

REMOVABLE PEELER LATHE FOR PALMWOOD VENEER PRODUCTION

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One of the solutions to the log shortage problem in plywood mills is undoubtedly the sourcing of logs from oil palm plantations. However, an acceptable and more efficient mechanism of log supply has to be worked out. This is to facilitate the log flow from the plantations to plywood mills so that the manufacturers will have enough logs for processing at a fair price and the revenue which the farmers require in replants will not be reduced.

Some plywood mills have already undertaken steps to improve the recovery and to increase value-adding processing of raw plywood. Most recent efforts are directed towards investing in new peeling lathes for small diameter logs. In line with this, MPOB has developed a prototype peeler lathe, which is specially designed for oil palm trunk for veneer production.

ADVANTAGES

This peeler lathe has many advantages. These include:

Cost Saving Operations

The debarking and veneer peeling processes can be carried out *in situ* within the specified area of oil palm replanting. The unwanted lignocellulosic materials will act as organic fertiliser on decomposition to the young palm trees. The core residues can also be used as a source for animal feed.

Versatility

After some compensation to the hydraulic system, the lathe machine is able to peel oil palm logs of more than 40 cm diameter.

High Throughput

This lathe machine can produce 1.8 m³ hr⁻¹ oil palm veneers compared to a conventional lathe of 0.9 m³ hr⁻¹.

DESCRIPTION

The peeler lathe, which is based on a spindle-less mechanism can produce oil palm veneers with thickness between 3 mm and 10 mm. *Figure 1* illustrates a prototype peeler lathe for oil palm veneer production. In general, the peeling of veneer from oil palm log consists of three steps, *viz.* the removal of the bark from the log, the conversion of debarked log to its cylindrical form, and the actual veneer peeling operation. *Figure 2* illustrates the process flow of veneer production from oil palm logs.

a) Debarking of oil palm log



b) Peeling of oil palm veneer



Figure 1. A prototype peeler lathe for oil palm veneer production.

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Figure 2. A process flow of the major stages for the veneer peeling operations from oil palm logs.

TECHNOLOGY

This technology relates to a prototype peeler lathe to cater for the inconsistent forms and sizes of oil palm logs, starting from the removal of barks to the production of veneers.

SPECIFICATIONS OF PEELER LATHE

Specifications	Unit	
Oil Palm Log		
a) Diameter (maximum)	mm	600
b) Length (maximum)	mm	2 700
c) Peeler core	mm	< 100
d) Veneer thickness	mm	3 to 10
The Peeler Lathe		
a) Hydraulic motor	kW	7.5
b) Diameter of roller 1	mm	130
c) Diameter of roller 2	mm	100
d) Roller motor	kW	15
e) Dimension		
Length	mm	1 500
Width	mm	1 650
Height	mm	2 800

ECONOMIC FEASIBILITY

The investment cost is estimated at RM 290 600 (including machine and other costs). The breakdown of costs or other costs includes: machine cost, auxiliary equipment, spare parts, electricity/petrol/diesel consumption, installation costs, operation costs *etc.*). An estimated income of RM 343 200 per year can be generated if the production of veneers is 3432 m³ yr⁻¹ with the selling price of veneer at RM 100 m⁻³.

From the study, if the machine peels OPT log 26 days per month and the production cost per m³ veneer is about RM 75, the profit per month is estimated at RM 7047. The payback period of using this machine is about 3.3 years, and it will be reduced if the selling price of veneers is more than RM 100 m⁻³.

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