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Energy matrices and carbon credit earned for a semitransparent photovoltaic thermal (SPVT) water collector under constant collection temperature mode

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In this communication, energy matrices of semi transparent photovoltaic thermal (SPVT) water collector has been evaluated for two different configurations namely collectors partially (Case A) and fully (Case B) covered by PV modules. The study has been carried out under constant collection temperature mode for industrial applications based on overall thermal energy and exergy output of SPVT water collector. Total carbon credit earned by SPVT water collector has also been evaluated. It has been observed that the energy payback time (EPBT) and energy production factor (EPF) are lower and higher respectively for partially covered SPVT water collector (case A). This can be considered as the best option in comparison with fully covered SPVT water collector (case B) from thermal energy point of view. Further unit cost of thermal energy and exergy is reduced by about 5% due to effect of carbon credits earned.

Biography

R K Mishra received Bachelor of Science degree (BSc) with Mathematics, Physics and Chemistry in 2003 and Master of Science degree (MSc) in Physics from University of Allahabad, Allahabad, UP, India in 2005. He received Master of Technology degree (MTech) in Material Science and Technology from IIT-BHU, Varanasi, India in 2008. He received PhD degree in 2014 from IIT Delhi in the area of solar energy. His areas of interest are material science in engineering, solar thermal, solar photovoltaic, solar cell materials, solar distillation, solar water/air heating system, hybrid photovoltaic thermal (HPVT) systems etc. He attended and presented several research papers in International conferences in India and in other countries namely Sweden, Spain, Ireland. He has worked for six months during January, 2013 to June, 2013 as a research fellow in Dublin Energy Lab, Dublin, Ireland under prestigious Government of Ireland, DIT Fiosraigh International Scholarships scheme. He has authored a book titled "Advanced Renewable Energy Sources" published by RSC Publishing, Cambridge, UK. He worked as the convener in the "International Conference on Energy Security, Global Warming and Sustainable Climate" SOLARIS-2012, held in BHU, Varanasi during 7-9, February, 2012. From July, 2014 he is working as Assistant Professor and associate HOD in the department of Mechanical engineering, Hi-Tech Institute of Engineering and Technology Ghaziabad, India.

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