

Technological Improvements in Palm Oil Milling/Refinery: The Monetary Incentive

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INTRODUCTION

Malaysia is the home of modern palm oil industry – where the industry originated. The size of the industry is increasing at a rapid pace in countries with appropriate climatic conditions. For example, Uganda is expected to produce 140 000 t of crude palm oil and 14 000 t of palm kernel oil per year. South America, Brazil, Ecuador and Colombia are increasing oil palm plantation acreage [*Oil & Fats International, Vol. 26 No. 4 (May 2010)*]. This leads to tremendous opportunities and a large market for technical innovations and strong monetary returns on cost of innovation. Malaysia has a head start in that it is a reputable brand name in this industry, and this should be taken advantage of.

OPPORTUNITIES

The new mills demand modern, up-to-date and cost-effective technology. The old mills would need replacement or upgrading of sections or equipment, which again needs to be modern and cost-effective. So any innovations in the palm oil milling and refin-

ery industry would potentially bring substantial financial returns to the innovators. It is reported that global acreage of oil palm is increasing rapidly, with new countries or regions going into the industry. The increase in market size provides a strong incentive to develop new products in the milling and refinery units for commercialization.

CAN MALAYSIANS DO IT?

Although the initial milling technology was sourced from overseas companies which had experience in milling other oil bearing seeds, Malaysians as a whole have made tremendous improvements. There are innovations in the loading ramp, sterilization chambers, screw presses, disposal of empty fruit bunches, and so forth. Innovations have also been introduced in the treatment of palm oil mill effluent (POME). Lately, attention has been given to the production of electrical energy, capturing of methane gas, and such. Various segments of the milling process are handled by different companies which specialize in different areas. Specialization in coordination with other players in the milling technology can contribute to better innovations, which are integrated.

Data from the Malaysian Patent Office show that innovators in the industry not only come from MPOB, but from universities, plantation refineries and also small

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workshops involved in fabricating equipment, like nut crackers, screw presses, *etc.* What needs to be done is a concerted or targeted approach to innovation. Ideas for new products, innovations and inventions can be scanned from other oilseed extraction industries or even related industries, such as sugar-cane crushing mills, or wood treatment mills. These ideas can be lawfully adopted in the oil palm industry.

Improvements or adaptations to third party equipment can also be claimed as patents by persons making the improvement. Such patents can then be licensed or sold back to the manufacturer of the original equipment. For example, when a refinery installs a distillation apparatus but finds it is not working optimally or to the desired parameters, and subsequently the mill makes appropriate modifications to the distiller to achieve the desired results. The modifications, if they satisfy the patentability criteria, can qualify for patents. Consent of the manufacturer of the original equipment is not necessary to file the patent.

PROPERTY RIGHTS BEFORE COMMERCIALIZATION

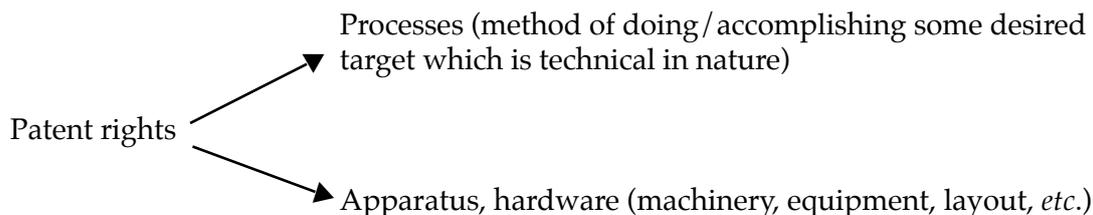
Everyone knows successful innovations are bound to be adopted or copied. The only way to mitigate this is to obtain exclusive proprietary rights to the innovation. The most important way to claim such rights is by way of patent rights, unless the innovation can be successfully kept and managed as a trade secret. In practice, it is extremely difficult to keep improvements as trade secrets, especially mechanical improvements. Perhaps chemical processes or formula-

tions can be kept as trade secrets if strong measures are taken to prevent leakage, espionage, and so on (*e.g.* the Coca-Cola® formulation is still claimed as a trade secret). An owner of a patent can shut out competitors from copying the invention for several years. This enables the owner to charge a premium price if the invention is really useful. Profits from the premium price enable the company to invest in further research and development to create further new products or processes.

WHAT CRITERIA MUST BE SATISFIED TO OBTAIN PATENT RIGHTS?

