PAPER NO: 71

NON-FERROUS METALS AND ALLOYS FOR USE IN THE INDIAN HEAVY ELECTRICAL INDUSTRY (*)

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The H.E.E.P. at Hardwar (a Unit of B.H.E. Ltd.) is scheduled to manufacture Turbosets of 100 to 300 MW, Hydrosets of various capacities as well as electrical machines (A.C. & D.C) of medium and heavy sizes upto 9,000 k.w. Our Plant is just in the initial stages of production and two other plants namely H.E.E.P., Hyderabad (also of B.H.E. Ltd.,) has the Heavy Electrical Plant of Bhopal, which have also commenced the manufacture of Hydro and turbo sets. However, the real experience in the equipment industry is yet to be attained.

In general, the manufacture at Hardwar is based on the designs from U.S.S.R. for these products, since evolving a new basic design for a complex equipment like turbosets requires a vast amount of experience, detailed investigation, and considerable time. The design requirements especially for turbo sets are very stringent. The reliability of all machines depends mainly on the quality of the materials used for its production. The specifications for various materials as also for Non-ferrous ones are more stringent than those laid down by I.S.S. Standards. The main problem, which is being faced today is in the substitution of imported materials by indigenous ones. Normally foreign specifications specify chemical composition and mechanical properties (like Tensile strength, Yield strength, elongation percentage and Hardness etc.) whereas in the Indian standards only the chemical composition is specified and as far as mechanical properties are concerned, only the tensile strength.

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There are a number of such special materials required for the Heavy Electrical Industries and a few examples include Silver bearing copper for machine-conductors, cupro-nickel tubes for condensers and Babbit material for turbines. Further as the quantities required of such special materials may not be appreciable, there is a need for standardisation of all the requirements among the different plants and this cannot be done unless national laboratories like N.M.L. get further investigations and feed these Plants with experimental data.

The paper describes the difficulties that are faced in reducting straightway the import of non-ferrous metals in the manufacture of Heavy Electrical machines and puts forward a few suggestions for implementation by all concerned.

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