



*“As part of its energy management programme, Xstrata Zinc has undertaken an innovative project at its Brunswick Mine to recover waste energy from its zinc dryers’ exhaust and to reuse this energy in its flotation process.”*



## Brunswick Mine Zinc Dryer - 2007 Heat Recovery Project

This project is already reducing energy consumption, greenhouse gas emissions and the emission of particles into the atmosphere, and reflects Xstrata’s commitment to improve energy intensity and progressively reduce emissions.

Xstrata Zinc’s Brunswick Mine in New Brunswick, Canada is one of the world’s largest underground lead and zinc mines. The mine has developed a number of initiatives for improving energy management, reducing the emission of greenhouse gases and achieving cost savings.

The mine’s concentrator uses selective flotation techniques to produce zinc, lead and copper concentrates. A study of the mine’s processes showed there was a waste of 30 GJ/hr of heat energy from the concentrate dryers’ exhaust, while 70 GJ/hr was required to heat the slurry in the flotation process during winter. A project team performed an energy audit to confirm the practicality of recuperating and then reusing the wasted energy – the results of which led the team to recommend a direct contact heat recovery system.



A team of external engineers worked with Xstrata Zinc’s engineers on the detailed design and construction of the tower. The cylindrical direct contact heat recovery tower is 10 feet in diameter, 20 feet high with a 60-foot stack and is designed to efficiently recuperate 95% of the available heat which can be used in the flotation process to reduce the amount of steam required to heat the slurry to the correct temperature. Following construction, the tower was connected to three of the mine’s five dryers and put into operation at the mine at the beginning of 2007.

An assessment of the initiative was carried out after 12 months of operation and showed that the project had decreased steam consumption in the flotation process by 7,100 pounds per hour or 16%, reducing energy costs by \$850,000 per year. Overall, in 2007 the Brunswick mine achieved a 6% reduction in total energy consumption, significantly contributing towards Xstrata Zinc’s targeted average reduction in energy intensity of 1% per annum.

The tower also provides further ‘scrubbing’ of the dryer’s output, reducing particles emissions into the atmosphere. The project reduces the emissions of greenhouse gases by 2.2% and the particulate contaminant from the dryers by 25% per year. Overall, the mine reduced greenhouse gas emissions by 13,000 tons or 5.1% in 2007, of which 5,500 tons was due to the zinc dryer project.

The Zinc Dryer Heat Recovery project received the Innovation Award from the New Brunswick Consulting Engineering Awards, given to recognize and celebrate achievement in the field of engineering. In 2008, Xstrata Zinc will continue to optimize the process to connect an additional dryers’ exhaust, which will increase the internal reclaim water temperature and enable the heat exchanger to operate at full capacity.