



FANSTEEL METALLURGICAL CORPORATION BOASTS COUNTRY'S LARGEST REFRACTORY METAL ROLLING MILL

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A program for increased capacity of tantalum, tungsten, and molybdenum was initiated in late 1950 by Fansteel Metallurgical Corporation, North Chicago, Illinois, to meet the never-ending demands of these refractory metals. In 1953 a rolling mill was completed, the last of an equipment installation project enabling an increase in manufacture of tungsten by about 75 percent and molybdenum by about 100 percent. This mill is the largest yet built for this service in the United States.

Fansteel Metallurgical Corporation and its subsidiaries, Tantalum Defense Corporation, Vascoloy-Rainet Corporation, and W. W. Alloys, Inc., have a combined plant area of more than 650,000 sq ft. Its six divisions are engaged in manufacturing and developing tungsten, molybdenum, tantalum, columbium, metal carbides, copper-base alloys, and aluminum bronze, just to mention a few products. The corporation's growth has been rapid and its product quality high.

The new 26-in. by 36-in. rolling mill was engineered and built by United Engineering & Foundry Company, Pittsburgh, Pennsylvania. Our own engineers from the Industry Engineering Department coordinated the electrical system with United's engineers. Control for the project was supplied by Clark Controller Company and included about 100

relays with almost 5000 contacts. Fansteel is one of the country's leading manufacturers of electrical contacts as well as selenium rectifiers which were used to supply 230-volt direct current required for control purposes.

The Elliott 600-hp main drive motor can be operated at four speeds, forward or reverse—450, 600, 900, or 1200 rpm, which correspond to 132, 176, 264, and 364 fpm at the mill. Pushbutton control is also provided for jogging or inching. Control is electrically interlocked so that the mill does not start until oil pumps are running and oil pressure normal.

An automatic preset, screwdown control enables the operator to preset the cam limit switches and automatically make 15 passes through the mill to the desired thickness. This feature has resulted in substantial savings in scrap, in time, and in rolling costs.

Other Elliott auxiliary equipment was supplied by our Crocker-Wheeler Division and consisted of two 15-hp, high-torque, high-slip, screwdown motors; one 10-hp hydraulic roll balance system and roll change motor; one 5-hp main drive, lube-system motor; and one 1½-hp screwdown, lube-system motor. All auxiliary motors are of the *Sealedpower* TEFC ribbed-frame design, much used by steel mills throughout the country during the last fifteen years.

Closeup of the Elliott 600-hp main drive motor. The motor is a four-speed, constant horsepower, two-winding, consequent pole squirrel-cage induction motor which develops not less than 250 percent pullout torque at all four speeds. It is equipped with a zero-speed plugging switch so that the motor can be plugged to stop in emergencies. It is of heavy-duty mill-type construction, designed to withstand sudden shocks and heavy overloads. Motor at right is the 5-hp main lube system drive motor.

