
The New Heat Transfer

Eugene F. Adiutori
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(hardcover)

First impressions can be misleading. This book starts with the statement "for all who stand up for Freedom" and continues in a contentious style which occurs more often in pseudoscience. However the book is well based and makes a valid case that parameters such as heat transfer coefficient, electrical resistance, friction factor and elastic modulus, are contrived parameters which obscure the often non-linear nature of the real world. Adiutori considers that science and engineering should be taught using functional relationships between measurable parameters instead of assuming linearity from the beginning.

Most of the book addresses the difficulties arising from the use of the convective heat transfer coefficient, h . Adiutori argues that the use of the heat transfer coefficient is mathematically wrong and should be discarded. He says h is an alias, it is the ratio $q/\Delta T$ and no more, it is not a parameter of nature nor a parameter that really exists. He gives many examples of problems in heat transfer that are hard to solve using the heat transfer coefficient but which can be elegantly solved using functional relationships.

Of course, physicists know in their heart of hearts that linearity is a special case for many natural phenomena. In physics, at least, we usually have plausible theoretical functional relationships for nonlinearity. Nevertheless, it is easy to consider parameters such as resistance and thermal conductivity to have a real existence.

I found this book interesting and it improved my understanding of several basic physics parameters. Nevertheless, I will still use linear parameters to describe phenomena in the real world, but I have been reminded of their 'contrived' nature.

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