

# Solar Based Machine Management System for Plastic Wastes

Ughade Payal Sanjay, Malunjkar Sayali Bhausaheb, Sarukte Sonali Pandurang, Prof. Pathak J. G  
Amrutvani Polytechnic, Sangamner, Maharashtra, India

**Abstract:** *Solar thermal applications vary widely across many different fields. This research aims to introduce the concept of using solar thermal energy in a new application for recycling waste plastic for use in 3D printing. In some countries or regions, waste plastic is not collected for recycling and thrown into landfills. This leads to serious local and global environmental pollution. In additive manufacturing, plastic is one of the main materials used to build 3D models. In this work, we suggest a novel way to produce extruded filament for 3D printing from waste plastic using solar energy. The concept relies on using a Scheffler fixed focus solar collector to heat the barrel of a filament extruder rather than using electrical heaters. The barrel of the filament extruder is heated by a receiver in the focal point of the solar collector. The molten plastic is then extruded through a nozzle to produce filament. This method is shown to be feasible as this paper presents the design and testing of the solar extrusion system where the receiver is heated to 160°C and regulated for a short time. The maximum receiver temperature is shown to be 229°C which is sufficient for*

**Keywords:** Solar

## REFERENCES

- [1]. Nitin Das, Namit Maske, Vinayak Khawas, Dr. S. K. Chaudhary, Er. R. D. Dhete, Agricultural Fertilizers and Pesticides Sprayers- A Review, IJRST – International Journal for Innovative Research in Science & Technology| Volume 1 | Issue 11 | April 2015.
- [2]. Shailesh Malonde et al —Design and Development of Multipurpose Pesticides Spraying Machine| IJAEGT Volume 04.
- [3]. Pandurang Lad et al —Solar Operated Pesticide Sprayer| IJARSE Volume 04.
- [4]. Linz, A. Ruckelshausen and E. Wunder, "Autonomous Service Robots for Orchards and Vineyards: 3d Simulation Environment of Multi Sensor Based Navigation and Applications".
- [5]. Degarmo, E. Paul; Black, J T.; Kohser, Ronald A.(2003), Materials and Processes in Manufacturing (9th ed.), Wiley, ISBN 0-471-65653-4