Recycling prevents pulp plant pollution

A breakthrough in the control of water pollution in the pulp and paper industry has been made by Dr. W. Howard Rapson, professor of chemical engineering at the University of Toronto.

The method will eliminate the pollution of water by bleached kraft pulp mills in what is claimed to be the world's first "closed-cycle" mill, which is now under construction for the Great Lakes Paper Company at Thunder Bay, Ontario.

The system, a decade in the making, is described by Dr. Rapson as a scheme that "provides for the recycling of the flow of contaminated pulp-processing waste in such a way that only essentially clean water, used for cooling purposes, will be discharged into the Kaministiquia River from the Great Lakes mill".

An essential component that makes the closed-cycle mill possible, is a process for removing the large quantity of ordinary salt (sodium chloride) produced from the bleaching chemicals. This process was also developed at the University of Toronto by Dr. Douglas W. Reeve.

Important complex processes of this kind require a large amount of testing, development and scaling up to commercial-size equipment. A company was incorporated to develop and promote the process internationally, Erco Envirotech Limited, a joint venture of Erco Industries Limited of Canada and Envirotech Corporation of the United States. Both Dr. Rapson and Dr. Reeve are consultants to this company, which licenses the process.

Kraft pulp mills chemically treat wood to separate the individual wood fibres, from which paper is made. The dark brown unbleached pulp makes strong paper for grocery bags, corrugated boxes, and other packaging materials. It is bleached white without losing strength, using chlorine dioxide, chlorine and sodium hydroxide.

New method

The contaminated effluent from washing the bleached pulp is the most serious water-polluting stream from this type of mill in many areas of the world. In the closed-cycle mill, the amount of water used is sharply decreased by counter-current washing, and the effluent is introduced into the chemical-recovery system, where it is evaporated and the organic matter is burned.

The pulping chemicals are regenerated, and the salt is recovered for manufacturing the bleaching chemicals electrolytically. The evaporator condensates are cleaned by steam-stripping and re-used as process water. Cooling is carried out in heat exchangers, and the thermally enriched but clean water is discharged from the pulp mill.

By this method, very expensive sewage-treatment plants, said to be not wholly effective, are not required. "Therefore, not only is water pollution eliminated, but the capital and operating costs are decreased," stated Professor Rapson. "At the same time the process produces stronger, cleaner and more stable pulp of higher yield."

After the new mill is operating successfully on the closed cycle at Thunder Bay, Professor Rapson hopes that kraft pulp mills throughout the world will adopt the system to avoid water pollution completely. "I hope that solving the water-pollution problem for one industry will also encourage other manufacturing industries to close up their water cycles," he said.

Environment Canada Minister Jeanne Sauvé has announced that the first DPAT (Development and Demonstration of Pollution-Abatement Technology) contract for $1,158,000 has been granted to Great Lakes Paper Company, which will spend an estimated $8 million to implement the complete closed-cycle facility, ready for the opening of the new kraft mill next year.

Love story has happy ending

A Canadian Forces *Chinook* helicopter was the gallant rescuer of lost love on September 17 after all others had failed.

The 5,000-pound centre piece of a fibreglass sculpture called *L'amour-Love* was flown to Hull from nearby Renfrew, where it had been finished by artist Henry Wanton Jones, head of the fine arts program at Concordia University in Montreal. Because of its bulk, the "rump" section of the complete work that will be located in the National Capital Commission park adjacent to the Federal Government's Place du Portage complex, could not be transported by road. Another attempt by a privately-owned helicopter had been unsuccessful.

Mike Kerr, DPW

To Hull with love

A Department of National Defence Chinook *helicopter over the Ottawa River* en route *from Renfrew, Ontario, to Hull, Quebec, carries the middle section of* Love, *a 36-foot fibreglass sculpture weighing over 5,000 pounds. The work was commissioned under the Department of Public Works' fine art program for a Federal Government office complex in Hull.*

The whole sculpture, which cost $88,500, is part of the Department of Public Works' fine art program. It was commissioned three years ago, processed at a steel foundry in Montreal and finished at a fibreglass plant in Renfrew. The other two sections, one resembling a knee, the other a head, had been hauled to Hull by truck.

The three parts, which together are 36 feet high and weigh over 11,000 pounds, will be bonded together on site, under the direction of Mr. Jones.

Sculptor's relief

As the giant helicopter drew nearer, crowds peered skyward. Traffic slowed, pedestrians stopped. The artist, awaiting the arrival of his huge labour of love, said that he had been searching the horizon for what had seemed like hours. As it drew closer, he said, all