NEW MOTION PICTURE APPARATUS

During the Conventions of the Society, symposiums on new motion picture apparatus are held, in which various manufacturers of equipment describe and demonstrate their new products and developments. Some of this equipment is described in the following pages; the remainder will be published in subsequent issues of the Journal.

THREE-WIRE D-C. SUPPLY FOR PROJECTION ARCS*

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Three-wire d-c. systems for projection room service provide a flexible and economic means for supplying current to the miscellaneous projection equipment usually found in the projection rooms of the larger theaters. Small theaters,

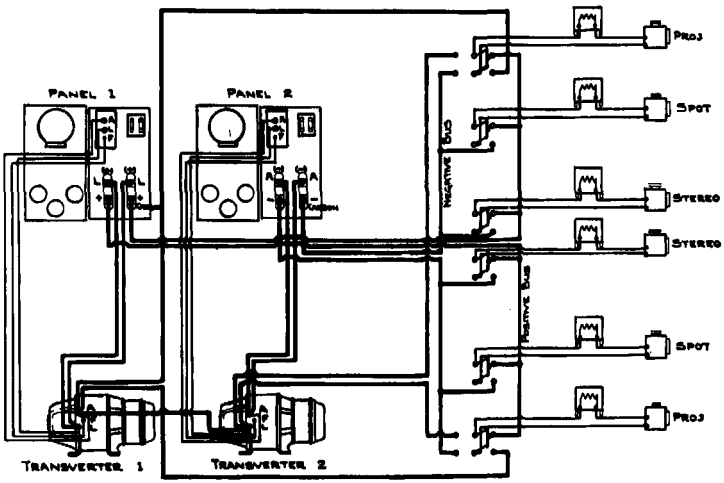

FIG. 1. Connections for two type H. I. Transverters and panels.

too, usually have spotlamps for special occasions, and the stereopticon also is a useful piece of projection equipment.

The advent of the low-voltage d-c. projector lamps with their high efficiency when operated on d-c. sources particularly designed to supply current to such lamps has resulted in changes in generator equipment from high- to low-voltage generators. The auxiliary equipment could not be used on these low-voltage

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sources, as it is outfitted with arcs that operate normally on 55 to 65 volts across the arc.

The three-wire Edison system is admirably suited to meet these conditions in a projection room. The diagram in Fig. 1 shows how three-wire service has been provided by using two 42-volt generators. Each projector is operated on one of the motor-generator sets. The switching arrangement permits either projector to be operated by either motor-generator set; but when the stereopticon and spotlamps are to be used, both sets are operated and the d-c. outputs of the two are connected in series. It is obvious from the way in which the switching scheme is worked out that when only the projectors are being used, only one motor-generator set need be operated; and in the event of difficulty with either

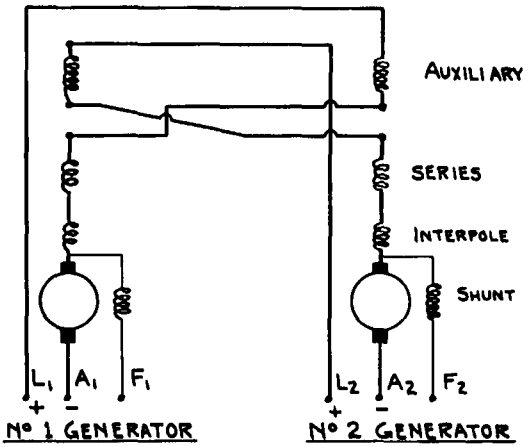

FIG. 2. Generator connections for universal Transverter.

of the motor-generators, current can still be supplied to the projectors from one motor-generator set.

There are installations where it is not desirable to install duplicate motor-generator sets with two control panels and the necessary switching arrangement to take care of possible emergencies. A single-unit motor-generator set has been produced particularly for this service, in which two 42-volt generators are driven by one motor, the two generators being not only flat-compounded, but having auxiliary series fields so that the voltage of the generator is maintained constant regardless of changes of load and, consequently, of the speed of the driving motor when the load is placed upon the other generator.

