

(54) Title of the invention : Effect of Chromium nanocoating on ribbed solar (PV/T) Air Heater

<p>(51) International classification :H02S0040440000, F24S0010500000, F24S0080000000, H02S0040420000, F28F0003120000</p> <p>(86) International Application No :NA Filing Date :NA</p> <p>(87) International Publication No : NA</p> <p>(61) Patent of Addition to Application Number :NA Filing Date :NA</p> <p>(62) Divisional to Application Number :NA Filing Date :NA</p>	<p>(71)Name of Applicant : 1)T Somasekhar, Research Scholar, Annamalai University, Chidambaram, Tamil Nadu, India Address of Applicant :Annamalai University, Chidambaram, Tamil Nadu, India ----- 2)Dr B Guru Prasad, Assistant Professor, Department of Mechanical Engineering, Annamalai University, Chidambaram, Tamil Nadu, India. 3)Dr M V Kishore, Professor and HOD Department Of Mechanical Engineering, Matrusri Engineering College, Hyderabad, Telangana, India. Name of Applicant : NA Address of Applicant : NA</p> <p>(72)Name of Inventor : 1)T Somasekhar, Research Scholar, Annamalai University, Chidambaram, Tamil Nadu, India Address of Applicant :Annamalai University, Chidambaram, Tamil Nadu, India --- ----- 2)Dr B Guru Prasad, Assistant Professor, Department of Mechanical Engineering, Annamalai University, Chidambaram, Tamil Nadu, India. Address of Applicant :Annamalai University, Chidambaram, Tamil Nadu, India. --- ----- 3)Dr M V Kishore, Professor and HOD Department Of Mechanical Engineering, Matrusri Engineering College, Hyderabad, Telangana, India. Address of Applicant :Matrusri Engineering College, Hyderabad, Telangana, India. -----</p>
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(57) Abstract :
A photovoltaic/thermal (PV/T) solar air heater with vertical fins on the absorber plate with and without chromium nanocoating is investigated. The fins are arranged perpendicular to the direction of air flow to enhance the heat transfer rate and efficiency. Air enters one end of the chamber of the air heater and subsequently flows to another end of the chamber. A comprehensive steady state analysis is performed. The effects of design, climatic and operating parameters are evaluated on outlet air temperature, thermal (energy) efficiency, electrical efficiency. Thermal performance characteristic curves are also developed for the PV/T system. The effects of the presence of fins, flow rate, inlet air temperature are evaluated on the thermal and electrical efficiencies. The extended fin area reduces the cell temperature considerably. Impact assessments on thermal and electrical outputs of solar PV/T. Keywords: - SAH, Nanocoating, Zigzag flow, Thermal Performance, Electrical Performance.

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