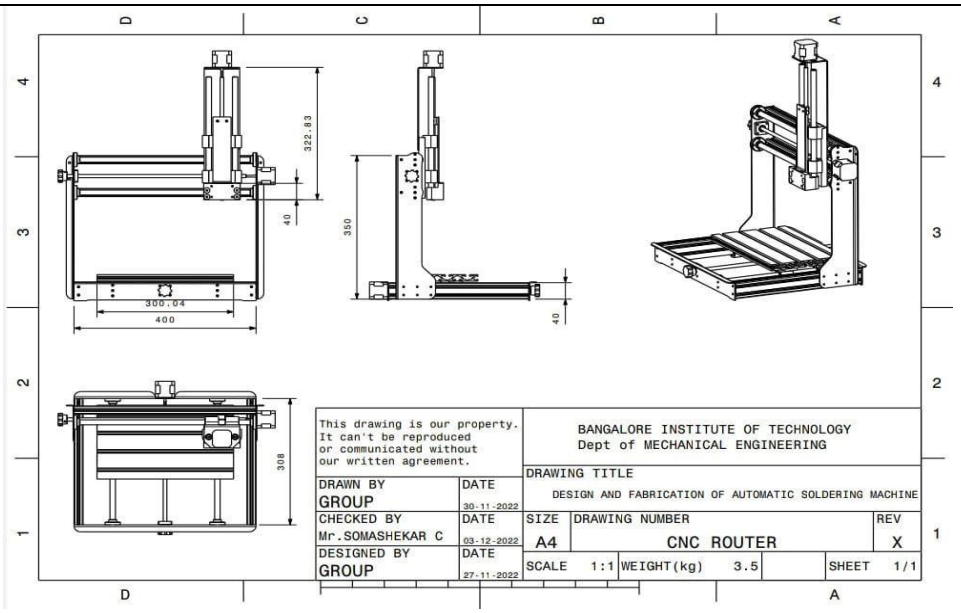
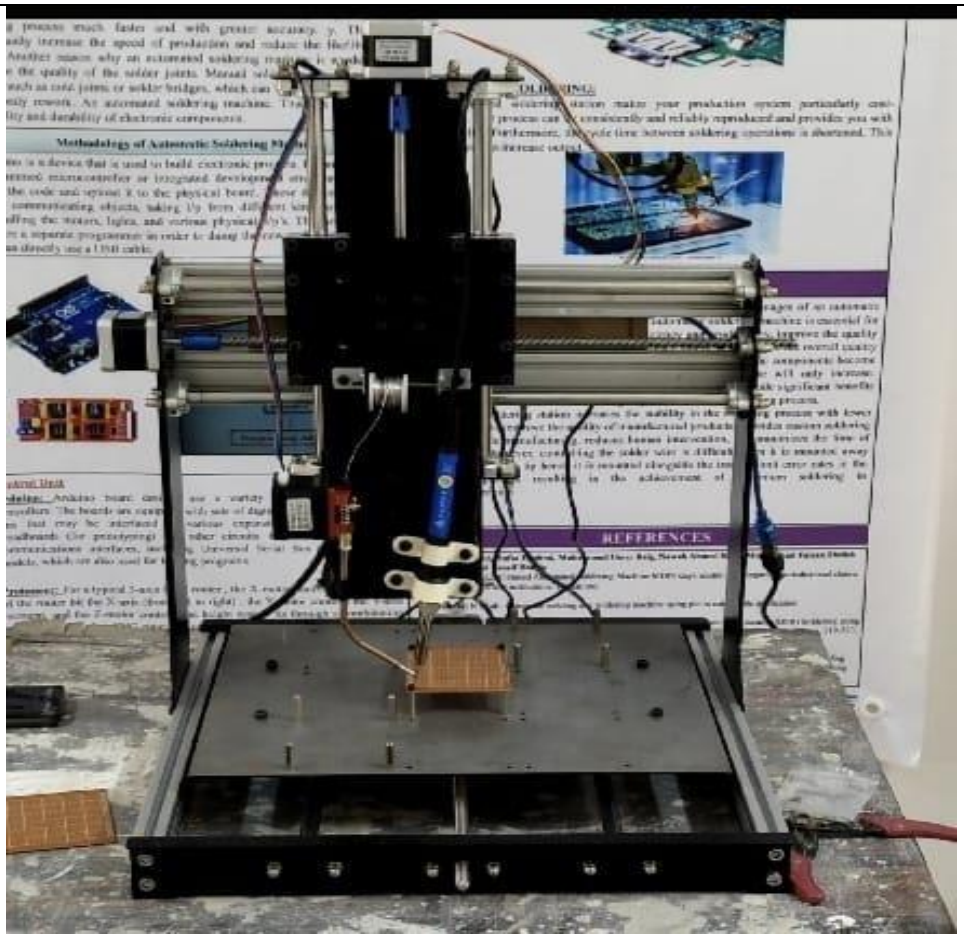
PROJECT SYNOPSIS