The motor of this particular type of motor-generator set is designed for high pull-out torque and high overall efficiency over a wide range of load. The generators are identical. In order to maintain constant voltage over a wide range of

load, it is desirable that the magnetic circuit of the generators be quite saturated. This provides stable operation with but little fluctuation with sudden changes of load, and with the large amount of space provided for shunt field windings the temperature rise in the shunt fields is extremely small. Current-densities in the armature and series field are extremely low so that the resistance drop is kept to an absolute minimum. A large number of commutator bars is used so as to improve the commutation and reduce the commutator ripple. By properly

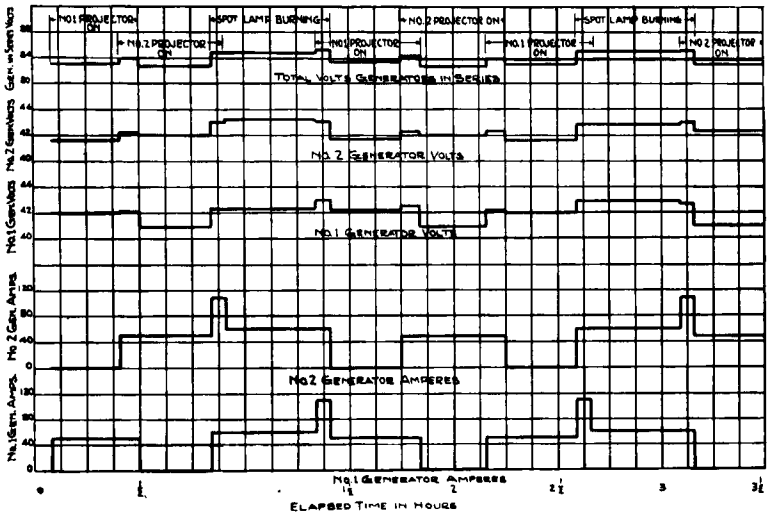

FIG. 3. Performance curves of Universal Transverter.

skewing the armature slots the commutator ripple is further reduced to a minimum.

Fig. 2 shows the manner in which the series fields are connected into the circuit. Any load placed on No. 2 generator increases the excitation of generator No. 1 sufficiently to compensate for the change of speed of the driving motor. Fig. 3 shows the voltage regulation of this type of motor-generator set under various conditions of load such as would be encountered in the projection room.

When two motor-generator sets are used they are equipped with individual control panels, and the two machines are operated practically independently of each other. Any adjustment of the output voltage of one machine does not affect the output of the other. The panels may be equipped with ammeters or merely a voltmeter, depending upon whether or not the projectors are equipped with suitable meters.

The panel equipment usually furnished with the two-generator motor-genera-

tor set has two independent field regulators, which are operated independently and which control the voltages of the generators independently so that the output voltage of either generator may be adjusted to the point at which the best operation of the arc results. The voltmeter circuit is provided with three-way switches so connected into the circuit that the voltage across either generator or across the two in series may be read on the single voltmeter.

The equipment was designed to meet the projection needs of some Midwest

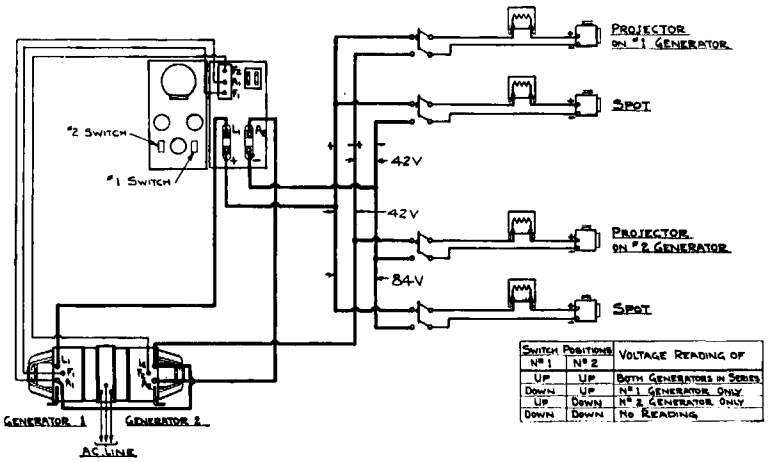

FIG. 4. Connections for Universal Transverter and panel.

theaters where 20- or 25-ampere generators were being used for reflector lamps with small carbons. To increase the current to 38 amperes for the S.R.A. carbons it was necessary to buy new generators, and in order to take care of the possible introduction of the Suprex lamp at a later date this particular type of generator was installed.

The generators are built in various capacities—as high as 200 amperes on continuous duty. The momentary service, or momentary overload duty, during a change-over period would be 300 amperes per generator at 84 volts.