Preface

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The Transformer— a member of magnetic component is the product of mature industry. Being away from cutting edge of technology, it sometimes do not receive the attention, which its economic-significance requires. The transformer designing is largely based on the scattered information and lack of uniformity in designing processes it cost more than they should. An attempt is made to dilute this problem through computer aided transformer design.

The causal experimenter and transformer design – expert use different languages and have opposing view points. The resulting faulty communications are at the root of many of the difficulties encountered with transformers. An objective of the software approach to transformer design is to facilitate this communication – process. Ultimately the aim of the present work is to secure the component in shortest possible time, and at lowest possible cost.

Although transformers are found virtually in all electronic circuits, very few people design and build their own transformers. The design considerations are intended to enable the user, to follow logic and understand the method of transformer specialist, and make it easier to use the electronic transformers to their best advantage.

One may like to immerse in a sea of details, hardware and recipes. However, no man's design or program for a design can be better than his comprehension of basic principles. This point of view is reflected throughout the work and that the 'simplicity' will be found to be illuminating rather than naive. Only the required minimum data is referred to, and the focus is made mainly upon fundamental relationships and design considerations. The complicated equations have been avoided. The subsequent design concepts have been formulated within a pragmatic context: When it is set-on to work, it work and continues to work.

A common user in electrical industry would be glad of nonmathematical description of transformer principles underlying the operation. To such men the general observations and the software to follow is going to prove useful.

The work is presented in a simplified, easy-to-read format under **FOUR** chapters. The **Chapter-I** takes brief account of historical background of transformer invention and the men behind the pioneering work done in the field. It also tells about the 'plan of present-work'. The **Chapter-II** is a kind of refresher course before going down to the transformer design on the computer. This chapter highlights the design algorithm for various transformers. Much of space

is devoted the power transformer which stands as a 'respresentative' of remaining transformers. The chapter is brief journey of mathematical step to step solution of transformer design.

There is an increasing application of pulse transformer in control circuits. The design of pulse transformer is therefore dealt with rather independently.

The topic of transformer design has been found very little systematic treatment giving various design aspects and practical examples. The software approach to transformer design is systematic, may not be the best, but in any case the way towards better design results. The **Chapter-III** and the 'program - Listing' to follow describes the software-route. The flow charts added makes the programming transparent and demonstrate the logic of design procedure.

The 'BASIC' being widely available, 'easy-to-learn' language covering almost all the facets, is used as the software developing tool.

In all, the dissertation work is presented in a comprehensive, concise and pragmatic manner, and promises to be useful and valuable especially for genuine experimenters. The user is not obliged to go through the mathematical excursion, instead, he may go straight way for software execution.

The use of standard EI-stamping and pot cores is suggested. However the user may go for own core made available from waste, in the light of old pioneering axiom of "waste not, want not", which today is making a strong comeback in every field.

The figures, data-tables are included with references given at the end of each chapter, and illustratative results to general specification are also given.

The lacks and lapses which remain in the 'design-procedure' are my own doings.

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