vere cumulative current peaks on the a.c. generator, at frequent intervals. Under these extreme load conditions the d.c. motor driving the motor-generator set must hold constant speed to maintain the frequency setting and the a.c. generator must hold up in voltage to produce the torque necessary for quick stopping and starting of the strip on the tables.

The Elliott 500-kv.-a. d.c.-a.c. motor-generator set, illustrated here, was selected for this service since it embodied inherent electrical design features which made it most adaptable to the fluctuating load conditions.

The d.c. driving motor is fully compensated with the compensating winding of insulated strap copper completely distributed around the entire magnetic area of the armature in close proximity to the armature conductors. This prevents field distortion even at extreme peak loads and affords sparkless commutation and close speed regulation, both important features in an adjustable-speed d.c. motor for this service. Another unusual characteristic of this Elliott motor is the use of laminated sheet steel in both the pole and yoke structure. This forms a quick-response magnetic circuit so that any change in motor field current imposed by the operator in the mill room pulpit, is followed instantly by the proper motor speed to give the frequency, and hence the speed setting of the runout table induction motors to correspond to the desired lineal feet per minute of the strip from the mill. It is important that very little time lag occur between the setting of the master switch in the pulpit and the actual speed response on the runout table.

The 3-phase adjustable frequency 500-kv.-a. alternator of the motor-generator set encounters some extreme peaks due to the plugging and line starting of the 87 three-hp. squirrel cage motors on the tables. Since these peaks follow at frequent intervals, the alternator must have a liberal thermal capacity. For quick starting and stopping of the motors, the voltage should hold up fairly close to normal under the low power factor peaks. This alternator is provided with a special field strengthening winding, auxiliary to the conventional field winding, so that field strengthening is automatic and proportional to the load. The proper a.c. voltage is thus available for quick starting and plug stopping of the squirrel cage motors under normal operation of the mill. Field forcing by means of field forcing relays may be cut in to function automatically to assist the special field strengthening winding and maintain the speed of starting and stopping at high operating speeds and forced mill output.

The motor-generator set is especially rugged mechanically and is enclosed to draw washed air from the ducts below and exhaust out the top half of both the motor and alternator. The laminated field yokes in both motor and alternator provide ventilating channels for air passage which gives low operating temperatures.

The operation of this entire mill has more than met the expectation of its designers. The flexibility of the electric drive utilizes the mill most advantageously for economy in production and uniformity of product regardless of the output demands and regardless of the variety of strip to be handled.

Continuous Filtering of Brine

In the refining of salt, every precaution must be taken to produce a product of absolute purity. Elaborate methods of filtering are therefore required. The photograph reproduced at the right shows an Elliott twin filter in the plant of the Worcester Salt Company, Silver Springs, New York. It is used as a final element in a carefully selected series or steps of filtering. The twin construction of this filter allows continuous service, as one side is always in use while the other side is available for changing the filter cloth. Such careful filtering is one of the many means taken to insure 100 per cent purity of the salt, bearing out the slogan of the Worcester Salt Company, "It takes the best to make the best".



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