

PALMOR™ ACCELERATED PULPING SYSTEM FOR EFB-PULP PRODUCTIONS

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There is increasing interest to use oil palm empty fruit bunches (EFB) to make pulp and paper in Malaysia. With its large cultivation of oil palm, EFB is amply available (an estimated 5 million tonnes a year, dry weight). As a cellulosic material of oil palm, it can be used to make pulp without depleting the nation's forest resources.

MPOB and SEA Pacific PaperTech Sdn Bhd have developed the PALMOR™ Accelerated Pulping System to process EFB fibre bundles to paper pulp. It gives a much higher yield (typically 78%) and requires much less chemicals and energy than the high speed single disk refiner in mechanical pulping. In addition, it is a continuous operation.

PROCESS DESCRIPTION

PALMOR™ Accelerated Pulping System is a semi-mechanical system in which EFB fibre bundles are pre-treated with an aqueous chemical solution followed by pre-heating, and then subject to mechanical forces in a disc refiner under pressure. During pulping, the EFB fibre bundles are defibrated and the elementary fibre fibrillated. Pre-treatments soften the EFB fibre bundles and reduce the energy consumption during pulping and also produce a stronger pulp.

SEA Pacific PaperTech Sdn Bhd and Malaysian Palm Oil Board (MPOB) will jointly study the effects of the fibre properties, process conditions and refiner disk configuration on the pulp quality. The findings can be used to fine-tune the process parameters to improve the product, reduce the energy and chemical consumption and develop a stronger pulp. *Figure 1* illustrates the process.

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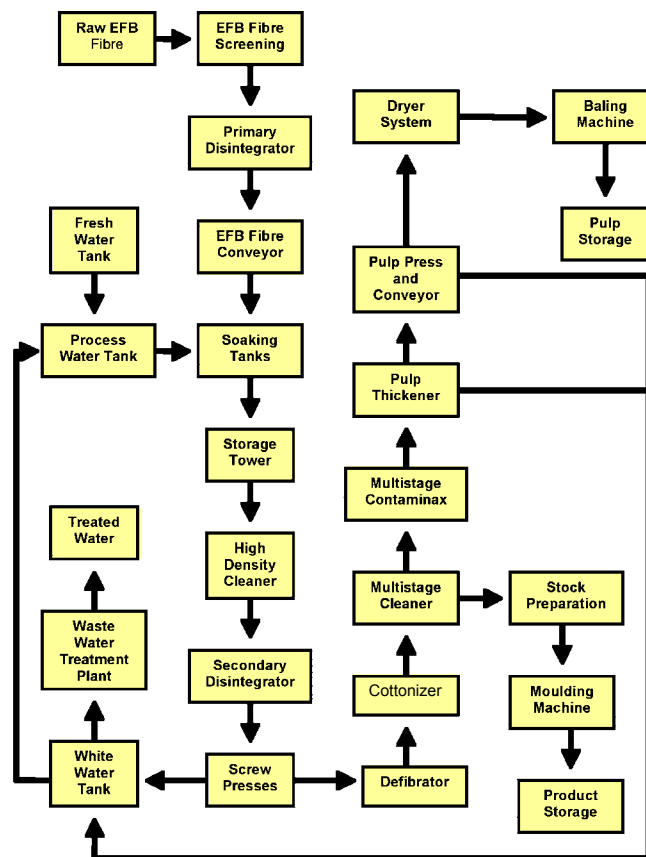


Figure 1. Processes in the PALMOR™ Accelerated Pulping System.

PROPERTIES OF EFB-PULP

The physical and mechanical properties of EFB-pulp are shown in *Table 1*.

TABLE 1. SHEET PROPERTIES OF UNBLEACHED EFB-PULP

Fibre length	0.96 mm
Burst test index	1.3 kPa.m ² g ⁻¹
Tensile index	22.20 Nm g ⁻¹
Freeness (CSF)	430 ml



BENEFITS

- Better quality control;
- Reduces electricity consumption by 20% compared to other mechanical pulping processes, like the high speed single disk refiner;
- Improves pulp strength through multi-stage mechanical treatment;
- Reduces the amounts of pollutants generated compared with conventional chemical pulping;
- Reduces the need to blend chemical and mechanical pulps for moulded paper products;
- Can partially substitute chemical pulp made from wood, reducing the need (and cost) for

having to use virgin pulp for certain grades of paperboard; and

- Lower investment cost in equipment and building.

ECONOMICS AND COMMERCIAL POTENTIAL

The PALMOR™ Accelerated Pulping System offers an attractive opportunity for producing various grades of mechanical pulp from EFB. The technology has been adopted by SEA Pacific PaperTech Sdn Bhd. It is currently producing 5-10 t day⁻¹ and slated to increase to 30 t day⁻¹ in full commercial run after the installation of additional equipment.

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