



3D Printing Innovation during Covid-19 Pandemic

Siddavatam rammohan reddy¹, Balaji krushna potnuru²

^{1,2} Assistant Professor, Department of Mechanical Engineering, Malla Reddy Engineering College (Autonomous), Maisammaguda, Rangareddy (Dist.), Secunderabad, Telangana -500100, India.

sriramreddy.276@gmail.com¹

Abstract

3D Printers are playing a huge role in helping to fight against COVID-19. 3D Printing also known as additive manufacturing, refers to processes used to create a three-dimensional object in which layers of material are formed under computer control to create an object. With 3D printing innovation these days, we can easily transform any design into a 3D model. The utilization of 3D Printers in medical fields are growing quickly and are required to reform human services. The corona virus infection-19 has spread all over the world and stances diverse challenges to healthcare offerings. Health care staff rely on Personal Protective Equipment to protect themselves and their patients from infection. Hospitals around the globe are running out of PPE for treating COVID Patients. The constrained accessibility of PPE has impacted many countries ability to react to the emergency. The 3D printing network is ready to overcome this international scarcity. The target of the current work is to examine the 3D printing innovation with regards to a Covid-19 pandemic and to analyze which kind of PPE can be printed utilizing 3D Printers. The beneficial 3D prints for Covid-19 are Face shield mask, Safety goggles, nasal swabs, Ventilators, Oxygen Venturi valves, hands-free door openers, Tweezers, Handy tool for buttons, Respirator mask, 3D Printing pill dispenser, medical devices and surgical tools and so on.

Keywords: 3D Printing, PPE and COVID-19

I. Introduction

Corona virus infection (COVID-19) is a newly discovered disease and it is an irresistible disease. The infection especially spread via droplets produced by an infected person coughs, sneezes or respire. Those droplets are too heavy to hold the air and rapidly fall on floors or surfaces. When you are close to someone who has corona virus or contacts a contaminated surface then your eyes, nose or mouth, you will become infected by breathing in the virus. Each patient/individual requires a separate mask and other personal protective equipment (PPE). How all of the sudden hospital could increase ventilators, protective equipment and some other spare parts needed. These segments can be printed effectively with Additive manufacturing process/3D Printers. Additive manufacturing (AM)

refers to a process by which the material deposited using digital 3D modelling data to build up a product in layers. Combination of these layers forms a solid object. Progressively, the term 3D Printing is used as a synonym for additive manufacturing.[1-4]

2. 3D Printing Technologies

In the age of COVID-19 supply chain got dispirited. 3D Printing is a supply chain substitute in this crucial period of scarcity. 3DP innovations will play a significant part in supporting hospital workers efforts in the midst of this emergency. 3D printing is an AM process in which material is solidified under machine control to construct 3D/Solid objects from a computerized file. 3D Printing gives the designer the ability to quickly