Reengineering towards carbon neutrality and with AI in future development

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Green electricity is a common issue and plays an essential role in achieving the carbon neutrality. It is also challenging to overturn the current energy system from fossil-based to renewable energy in the industrial processes. The key problem is on the unknown limits on the material utilization and the energy conversion of renewable energy. We identified three fundamental questions on system and surrounding, heat and electricity, as well as the rate and efficiency to discuss the green electricity of chemical engineering from the perspective of thermodynamics. Energy converters based on green electricity, such as ultraviolet, microwave, etc., seem to promote industrial process reengineering. In addition, wind power will be discussed for their bearing wear issues, where the viscosity of the bearing lubricant is critical for early diagnosis of bearing damage to provide fundamental data for the working equation, viscous pressure equation and Stribeck curve needed for sensing and decision making in intelligent wind power technologies.

REFERENCES

References should be listed in Times New Roman Font 10-point font with the heading "REFERENCES" in Times New Roman Font 11 point bold in all-capitals. They should be prepared according to the following style, providing where possible the DOI. When referring to them in the text, type the corresponding reference number in square brackets as in the following example [1].

[1] Liu Chang, Lu Xiaohua. "Carbon reduction pattern in China: comparison of CCS and biomethane route". CIESC Journal, 2013, 64(01): 7-10.

[2] IEA. "CO_2 Emissions in 2023". Paris, 2024.