

# Magplane Technology developing unique mineral transportation system

by Ellsworth Dickson

Traditionally, most mining companies have used diesel trucks to move their mineral products. In addition to the initial cost of buying or leasing a fleet of trucks, there is the cost of diesel fuel and its associated air quality concerns. As well, with the mining sector booming, in recent months there has been a shortage of tires for the multi-tonne trucks.

Bedford, Massachusetts-based **Magplane Technology, Inc.** [MAGP-Pink Sheets; www.Magplane.com] was founded by a group of Massachusetts Institute of Technology engineers that have developed two innovative technologies – a magnetic levitation passenger transportation system that offers advantages over high-speed trains and light-rail transit systems and a magnetic propulsion system for transporting mineral products by pipeline. Being a mining-oriented publication, this article will focus on Magplane Pipeline Technology, Inc., a wholly-owned subsidiary of Magplane Technology.

Basically, as illustrated in the accompanying photograph, the pipeline system provides an environmentally clean and safe method to transport minerals. Using electricity, a magnetic drive propels the loaded capsules of mineral products through a closed pipeline (up to 100 cm in diameter)



with an annual throughput ranging from 2 million tonnes to over 10 million tonnes.

The technology is particularly useful for transporting large volumes of minerals such as coal and iron ore. Considering the fact that global coal production is approximately 5,300 million tonnes annually (source: BP Statistical Review of World Energy 2006) with diesel truck expenditures conservatively estimated to be US \$8 billion (Magplane estimate), it is apparent the MagPipe technology has a huge potential market.

What about MagPipe capital and operating costs? Capital and operating costs over the life of a MagPipe system are designed to be significantly lower than diesel trucking costs at capacities above 2 million tonnes per year. Dr. Bruce Montgomery, chairman and chief technical officer of Magplane, states that the company has determined that operating costs for the MagPipe are about 60% of a medium-length rail system and about 20% of a short-haul trucking operation.

Since the World Coal Institute estimates that 70% of the cost of coal is in transportation costs, this sector of the mining industry might do well to take a look at the MagPipe system.

The MagPipe system is more than just an

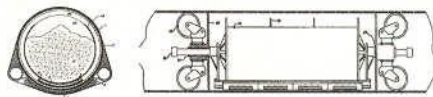


ILLUSTRATION: A schematic drawing of the mineral product capsule. Illustration courtesy Magplane Technology, Inc.

PHOTO: The MagPipe demonstration project at IMC Global in Florida. Photo courtesy Magplane Technology, Inc.

idea. The Magplane Pipeline Technology was demonstrated in Florida at IMC Global Inc., which has merged with Cargill Crop Nutrition to form **The Mosaic Company** [NOS-NY] – the world's leading producer of potash and phosphate crop nutrients. In the demonstration, phosphate ore was successfully transported at speeds up to 65 kilometres/hour using the pipeline system that utilized rare earth (neodymium-iron-boron) permanent magnets on the capsules over a 275-metre long pipeline containing a linear synchronous motor winding.

Recently, Magplane Technology received a National Assessment report from the China Science and Technology Ministry on the MagPipe technology by a group of experts invited by the Inner Mongolian Science and Technology Department. The report stated that the pipeline technology will provide "great contributions to Inner Mongolia in the areas of environmental protection, reduction of petroleum fuel consumption and provide solutions to existing logistical problems for ore transportation."

In May 2007, Magplane Pipeline Technology signed a Framework Agreement of Co-Operation with the People's Government of Inner Mongolia Autonomous Region initially worth US \$80 million to build commercial pipeline infrastructure for transporting the region's coal production. Inner Mongolian coal production is forecast to top 500 million tonnes annually by 2010 to meet the growing demand by power plants and other industries. Inner Mongolia produces over 17% of China's total coal, the production of which suffers from transportation bottlenecks and high truck costs due to difficult terrain. The MagPipe technology can easily handle steep terrain.

Under the joint venture, Inner Mongolia will award at least 200 kilometres of commercial pipelines and has identified 47

potential MagPipe routes totaling about 1,000 kilometres. The first three commercial pipelines are: a 6.5-kilometre Meng Tai Coal and Electricity line with a 2.5-kilometre demo, a 32-kilometre Yi Tai Group line, and a nine-kilometre Yi Tai Group line with a 25 million tonne annual capacity.

Magplane Pipeline Technology will retain a 51% interest in the joint venture,

39% will be owned by a new investment corporation, the Inner Mongolia Maglev Investment and Development Company Ltd., and a private company, Beijing Farthest which will have a 10% interest. Maglev Investment consists of a consortium of a government investment agency and several industrial companies.

With over 2,000 mines in operation

in the United States, Dr. Montgomery is of the view that the Magplane Pipeline Technology would be of interest to at least 50 mining operations that will benefit most from replacing diesel trucks with MagPipe technology. In addition, several mining companies in South Africa, Australia and India have expressed an interest in the Magplane Pipeline Technology. ■