



Centre for Innovation in VLSI and Smart Systems (CIVSS)

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

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Location: 3rd Floor, Aryabhata II, Sector 62 Campus

Objective

CVSS is primarily concerned with two distinct areas. The first is on creating integrated circuits and systems with low power consumption and high speed. The second area of focus is on developing smart systems that focuses on new models and architectures for various applications and addresses emerging challenges. CCVS covers expertise in relevant areas including smart cities, IoT, robotics, and even games technologies.

Hardware/Software Availability

Proteus Platinum Design Suite

The suite consists of following three design environments:

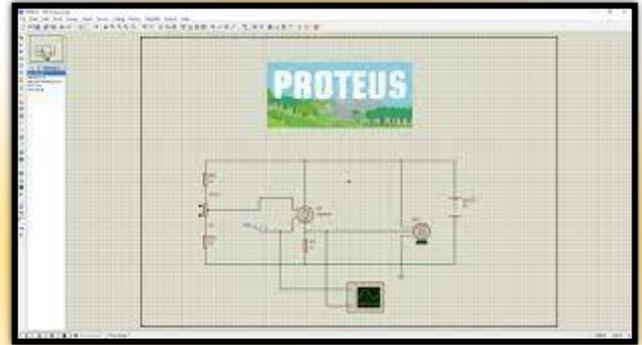
Proteus Virtual System Modelling (VSM) combines mixed mode SPICE circuit simulation, animated components and microprocessor models to facilitate co-simulation of complete microcontroller based designs. It allow to specify a program (HEX file, COF File, ELF/DWARF2 File, UBROF File etc) as a property of the microcontroller part on the schematic and during simulation will show the effects of the program on the schematic that has been created. We can change our 'hardware' by rewiring the schematic, changing component values for resistors, capacitors etc. and deleting or adding new components to the design. We can change our firmware in the IDE of our choice and, once compiled, test the new code on the new system at the press of a button. The schematic serves as a 'virtual



prototype' for the firmware and it's quick and easy to make changes to either.

Proteus PCB design combines the ISIS schematic capture and ARES PCB layout programs to provide a powerful, yet easy to use suite of tools for designing printed circuit board. Whilst the ARES package can be used as a 'computerized light box', the usual approach is to draw the circuit diagram in ISIS, and then to create a PCB from it using ARES. The net list integration between the two packages ensures that the connectivity of the PCB exactly matches that drawn on the schematic.

Proteus Visual Designer (IOT Builder) combines world class Proteus VSM simulation with an easy to use flowchart editor and a gallery of virtual hardware to provide a truly integrated and intuitive development environment for **Arduino and Raspberry Pi**. The peripheral gallery makes hardware design easy. Simply add a shield or sensor from the gallery and Visual Designer will automatically place the correct circuitry on the Proteus schematic for us and add some simple methods to Visual Designer that allow us to control the hardware. The software is then designed as a flowchart so we can easily drag and drop these methods along with decisions, delays and assignments to drive the hardware. Compile and simulate at the press of the button, making use of our renowned simulation and debugging technology to watch your design come to life on screen. Finally, transfer to the physical hardware with a single mouse click and see it working first time in the real world.



LPKF ProtoMat E44 PCB Machine

LPKF ProtoMats are global standards in precision, flexibility, and user-friendliness. LPKF circuit board plotters are utilized for indispensable fast in-house production of PCBs – for quantities ranging from one offs for development projects to small batches. They are ideal for high-capacity, analog, digital, RF, and microwave applications. Made in Europe: for over three decades now, LPKF circuit board plotters have served as a benchmark in the milling, drilling, and contour milling of PCBs. Following are its key features:

Protective housing: The ProtoMat housing makes processing especially comfortable. It seals the working chamber off from the environment and reduces noise emissions.

Circuit board plotter spindles: The LPKF ProtoMats come with different milling spindles that rotate at speeds of 30000 RPM to 100000 RPM (controlled). A high spindle speed enables faster processing, increases resolution, and improves side wall quality.

Camera system: With the integrated registration camera system, the LPKF ProtoMats achieve a precision of $\pm 20 \mu\text{m}$ for processing of double-sided PCBs with fiducial marks. A camera increases this precision even more: it detects registration marks or geometric features of the board and automatically adjusts the milling width – for fully automated processing.



Vacuum table: The integrated vacuum table facilitates processing of flexible materials and securely holds small workpieces down on the working surface.



3D printer for PCB packaging

The machine can print the minimum feature of 1mm and the maximum size that can be printed in the machine is of 230mm*230mm*230mm in X,Y and Z direction. Following are its key feature:

- The Machine is completely indigenous and is designed and manufactured in India.
- Machine has 2 nozzles which make it efficient for printing complex to complex designs.
- Machine nozzles have the heating temperature upto 300 degrees C which makes it compatible for printing several materials with basic of ABS and PLA and higher end materials including Nylon and Carbon fibre.
- Machine is sturdy with complete metal body.
- Machine is completely a closed box to maintain proper temperature.
- Machine has a heating glass platform/print bed with the maximum heating temperature of 150 degrees C.



Glimpses of the Venue

