



GP in Edible Oil Industry in India

In response to Agenda 21 of the 1992 UN Rio Earth Summit, the APO launched its Green Productivity (GP) Program as a strategy for integrating productivity enhancement with environmental protection in its member countries. GP activities take the form of awareness generation, dissemination of GP know-how, and sponsoring of demonstration projects in industries, farms, and communities to serve as GP models for others to emulate. In November 2000, the APO in collaboration with the National Productivity Council (NPC) of India sponsored a GP demonstration project in the edible oil sector of the Indian economy.

India is the fourth-largest oilseed producing country in the world, after the USA, China, and Brazil, with a harvest of about 25 million tons of oilseeds per annum. The edible oil sector is important to the Indian economy as it provides job to millions of people, achieves an average domestic turnover of about US\$10 billion per annum, and earns foreign exchange amounting to US\$90 million per annum. Soybean is the third largest oilseed crop in India next to groundnut and mustard, and accounts for 25% of the annual total oilseeds and about 10% of total vegetable oils produced in the country. The minus side of the equation is that edible oil processing is one of the most polluting industries in India. It generates substantial water pollutants, toxic gases, and solid waste.



APO and NPC experts doing on-site inspection

With the objective of enhancing productivity and encouraging good environmental protection practices in the edible oil sector of India, M/s. Rama Phosphate Ltd. (Oil Division), a soy oil processing company in Indore, India, was selected to participate in the APO GP Demonstration Program. Established in 1993, the company has 150 employees, an annual turnover of US\$20 million, and a production capacity of 500 tons/day of soy processing, 500 tons/day of solvent extraction, and 100 tons/day of oil

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Volume 32 Number 4
April 2002

"To keep ahead, each one of us, no matter what our task, must search for new and better methods — for even that which we now do well must be done better tomorrow."

James F. Bell

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Published by
Asian Productivity Organization
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refining. It also produces by-products like de-oiled cake and acid oil.

GP tools and techniques like eco-mapping, concentration diagrams, control charts, fish-bone diagrams, and brainstorming were used to identify problem areas. Some of the major ones were hexane and oil losses. During the implementation of the project, the GP team that provided technical assistance to Rama Phosphate noticed that steam generation and supply to various operations were inadequate. As a first measure, efforts were made to increase boiler efficiency from 60% to 80% and to recover waste heat from flue gases. One outcome was that coal consumption fell by 1350 tons/year. This has not only resulted in economic gains to the company but in: 1) reduction in green house gases (GHG) emissions by 2025 tons/year; and 2) reduction in hexane and oil losses of 13% and 20%, respectively.

By means of brainstorming, top management and steering committee members generated a total of 36 GP options as possible solutions to the problems identified.

Eighteen were accepted for implementation after passing a stringent evaluation of technical feasibility, economic viability and environmental acceptability. The management invested about US\$425,500.00 to implement the 18 options; the payback period in savings made and higher productivity attained was estimated to take 15 months. By January this year, Rama Phosphate had achieved an overall productivity increase of 20%. In addition, it went on to attain ISO 14001 certification and to receive the Soybean Processors Association (SOPA) of India best sales in market award for two years running.

As a follow-up to this project, the National Productivity Council of India, in collaboration with the APO and SOPA, will disseminate the experience of Rama Phosphate to the edible oil industry in the country and to develop benchmarks and best practices in soybean processing. 