1)	**Project reference Number**	**46S_BE_2576**
1)	**Title of the project**	DESIGN AND FABRICATION OF AUTOMATIC SOLDERING MACHINE
2)	**Name of the college and Department**	Bangalore Institute of Technology, Bangalore Department of Mechanical Engineering
3)	**Name of the Guide**	Mr. SOMASHEKAR.C
4)	**Name of the students**	UDAY SHANKAR S ABDULLA KHAN AMAN PARAMESHWAR
5)	**Keywords**	Automation , Soldering, CNC
6)	**Introduction**	Soldering is a process in which two or more items are joined by melting and putting a filler metal (solder) into the joint, the filler metal having a lower melting point than the adjoining metal. Unlike welding, soldering does not involve melting the work pieces. In brazing, the work piece metal also does not melt, but the filler metal is one that melts at a higher temperature than in soldering. In the past, nearly all solders contained lead, but environmental and health concerns have increasingly dictated use of lead-free alloys for electronics and plumbing purposes.
7)	**Objectives**	• To design automated soldering machine. • To fabricate automated soldering machine. • To make production system particularly cost-effective • To improve speed and efficiency
8)	**Methodology**	Arduino is a device that is used to build electronic projects. It consists of a pre-programmed microcontroller or integrated KSCST: Student Project Programme: 46th series: 2022-2023 3 development environment, used to write the code and upload it to the physical board. These devices are used to make communicating objects, taking i/p from different kinds of sensors and controlling the motors, lights, and various physical o/p's. The Arduino doesn't require a separate programmer in order to dump the new code on the board but, we can directly use a USB cable. A drawing of the model has been attached to this form

		
9)	**Results and Conclusions**	i. The automated soldering station increases the stability in the soldering process with fewer errors, tends to improve the quality of manufactured products, provides custom soldering for small-scale manufacturing, reduces human intervention, and minimizes the time of production ii. However, controlling the solder wire is difficult when it is mounted away from the soldering tip hence it is mounted alongside the iron to limit error rates in the soldering process resulting in the achievement of maximum soldering in the desired region. iii. Thus the simultaneous soldering of the accurate position where the soldering has to be done proves not only efficient but also ensures accurate and also customer's requirement can be met easily. iv. Accuracy mainly comes from the inspection that is done after the soldering. Thus the objective of the project to develop an bottom fixture to hold the PCB in Soldering machine is achieved

		
	Scope for future work	• **Artificial intelligence (AI) and machine learning (ML):** AI and ML are being used to develop more intelligent and autonomous soldering machines. These machines can learn from their mistakes and improve their performance over time. • **Robotics:** Robots are being used to automate more and more tasks in the manufacturing process, including soldering. Robots can be programmed to perform complex soldering operations with precision and accuracy. • **3D printing:** 3D printing is being used to create complex electronic components that are difficult or impossible to manufacture using traditional methods. This is opening up new possibilities for the design and manufacturing of electronic devices. • **The Internet of Things (IoT):** The IoT is connecting billions of devices around the world. This is creating a demand for new ways to monitor and control these devices. Automatic soldering machines can be used to monitor and control the soldering process in real time.