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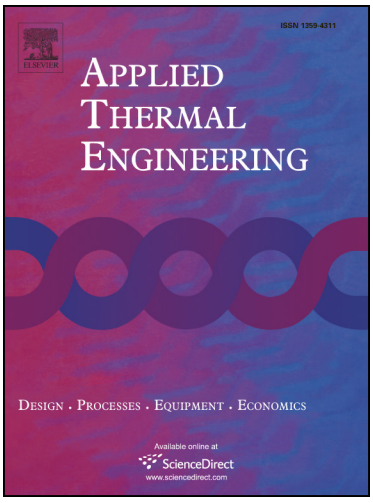

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PII: S1359-4311(17)33546-9
DOI: http://dx.doi.org/10.1016/j.applthermaleng.2017.07.173
Reference: ATE 10841

To appear in: *Applied Thermal Engineering*

Received Date: 24 May 2017
Revised Date: 20 July 2017
Accepted Date: 24 July 2017

Please cite this article as: M-J. Li, H-H. Zhu, J-Q. Guo, K. Wang, W-Q. Tao, The development technology and applications of supercritical CO_2 power cycle in nuclear energy, solar energy and other energy industries, *Applied Thermal Engineering* (2017), doi: http://dx.doi.org/10.1016/j.applthermaleng.2017.07.173

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The development technology and applications of supercritical CO_2 power cycle in nuclear energy, solar energy and other energy industries

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Abstract

The development technology and applications of supercritical CO_2 power cycle have recently been gaining a lot of attention for applications to different energy industries. The advantage of the S-CO_2 cycle is high-efficiency within an economic and convenient structure. The stable chemical properties make it be proper to a range of metal material applications. This study provides a detailed comprehensive study of the recent development trends of the S-CO_2 power cycle and the different applications of S-CO_2 power cycle in various energy industries, especially nuclear energy and solar energy. The theoretical analysis, experimental analysis and the classification of different approaches are summarized for energy sources. The comparison of working fluids, component designs are presented in the article as well. The challenges for improving the efficiency of S-CO_2 power cycle applications are analyzed. The study will be a beneficial complement to understanding the recent progress.

Keywords: Supercritical CO_2 power cycle, Working fluid, Nuclear industry, Solar industry, Technology, Application

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