



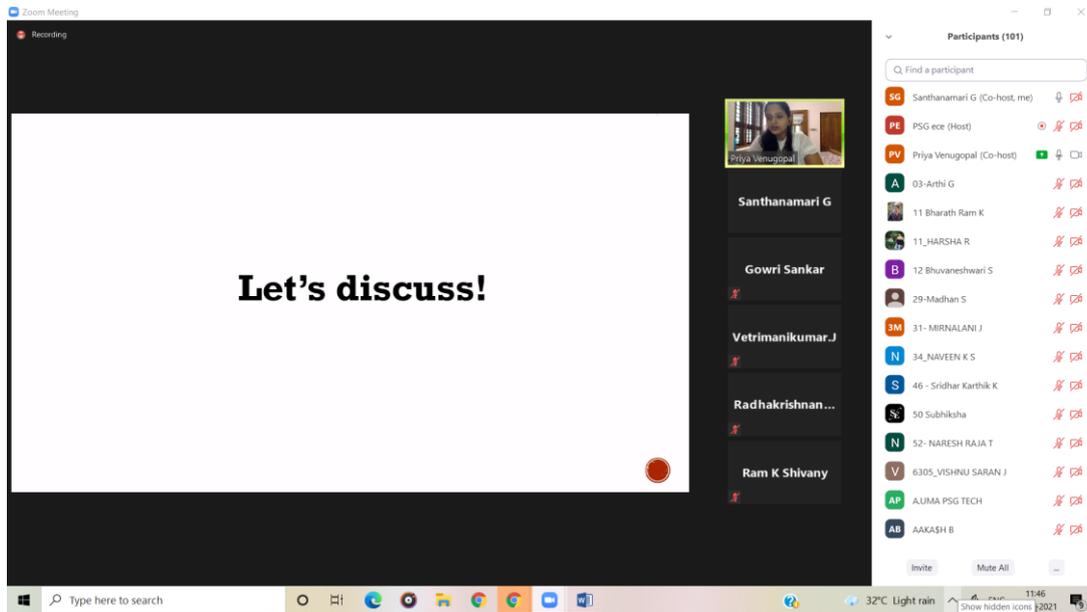
**PSG INSTITUTE OF TECHNOLOGY AND APPLIED RESEARCH**  
**NEELAMBUR, COIMBATORE-641 062**  
**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**  
**In association with**  
**ISTE Students' Chapter**  
**Report of Webinar on "POWER - AWARE IC DESIGN"**

The Department of Electronics and Communication Engineering in association with ISTE Students' Chapter, PSG Institute Of Technology And Applied Research, Coimbatore organized a webinar on "**Power – Aware IC Design**" on June 12, 2021 (10.30-11.30 am). The resource person was Dr. Priya Venugopal, Principal Engineer Design Enablement Advance Circuit Design (ACD) – BLR Global Foundries, Bengaluru. More than 100 participants including faculty members and students from different reputed institutions attended and were benefitted from the webinar. The webinar was coordinated by Dr G Santhanamari, ASP and Ms M Deepa, AP from the Department of ECE.

Dr. Priya started the session by discussing in brief about integrated circuits (IC). She elaborated on the need for integrated circuits. Discrete circuits take more space and generate more heat and hence it is difficult to have a compact system using discrete circuitry and so, integrated circuits are used to overcome this challenge as they occupy less space, require lesser power and can be used for large scale manufacturing. She then explained the basic terminologies related to IC design namely technology node, technology scaling, difference between analog and digital ICs and the process of IC fabrication. She explained in detail about the need to reduce channel length of a transistor in order to accommodate more transistors in an IC. She also mentioned about the transition in the decrease in channel length from 250 nm in 1997 to 7 nm now. She then went on to explain the different applications of ICs. She revealed that we carry a minimum of 14 IC chips with us always in our mobile phones. Some other applications which use more ICs are computers, automobiles, defense, medical equipments, wearable devices, air coolers, washing machines, smart watches and so on. She later explained in brief what an IC design engineer does in a day. Before IC fabrication, there are a series of steps in the design flow namely specification, system model, reference circuit, circuit design, schematic simulation, layout and post-layout simulation.

She explained in detail about Power – Aware IC design. It includes operating an IC on a low power budget, with a goal to operate on the minimum possible power profile. She later mentioned the areas where power – aware ICs are used such as smart cities, IoT, intelligent systems, home automation, autonomous vehicles and body sensor networks. She also elaborated on the need for power – aware IC design as it provides prolonged battery life, reduced charging cycles, cost efficiency, lesser heat dissipation among many other reasons. She then explained one

such application using a case study on the design of a Wearable Cardiac Activity Monitor IC. The modules inside the Cardiac Activity Monitor are sensors, signal acquisition circuits, signal conditioners, memory, controller and transceiver module. Such an application should be battery operated and one of the techniques to achieve power awareness is duty – cycled power profiling. The system can also be designed to operate in sleep mode, active mode and transmission mode for power awareness. She then discussed some of future market prospective for power – aware IC design such as energy harvesting, flexible electronics, pervasive sensing networks, implantable medical devices, AI/ML accelerators and Industrial IoT. Finally, she ended the session by giving some insights to take up a career in IC Designing and spoke in brief about the research happening worldwide in the area of semiconductor devices, circuit design and design verification. The session came to an end by doubts of participants being clarified by the guest speaker.



Zoom Meeting

Recording

View

Participants (50)

Find a participant

SG Santhanamari G (Co-host, me)

PE PSG ece (Host)

PV Priya Venugopal (Co-host)

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N 34\_NAVEEN K S

V 6305\_VISHNU SARAN J

A Aravind

AA Archana A

BD Brindha Duraipandi

BK Brindha k vcew/ME 1st year vlsi d...

DM Dimple Mahesh Garimella

DB Dinesh B

G Ghoshik

GK Gokulakrishnan K

GS Gowri Sankar

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Santhanamari G

Radhakrishnan K R - P...

LVivek Anand ECE

SHREENIDHAA K K

PSG ece

Sangeetha S

Praveen S

Archana A

R.Rajalakshmi

Brindha Duraip...

VANATHI

R Parthasarathy

Lolla Akshatha...

VAISHNAVEE K R

Suryaa E.N

Siva Surya S

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Susithra N

PRABHURAM S S

Gokulakrishnan K

Dinesh B