Supervisory Control Systems

The features of two supervisory control systems have previously been described. These were designed primarily for use in connection with sub-stations and were limited in their application to the functioning of not more than 24 circuit breakers. In addition, a further system has been developed, capable of dealing with very large power schemes and this provides control of a large number of points over a minimum number of line wires.

The method of operation is generally similar to that of the small systems. In the case of large schemes however, the circuit breakers or points to be controlled or indicated to a central station, are arranged in groups of eleven, a preliminary "group signal" being transmitted to determine in which group the final selection is to be made. A total of 23 groups can be accommodated, that is, control or indication of 253 circuit breakers can be provided over two line wires.

This system is specially adapted to transmit meter readings over the same line wires. Each meter of which readings are required, occupies one of the groups mentioned above and any number of meters up to the capacity of the system may be dealt with in this manner The actual transmission of the reading is obtained by impulsing over the line wires in a manner similar to the transmission of the ordinary breaker signal and the transmitted reading is displayed on the control panel on an instrument similar to the ordinary switchboard meter The indicated reading is not affected by variations in the characteristics of the pilot line wires or variations in the voltage of the supply battery, and can be guaranteed to be within three per cent. of the original.

The circuit arrangement is such that while one meter reading can be transmitted at a time over the line wires, all the remaining indicating instruments are held with their last readings showing. If required, the reading of any one meter may be brought up to date by operating a Meter Key associated with that meter It can also be arranged that the readings of all meters may be checked automatically at stated time intervals and also that in the event of a change in any meter reading, the change is immediately signalled to the control station. In this last case, a practically continuous indication of all meter readings is provided at the control panel.

The system can be applied to almost any type of meter such as wattmeters, voltmeters, ammeters, power factor meters, etc. The principle can also be extended to indicate to a distant point the position of other types of apparatus capable of taking up one of many positions such as transformer tap changing switches, sluice gates, valves, steam gauges, etc.

In cases where the lines between the control station and the sub-station are not of a character suitable for the transmission of impulses of direct current, as for instance, when valve repeater stations or telephone repeating coils are inserted, an auxiliary equipment can be supplied at each station to convert the direct current impulses into impulses of voice frequency current. These may be transmitted over any speech channel and are received amplified and converted back into impulses of voice frequency current. These direct current impulses at the distant station One speech channel only is required between the two stations.