

# Preface

The recently published book by the author, “Engineering Heat Transfer”, already dealt with exact computation of heat exchangers and tube banks. In design computation this is accomplished via corrective factors; the latter makes it possible to compute the actual mean temperature difference by starting from the logarithmic one relative to fluids in parallel flow or counter flow.

As far as verification computation is concerned, corrective factors were introduced to compute a certain characteristic factor correctly, as is fundamental for this type of computation.

Based on the above, the author decided to investigate further, refine, and widen this topic: the outcome of this work has resulted in this handbook.

New types of exchangers were examined; the calculation was refined to produce practically exact values for the factors. The scope of the investigation was increased by widening the range of the starting factors. Furthermore, a greater number of values to be included in the tables was considered. Finally, a few characteristics of certain values of the corrective factors were highlighted.

The first section is an introduction; it summarizes the fundamental criteria of heat transfer and proceeds to illustrate the behavior of fluids in both parallel and counter flow. It also shows how to compute the mean isobaric specific heat for some fluids; it illustrates the significance of design computation and verification computation. In addition, it illustrates how to proceed with heat exchangers and tube banks to carry out both design and verification computation correctly.

Appendix A then includes 36 tables as a reference for design computation. The tables contain the corrective factors required to obtain the actual mean temperature difference by starting from the mean logarithmic temperature difference relative to fluids in parallel flow or counter flow.

Finally, Appendix B includes 35 tables for verification computation. As far as heat exchangers are concerned, it shows the values of factor  $\psi$  which is required for this type of computation. The values of the corrective factors for coils and tube banks are also presented.

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