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## Stirling Analysis Comparison of Commercial Versus High-Order Methods (Paperback)

By Roy C Tew

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*. Recently, three-dimensional Stirling engine simulations have been accomplished utilizing commercial Computational Fluid Dynamics software. The validations reported can be somewhat inconclusive due to the lack of precise time accurate experimental results from engines, export control/proprietary concerns, and the lack of variation in the methods utilized. The last issue may be addressed by solving the same flow problem with alternate methods. In this work, a comprehensive examination of the methods utilized in the commercial codes is compared with more recently developed high-order methods. Specifically, Lele's compact scheme and Dyson's Ultra Hi-Fi method will be compared with the SIMPLE and PISO methods currently employed in CFD-ACE, FLUENT, CFX, and STAR-CD (all commercial codes which can in theory solve a three-dimensional Stirling model with sliding interfaces and their moving grids limit the effective time accuracy). We will initially look at one-dimensional flows since the current standard practice is to design and optimize Stirling engines with empirically corrected friction and heat transfer coefficients in an overall one-dimensional model. This comparison provides an idea of the range in which commercial CFD...



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