To solve these problems, we developed an automatic production control system (APCS) consisting of 9 subsystems which involve the solution of 228 problems and the output of 584 documents. The large variety of computers used in the system adversely affects the system's performance with respect to solving complex problems on the basis of a unified data and standard base.

The plant is presently being requipped with more sophisticated computers. The use of a single type of third-generation computer with improved mathematical capabilities will allow us to develop operational programs adaptive to modifications, which is one of the main prerequisites to the stable functioning of any APCS.

The present APCS adequately covers basic problems in production control. It embraces the following subsystems: technoeconomic planning; operational accounting (inventory), analysis, and planning of production; a "Listoprokat" master computer complex; accounts; marketing and sales; budgeting; maintenance; management. Together with the elaboration and improvement of existing subsystems, there are plans for the development and introduction of such important subsystems as "materials supply" and "quality control."

The production-process control problems have been most highly elaborated in the OH shop and rolling mills. The "Protsess-2" system has been successfully introduced to control refining operations in the former based on predictions of carbon content and metal temperature.

An automated system has been introduced in cold-rolling mill No. 1 to determine sheet quantity and weight at the shears. Plans are being made to automate the finishing group of the 20-roll cold-rolling mill.

Introduction of the automated system at the plant has resulted in a 1.6% increase in total output and a 1% reduction in rejects as a result of a decrease in work time lost for organizational reasons, a reduction in the consumption of electric power, fuel, and ingot molds, and a decrease in the supervisory staff by 43 men.

Annual savings have totaled 792,000 rubles.

CONTAINER TRANSPORT OF PIECE AND LOOSE FREIGHT

G. T. Zmievskii

During 1974-1977, the "Dneprospetsstal’" plant introduced the use of containers to transport electrodes, clays, and powdered fireclay from the Zaporozhe Refractory Plant, to transport lime from plant kilns to electric steelmaking shop No. 2, and to transport ferroalloys from the Zaporozhe Ferroalloys Plant to storage platforms in the shop, as well as to convey ANF-6 flux, nonmagnetic crop ends, abrasives, molded refractories (beakers), and scrap metal from the scrap breaking shop to steelmaking shops Nos. 1, 2, and 3 along with other freight.

Container Transport of Electrodes

Before the introduction of containers, 300-500-mm-diam. graphite electrodes were transported from the Dneprovsk Electrode Plant (DÉZ) to electric steelmaking shops in bulk in gondolas. The electrodes were unloaded at the "Dneprospetsstal’" plant one by one into stationary bins located underneath the main floor of the electric-furnace steelmaking shop, later to be transferred singly to the furnace bay. The furnace attendants would manually roll the electrodes to the furnace over distances of up to 100 m.

Now electrodes are loaded into 8-ton capacity containers at the DÉZ. Five containers are loaded onto each four-axle flatcar (Fig. 1), the containers to be subsequently delivered directly to the furnace area. This reduces unloading time by a factor of eight, eliminates losses from electrode breakage, and makes the work of 40 men easier. Savings here amount to 20,200 rubles.

ANF-6 flux from the Nikopol Ferroalloys Plant (NZF) is delivered to electric furnace shop No. 5 in containers. It was previously transported in sacks weighing 25 kg in boxcars. The bags with flux were lifted into the boxcars from the products warehouse at the NZF by means of electric loaders, and were unloaded from the cars into shop No. 5 by hand using a special packing case. The flux was then emptied from the bags into floor-level bins.

"Dneprospetsstal’." Translated from Metallurg, No. 6, pp. 7-10, June, 1978.
Fig. 1. Container for electrodes.

Fig. 2. Diagram (a) and exterior view (b) of containers for flux ANF-6, 7.5-m³ capacity: 1) sectional gate; 2) journal; 3) loading hatch.

Fig. 3. Container transport of nonmagnetic crop ends on railroad flatcars.