



**JOY MINING MACHINERY**  
A Joy Global Inc. Company

## NEWS RELEASE

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### **200<sup>th</sup> JOY 4LS Shearer Marks the Start of a New Generation**

WARRENDALE, PENNSYLVANIA – August 2006 – Marking its 20<sup>th</sup> anniversary with the shipment of its 200<sup>th</sup> unit in July, the JOY 4LS shearer series established itself as the most prolific producer of coal in the history of longwall mining and, at the same time, introduced the next generation 4LS—the model 4LS20—specifically designed for the Eastern European and Asian markets.

Since first introduced in July 1986 at American Electric Power's Martinka Mine, the 4LS shearer has mined literally billions of tons of coal in seams ranging from 52 inches (1320 mm) to more than 13 feet (4 metres) thick in virtually every country in the world employing longwall mining; from the North American Continent to Australia, from Europe and Asia to Africa.

Leading the way in longwall mining technology, Joy Mining Machinery continually improved on its pioneering shearer designs, building ever more advanced, more productive machines since the introduction of the first JOY model 1LS shearer in 1975; that machine evolving into the 2LS, 3LS, 4LS, 6LS and, today, the 7LS series of shearers, including the 7LS7, the world's most advanced shearer capable of single-pass mining the thickest extraction in the world today.

While continuing in those efforts to design the most sophisticated, technologically improved shearers in the industry, Joy engineers also recognized that the needs and demands of the Eastern European longwall mining industries were not the same as those in the West, where the emphasis has long been on larger, more powerful machines capable of producing ever-higher tonnages.

In Russia and Poland, a machine was needed with a proven performance record, one that offered technology specific to their requirements of increased productivity and lower operating costs within existing mine infrastructures. Joy engineers also knew no machine had proven itself in more places, under more varied conditions and over a longer period of time than had the 4LS shearer.

Joy already had established a significant market presence in Poland. The advent of Joy's highly touted 1000 volt AC variable frequency drive—OPTIDRIVE—allowed Joy engineers to design into the 4LS shearer a more powerful haulage unit with JNA controls; thus creating the model 4LS20, a competitively priced machine that featured Joy's industry-leading expertise but at a slightly lower power than the state-of-the-art JOY 7LS shearers; a machine designed to accommodate the continually developing longwall mining industries of Eastern Europe and potentially China.

In replacing what had been the standard DC haulage on the 4LS shearer with the AC OPTIDRIVE on the 4LS20, Joy allows the use of a mine's existing 950 or 1100 volt primary voltage source, thus saving the mine operator the additional expenditure to change the incoming voltage source to 3300 volts. The 4LS20 also increases total horsepower from 570 hp to 937 hp (425 kW to 698 kW), haulage pull from 98,000 lbs to 135,000 lbs (44,452 kg to 61,235 kg) and total weight from 68,000 lbs to 89,000 lbs (30,844 kg to 40,370 kg). At the same time, ranging arm length was increased from 76 inches to 93 inches (1930 mm to 2362 mm) and the cutting range from up to 9 feet 2 inches to 14 feet (2.8 metres to 4.3 metres).

Over the years, Joy incrementally increased the power output from the 4LS shearers. The original model 4LS1 shearer utilized 35 hp (26 kW) haulage motors, later increased to 50 hp (37 kW). With the advent of Joy's AC OPTIDRIVE, the haulage ratings further were increased to 80 hp (60 kW). Over the same period of time, the cutter motor output on the 4LS series shearers had been increased significantly, from 240 hp to 565 hp (179 kW to 421 kW) today. The Eastern European and Asian longwall mining industries often utilize a 380 hp (283 kW) cutter motor in order to operate comfortably on 1000 and 1100 volts.

Combined, these latest advances in the 4LS series of shearers increases production, improves productivity, lowers operating and maintenance costs while, at the same time, requires only minimal retraining of personnel to familiarize them with the improved, yet simpler, haulage system and controls. The JOY 4LS20, a unique machine designed to meet the needs of a unique market.

PHOTO CAPTION:

JOY 4LS20 shearer delivered to the Raspadskaya Mine in Russia.

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*Joy Mining Machinery, a subsidiary of Joy Global Inc., is a global leader in the development, manufacture, distribution and service of underground mining machinery for the extraction of coal and other bedded materials.*