficiency

i. Installation Nail S

- Nails S installed but incorrectly so it is not effective to prevent the broken propagation on logs.

ii. Debarking

- Debarking blunt knife was used so that the barking is not effective, it still leaves the bark.

iii. Fixing Damaged Veneer

- The end of veneer much torn because gum tape positions are too deep.
- Mechanical fixing damaged veneer due to any improper laying tape and wasteful wear filler.

- Veneer repaired entered again into the hot press while wearing enough irons (hand ironing).

iv. Working Room Light

- Setting the light in the room did not work supports an efficient quality control because of misplaced or blinding lights.

v. Inefficient Layout

- Veneer repaired cannot be directly transferred because there is no way in, had to wait an entire group of workers finish the job.



Photo (9)



Photo (10)



Photo (11)

Photo (9) shows an installation of gum tape too in the resulting veneer torn ends; Photo (10) shows misplaced the tape; and Photo (11) shows the workspace lighting is not good.

Problem Solving

- Changing the layout of nail S in order to effectively prevent expansion or cracked/broken propagation.
- Always use a sharp knife for debarking process.
- Replacing the gum tape about 2 – 3 cm from the tip of veneer sheets.\
- Put the tape accurately to veneer torn truly bonded.
- Veneer already given filler does not need to get hot press but quite ironed.
- Rearrange the lighting in the workspace, both the direction and intensity of the beam.
- Improving lay out the fixing veneer that veneer that has been corrected can be directly transferred.

IV. Discusiion

4.1. Sawn Timber Industry

The level of processing efficiency logs by CV. KAINDO still relatively low.

- Inefficiency seemed to happen mainly due to neglect and lack of maintenance. Negligence associated with the mentality that lack of respect for the value of raw materials. The perception that the logs are abundant seems to linger in the sawmill industry. Changing such perceptions would require time and change must start with business owners. The most obvious example is the omission of logs rotten or damaged; whereas preventable with relatively small costs such as the provision of sleepers, the closure of logs with a tarp, mounting Paku S on logs ruptured or watering pile of logs on a dry day.
- To improve dimensional precision sawn timber, installation and settings (setting up) saws, table stopper and very influential. The position of the saw can only be corrected by improving the position of the flywheel; table position and the stopper must be checked using a water-pas. But all these improvements requires the cost relatively little when the impact on yield and production costs are very significant. Therefore, improvement of the position of saws, table and stopper should be made a priority by the owner.
- For the maintenance of saws, the unavailability of a professional saw doctor, operators need to be given the basic skills, especially in the high set saw blade

and the shape and size of the gullets. Therefore, training by a professional is needed.

- Sawn timber is often stored for long periods in warehouses. To prevent damage by pests and diseases, the wood needs to be treated by spraying the repellent regularly.
- Sawmill operator working with a contract system, which is paid based on the volume of extraction. Therefore, operators pay less attention to waste, only the pursuit of production volumes regardless of the volume of raw materials used to produce such production. It is the duty of the owner or supervisor factories to provide technical guidance to conserve raw materials. If necessary, the volume of waste used as one of the parameters of the employment contract; for example operators with little waste entitled to a bonus.
- The quality of sawn timber produced is still low due to the low dimensional accuracy and the absence dryer kitchen. It is inconceivable that the buyers of KAINDO RST will require further processes such as re-sawing and kiln drying prior to secondary processing. Therefore, the dimensional allowance requested by the buyer must be safe, and this condition is that the cost to KAINDO as a supplier of raw materials secondary processing.
- However, the low efficiency of processing and the quality of sawn timber, reflecting the relatively high production costs. Business continuity seems to only be maintained if people pay round wood and operators at a low price. That is, the cost of inefficiency actually paid by the customers in Ciamis.

4.2. Bare Core Industry

PT. KBN Indonesia is a relatively modern industries with medium-scale operations, is specialized in producing bare core for export purposes. Waste classified as minimal because almost the entire size of the timber can be used. Some sources of inefficiency can be easily solved without investment. Stacking wood for drying only a purely technical matter; consumption of plastics in packaging tape can be reduced only with more intensive control; timber uneven surfaces can be solved by improving the sawing process. Perhaps more difficult to overcome is the increase CUR (Capacity Utilization Rate) because it involves the supply of raw materials. However, the magnitude of the idle installed capacity must be overcome because the

investment costs that affect the average cost of production, that is, idle capacity also makes the structure of higher production costs and reduced competitiveness.

4.3. PT. Berkat Karunia Surya

The industry is classified as a medium-scale and specialized in producing plywood. Various sources of inefficiency are found basically can be solved with relatively low costs. For example, the installation of nail S only purely technical issues; debarking ineffective only require sharpening knives; veneer repair the torn and damaged only requires simple skills training. This might need a small investment for lighting repair and improvement workspace layout by installing rails for carts transporting the veneer that has been repaired. If the upfront overcome weaknesses, it is certain that will increase efficiency and quality of the plywood produced is also better.

V. Conclusions and Suggestions

5.1. Conclusions

- Small Industries sawmill has not been operating efficiently and the quality of sawn timber produced is still low. Source of inefficiency is the main treatment is not sufficient on logs in logyards causes some logs rot, crack or break, mounting bandsaw, tables and stopper incorrect result in division and cutting wood is not angled, lubrication bearing insufficient cause the temperature saws excessive, RPM is too low may result in filamentous sawn wood, the saw blade maintenance is inadequate resulting in excessive waste and fast saw blade fracture and lack of maintenance of sawn timber resulting in a loss of quality.
- Industrial bare core medium scale operates relatively efficient because it uses a relatively recent technology. The main source of inefficiency is the preparation that goes kiln dry wood, which is less accurate results in the timber does not dry evenly, the consumption of plastic wrapping tape that is less efficient in packaging and consumption of glue (adhesive) which is wasteful because the surface is rough or choppy sortimen. Low, CUR is also a problem of inefficiency resulting structure of production costs higher than expected.
- Medium-scale plywood industry to operate less efficiently. Source of inefficiency is the main installation of spikes S incorrect result in broken logs uncontrolled,

knife debarking is not sharp resulted debarking logs are not perfect, the installation of gum tape improper cause many tears at the end of the veneer and inadequate skills in the repair (fixing) veneer damaged resulting in waste of putty (filler) and plastic tape.

5.2. Suggestions

- The efficiency of processing operation and product quality are the essential factors that determine the level of competitiveness. To build up the competitiveness, efficiency and product quality must be a basic philosophy in operations management. Therefore, the owner executive, managers and supervisors must understand how efficiency and product quality affect the structure of production costs, product price and competitiveness.
- Wastage of raw material is still ongoing. The perception of timber availability is in abundance supply seems still remains unchanged. Industry owner, executives, managers and supervisors should be aware that timber is a gift of Almighty God that has to be utilized properly.
- Productivity is one of the key that determine production cost. The higher productivity, the lower production costs and increased competitiveness. Therefore, productivity should strive to remain high through well planned technical trainings.

-o0o-