sideration of frequency and endeavour to determine the best frequency with loads such as we are to handle, that is:---

INCANDESCENT LIGHTING, ARC LIGHTING, POWER SERVICE BY INDUCTION OR SYNCHRONOUS MOTOR AND RAHLWAY LOAD: With incandescent lighting while 30 cycles is the limiting frequency, 40 cycles is unsatisfactory when moving objects are viewed by it. On this continent 60 cycles is the standard frequency for such a service, while 50 cycles is European practice. For arc lighting 40 cycles is the limiting frequency. Lower frequencies are made use of in the application of the recently developed mercury vapour converter and magnetite lamps. This new system, however, will probably have to go through a process of further experimenting. The conservative investor will still select the higher frequency series alternating enclosed arc lamps.

INDUCTION MOTORS: Analyzed from the standpoint of frequency, induction motors show characteristics which make it difficult to decide as to the best motor. Both motors under careful design can be made of equal performance as to power factor, efficiency, etc. But the motors will be of radically different designs. From the commercial standpoint the 60 cycle motors have a decided advantage, namely, a somewhat higher speed. Speed and cost are inversely proportional, hence the 60 cycle motor will prove the cheaper of the two. Another point which favours the 60 cycle motor is the greater demand for it, and the manufacturing companies have developed a finer design of this frequency. As a rule lower frequency motors are adaptations to standard 60 cycle frames and punchings, hence their performance does not show characteristics of the same high standard. Of course the low frequency motors have advantages of their own, such as better starting torque, higher instantaneous but not continuous overload capacity and lower speeds. As stated before, unless the motors of the lower frequency are standardized for best and most efficient design the high frequency motors are more satisfactory.

The principal factors in favour of the 60 cycle motors are better continuous overload capacity and also a cheaper product commercially as a result of higher speeds. Therefore, with equally good performance as to efficiency and heating, the 60 cycle motor will still be ahead of the 25 cycle motor.

Revolutions per minute-Synchronous speed										
POLES	2	4	6	8	10	12	14	16	18	20
25 Cycles	-1500	750	500	375	300	250	214	187	166	150
60 Cycles -		1800	1200	900	720	600	514	450	400	360

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