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- [1] H. Li, J. Yan, Evaluating cubic equations of state for calculation of vapor-liquid equilibrium of CO<sub>2</sub> and CO<sub>2</sub>-mixtures for CO<sub>2</sub> capture and storage processes, *Applied Energy Journal*, Vol. 86, No. 6, 2009, pp. 826–836.
- [2] M. M. Rashidi, N. Rahimzadeh, N. Laraqi, Evaluation of the equations of state for air, nitrogen, and, oxygen on throttle reduction efficiency by using exergy analysis, *International Journal of Exergy*, Vol. 9, No. 3, 2011.
- [3] X. Jin, D. Xu, X. Zhou, Performance Evaluation of Air-Conditioning System Using NARM by Equation of State, *International Refrigeration and Air Conditioning Conference*, 1994, pp. 261.
- [4] Kouremenos, D.A., Antonopoulos, K.A. Compressibility charts for gases with different acentric factors and evaluation of the Redlich-Kwong-Soave equation of state. *Forsch Ing-Wes*, Vol. 57, 1991, pp. 158-161.
- [5] Yousef S. H. Najjar, Awad R. Mansour, Evaluation of Peng Robinson Equation of State in Calculating Thermophysical Properties of Combustion Gases, *Chemical Engineering Communications*, Vol. 61, No. 1-6, 1987, pp. 327-435.
- [6] Y. A. Cengel, M. A. Boles, M. Kanoglu, *Thermodynamics: An Engineering Approach*, 10<sup>th</sup> Ed., Mc Graw Hill, 2023.
- [7] Sh. Eliezer, A. Ghatak, H. Hora, *Fundamentals of Equations of State*, World Scientific, 2002.
- [8] R. Span, *Multiparameter Equations of State*, Springer, 2000.
- [9] R. Humphrey, C. A. Neel, Tables of Thermodynamic Properties of Air from 90 to 1500 K, Arnold Engineering Development Center Air Force Systems Command USAF, 1961.
- [10] J. H. Perry, *Perry's chemical engineers' handbook (6 ed.)*, MCGraw-Hill, 1984.
- [11] Vasserman and K. A. Rabinovich, Thermophysical Properties of Air and Air Components, U.S. Department of Commerce, *National Technical Information Service, Springfield*, 1971 (Translation from Russian, first published 1961).
- [12] J. Hilsenrath, C. W. Beckett, W. S. Benedict, L. Fano, H. J. Hoge, J. F. Masi, R. L. Nuttall, Y. S. Touloukian, H. W. Woolley, Tables of Thermal Properties of Gases, *National Bureau of Standards*, 1955.
- [13] N. B. Vargaftic, *Handbook Thermophysical Properties of Gases and Liquids*, Nauka, 1972.
- [14] Murdock, James W., *Fundamental fluid mechanics for the practicing engineer*, CRC Press, 1993.
- [15] ANSYS, ANSYS FLUENT 12.0/12.1 Documentation, ANSYS Inc., 2009, [Online]. [https://www.afs.enea.it/project/neptunius/docs/fluent/html/ug/main\\_pre.htm](https://www.afs.enea.it/project/neptunius/docs/fluent/html/ug/main_pre.htm) (Accessed Date: January 17, 2024).
- [16] G. Soave, Equilibrium constants from a modified Redlich-Kwong equation of state, *Chemical Engineering Science*, 1972.
- [17] D. Peng, D. Robinson, A New Two-Constant Equation of State, *Industrial & Engineering Chemistry Fundamen.* 1976, 15, 1, 59–64 <https://doi.org/10.1021/i160057a011>.

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- Vasileios Moutsios performed research of resources, formal analysis, and the writing - original draft.
- P. Dionissios Margaris performed supervision and validation.
- Nicholas Pittas performed supervision.

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**Conflict of Interest**

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