

**ABSTRACT:**

Carbon emission reduction targeting is an important and effective effort for industry to contribute in controlling greenhouse gases concentration in atmosphere. Graphical approach has been proposed for CO<sub>2</sub> emissions reduction targeting via HEN retrofit and fuel switching. However, it involves potentially time consuming manual procedures and the quality of solutions produced greatly depends on designer's experience and judgment. Besides, graphical approach hardly account for the cost factor during the design phase, thus potentially generate complex design. This paper introduces an MINLP model for simultaneous CO<sub>2</sub> emissions reduction targeting via fuel switching and HEN retrofit. A sequential model execution was proposed along with the proposed model. The application of the model on a crude preheat train case study has demonstrated its workability to generate optimal solution for targeted CO<sub>2</sub> emissions reduction at minimum payback period.