

Table 2 Values of $\theta'_i(0)$ for $Pr=11.4$

$\theta'_0(0) = -1.00576$
$\theta'_1(0) = -0.15368$
$\theta'_2(0) = -0.020560$
$\theta'_3(0) = 0.011333$
$\theta'_4(0) = -0.0097526$

number of 11.4. This information would be useful for the evaluation of the surface friction factor as well as the heat transfer rate. The numerical results demonstrated that the heat transfer rate increases with increasing transverse curvature.

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Fundamentals of Flow Measurement

J. P. DeCarlo

The International Society of America has published a number of ILM's (Independent Learning Modules) on control principles and techniques, fundamental instrumentation and unit process and unit operational control. The ILM's aim to be self-contained books which allow the reader to teach himself the subjects covered by the series of modules.

Clearly the authors have to start with the assumption that their readers have a broad understanding of basic physics and engineering. There is thus no attempt to give detailed or mathematical expositions but it is hoped that sufficient explanation is there to allow readers to grasp the essential characteristics.

Joseph DeCarlo achieves this goal excellently in this ILM, *Fundamentals of Flow Measurement*, though inevitably in trying to cover such a wide field there have to be many areas where only the surface is scratched. The most serious gap is on the assessment of uncertainties for although several pages deal with the terminology of random and systematic uncertainties, etc, no reference is made to the ISO Standard 5168 and the examples are not adequate to enable the reader to carry out his own assessment.

The format is good, with the book being divided into 12 units, each with a simple set of objectives and a

summary and a series of exercises at the end. The first three units deal with the general background of classification and terminology and the next eight with the different groups of closed conduit and open channel devices and techniques.

The final unit deals with flowmeter selection. This is a most difficult subject and in the example used to illustrate the method there are a number of instances where the choice is not as straightforward as the author would think. Nevertheless the author's choice of the phrase 'smiles per dollar' adds a moment of lightness to a very serious subject.

Overall this book fulfils a real need for there are very few books which provide a general introduction to the whole subject. Although it is oriented to use in the USA, and the references are mainly American, this should not deter readers in other countries. An Appendix giving well-presented solutions to the exercises in each unit is admirable.

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