Malaysia grants two types of rights under the Patents Act 1983. First is patent right. The second is known by the name of Certificate for Utility Innovation – a kind of small patent, or petty patent, or innovation model as it is known in some other countries. Patent rights can be obtained for processes, that is, methods of doing something or producing a product. For example, a method of introducing steam into the sterilizer chamber, method of extracting oil from empty fruit bunches, or method of fractionating crude palm oil into desired fractions, and so forth. Additionally, patent rights can be obtained for machinery, equipment, gadgets, *etc.*

In practice, when the novel method involves developing an innovative apparatus, the same patent application can claim the new method as well as the machine. In such a patent, no one can copy the process or the machinery or both. It is a strong patent indeed. Alternatively, the process may be known in the industry but the apparatus may be novel – in such a case only the ap-



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paratus can be protected by a patent. Say, for example, a method of sterilization is known, but the structural configuration of the sterilizer may be inventive, *e.g.* from a horizontally positioned sterilizing chamber to a vertically positioned sterilizing chamber. In the latter situation, if the invention is just a change of position, it would probably not qualify for a patent. It must involve much more – for instance how to handle the vertical drop of the fresh fruit bunches (FFB), how to ensure the FFB is steamed evenly from top to bottom, how to remove the cooked FFB from the chamber, *etc.*

There is a common misunderstanding that to obtain a patent, the entire process or machine must be new. This is not true. A patent can be obtained for just one feature of a part of a machine, provided that the feature is novel and not obvious. This is known as an improvement patent. In fact, Thomas Edison's patent for an electric bulb was an improvement patent and not a breakthrough invention. There were others before Edison who showed how to produce light energy by passing an electric current through a metallic filament. The problem they faced was the burning out of the filament due to the oxidation of the heated filament. Edison solved the problem by creating a vacuum surrounding the filament. Of course, Edison was smart enough to file for patents for his invention, and subsequent to Edison's patent, there were many other improvement patents.

So, what is required to obtain a patent? The law requires that to obtain a patent, an invention must satisfy three main criteria as follows:

- the claimed feature must be novel (*i.e.* the feature should not have been disclosed to the public in any manner anywhere in the world);
- the claimed feature should not be obvious to a person skilled in the art (*i.e.*

the feature should not be obvious to a another person who is knowledgeable in the same field of technology as the invention) – this step is known as the inventive step; and

- the invention must be industrially applicable (*i.e.* the invention can be reproduced and is workable, in that it is not merely an imagination).

Many innovators and researchers find it difficult to satisfy the second criteria but are able to satisfy the first and third criteria. To encourage inventions, the Malaysia Patents Act does grant a similar right to inventions that just satisfy the first and third criteria – this right is the Certificate for Utility Innovation – commonly called UI for short. UIs are granted for novel improvements, thus, exclusive rights can be obtained for novel modifications of equipments or processes even though some modifications may be obvious.

While a patent or UI is valid for 20 years from the date of filing the application, the rights to sue others starts from date of grant of patent. What can an owner of a patent or UI sue for? He can demand that the offender:

- stop his infringing activities immediately;
- destroy the infringing machinery, apparatus or systems;
- pay damages to owner of patent or have account of profits made and pay the plaintiff any sum so computed; and
- pay legal costs.

The patent system provides an incentive to innovate or invent by giving a patent holder exclusive rights during the duration of the patent.

Patents are only enforceable in the country where it is granted. So if owners of new





technology want exclusive rights to their new processes or new equipment, then they would have to apply for a patent in each country they want protection. If an invention can be used in a Malaysian palm oil mill, it can also be used in other oil palm producing countries. Therefore, patent rights should be obtained in those countries too. There are international patent filing procedures which assist in the filing of patent applications in several countries. All applications are time sensitive. Ideally, a patent application should be filed at the Patent Office before disclosing the invention to anybody who is not bound to keep the information confidential. You could consult an experienced patent agent who can not only draft the patent specification but also advise you on and take care of the complex international patent filing procedures.

THE MONEY

The new technology development – a new process or method, or a new equipment or system for which a patent has been applied for, can be commercialized in several ways.

Firstly, the entire technology can be sold to a third party either before filing a patent

application or at any time after. The value of the sale would depend on several factors. It is possible to value the technology – a monetary value can be decided based on established valuation methods.

Secondly, the technology can be licensed for royalty income for the duration of the patent. Sometimes a patent can form the subject matter for cross-licensing, for example, A licensing his technology to B in return for B licensing his technology to A. This allows both A and B to use each other's technology without the fear of infringement.

Keep in mind that the technology to be commercialized in this manner must be recognized as property in the country where it is proposed to be commercialized – either in the form of patents or as trade secrets.

With the rapid growth of the oil palm industry worldwide, there is an economic opportunity for Malaysians to look beyond our shores in extracting value from their innovations or inventions. Indeed, some have already started in this route to capture the global market of the oil palm industry.