

Cashing in on Trash

There are estimated to be some 700 billion plastic drinks containers, bottles and cans in circulation in the world, the majority of which still end up in landfill sites. The raw materials and energy consumed in manufacturing ever more bottles exacerbates the depletion of natural resources. In Norway, however, consumers now return 90 percent of their used drinks containers to supermarkets for recycling in return for a cash refund. The success of the Norwegian effort was made possible in part by the ingenuity of two brothers, Petter and Tore Planke, the founders of TOMRA.

Their story began in 1971, when the owner of one of Oslo's biggest supermarkets sought their help: The Norwegian government required shops to refund customers for empty bottles, but supermarkets were unable to cope with the quantities. They needed some kind of automated processing system. Within a year the brothers had devised a prototype

"reverse vending machine," containing a single hole for the return of all types of bottles, and a printer to issue receipts for the amount of the refund due. Tore Planke filed their first patent with the Norwegian Patent Office in December 1971.

From there, the brothers began to develop new products and processes covering the whole process from bottle collection to delivery to the recycling point. Thirty-four years on, TOMRA is a market leader in reverse vending machines for glass and plastic bottles and cans. Under the slogan, *Helping the world recycle*, the company has installed 50,000 machines on four continents.

The company has more than 30 PCT applications, which cover devices for lifting, rotating and conveying empty bottles, as well as sophisticated image recognition technology to identify different sorts of containers. Maintaining the patents is expensive. But, says



Courtesy of TOMRA

TOMRA has installed 50,000 reverse vending machines worldwide to encourage the recycling of beverage containers.

TOMRA's chief scientist, Andreas Nordbryhn, without patent rights, "you have no way to calculate the possible losses if you run into problems. It is a lot like insurance. Who would run a business today without appropriate insurance?"

More information: www.tomra.com

See also www.wipo.int/pct/en/inventions/ for WIPO's PCT website Gallery of Notable Inventions and Inventors, featuring a selection of other interesting innovations.

"Our biggest problem," Professor Jia told WIPO Magazine, "was the common belief that a waste is a waste. No-one believed that the oil-sand fluid coke, a solid with a dense, layered structure, could be activated." He and Professor Kirk are now securing funding to field-test the effectiveness of *SOactive* and *ECOcarbon* in removing mercury at the site of a company that emits both mercury and sulfur in its industrial waste.

The professors themselves drew up the draft patent application and claims before getting them finalized by a patent attorney. "For me it was a learning process," comments Professor Jia, "and quite demanding in time and money." Their PCT application was published in 2003.