lead in transportation

Skytrain leads world in rapid transit

This summer, the world came to Vancouver to attend Expo 86, and many of the millions of visitors arrived on one of the world's largest and most advanced, fully automated urban transit systems — Vancouver's new Skytrain.

The Canadian-developed and manufactured Skytrain system was completed on schedule (in January) and on budget ($845 million). The light rapid transit system runs for 13 miles from Vancouver's central core to the suburbs. Skytrain's gleaming white, blue and red cars travel underground through Vancouver's downtown, then rise for the remainder of the line on an elevated structure.

The system is connected with trolley buses and boats in Vancouver, and the neighbouring municipalities of Burnaby and New Westminster. The resulting integration means a 30—50 per cent reduction in travelling time for most of Skytrain's transit riders.

Designed by the Urban Transit Development Corporation of Ontario (now owned by Lavalin Inc in Montreal), Vancouver's new transit system features a major technological innovation, the linear induction motor (LIM). The LIM is essentially a six-feet-long electric motor stretched out flat.

An alternating electric current surges through copper wire in the LIM and produces a complementary current in a metal plate alongside the rails. The two currents are not in step — one is constantly behind the other — so two magnetic fields attract each other and try to join together. However, they never quite make it. Instead, the motor slides along above the steel plate and pulls the train with it.

The LIM needs no gear or transmission, because it acts independently of friction between the train wheels and rails. For limited braking, the motor turns into a generator absorbing the momentum of the vehicle until the mechanical braking system kicks in (below 6 miles per hour). There is also an emergency magnetic brake, which clamps onto the running rails.

Skytrain's steerable axle-trucks allow wheels to follow rails on curves rather than scraping against them. This reduces friction, noise and wear on the wheels. The steerable truck feature also extends the life of curved rails by an estimated 10 to 20 times, generating a considerable cost saving.

Skytrain also offers fully automatic, driverless train control. Yet the system's total cost stacks up well in comparison with others in North America. In fact, on a cost-per-kilometre basis, Skytrain is the cheapest transportation system in North America.

All-terrain vehicles win export orders

For the past nine months, Canadian Foremost Limited of Calgary has been supplying the Union of Soviet Socialist Republics with 50 of its special heavy-duty vehicles.

The sale, worth more than $25 million, is the largest contract obtained by the Canadian-owned manufacturing company, but it is just one of several dozen that the company has won in recent years.

One of the Foremost's divisions, the Transportation Equipment Group, specialises in the design and manufacture of low-ground-bearing-pressure wheeled and tracked all-terrain vehicles. The vehicle-line payload capacities range from 3.6 to 64 tonnes.

Equipped with all-wheel drive and articulated steering, Foremost's Terra-tyred, low-ground-bearing-pressure vehicles are designed for maximum mobility in marginal terrain conditions. Its specially designed low-pressure tyres evenly distribute loads over a large area, thus improving vehicle traction and effectively increasing vehicle mobility and gradeability.

The wheeled vehicles can be fitted with a wide variety of auxiliary equipment to meet special job requirements. Supplied with a deck, they can become versatile logistical support units, able to transport loads weighing up to 64 tonnes across rough terrain.

The wide flexible tracks on the tracked vehicles substantially reduce ground bearing pressure and provide greater traction, allowing them to transport heavy equipment, supplies and personnel across the softest terrain.

Foremost all-terrain vehicles are used by many industries for a wide range of functions, including pipeline and powerline construction, geophysical exploration, mining and construction, heavy oilfield hauling and logistical support units for many resource development projects in remote areas.

In 1985, only about 20 per cent of the company's sales were in Canada. The vehicles have gained international recognition and are sold for use in many countries and regions around the world, including the US, Southeast Asia, South America, the Soviet Union, Antarctica, Mexico and the Middle East.

Delta 100 all-terrain vehicle.