

## ***IEEE International Conference - ICFCR 2020***

**International Conference on Futuristic technologies in Control systems & Renewable Energy (ICFCR 2020), held at MES College of Engineering, Kuttippuram from 23 to 24 September 2020 focused on the latest developments, challenges and upcoming technologies in the area of control systems and renewable energy. The theme of the conference was “Control systems and Renewable energy for sustainable development”. The Conference was organized by the Department of Electrical & Electronics Engineering, MES College of Engineering, Kuttippuram, Malappuram, Kerala, India. The conference aimed to bring together leading academicians, scientists, industrialists and researchers to exchange and share their experiences. It provided a platform for researchers, practitioners, academicians and budding professionals to present and discuss the most recent innovations, trends, concerns and practical challenges the world encounters and to seek solutions which can be adopted in the field of control systems and renewable energy.**

**The Conference was financially co-sponsored by All India Council of Technical Education (AICTE) and technically co-sponsored by Institution of Electrical and Electronics Engineers (IEEE), USA, through the Kerala Section. The conference was proved to be a forum for technical exchange among researchers from academia, research groups, and industries. All the presented papers have been submitted to IEEE for inclusion in IEEE Xplore digital library.**

**The technical desk of ICFCR 2020 has received a total of 81 submissions from different parts of the country and abroad, in spite of prevailing world wide restrictions due to covid-19 pandemic. After the thorough peer review process involving 84 reviewers 49.4% of papers were accepted for camera ready submission and finally 38.2% of camera ready submissions were received for technical presentation.**

**The technical Program of ICFCR 2020 consisted of two keynote talks in the focus area of the conference. The keynote sessions were delivered by Prof. Sukumar Kamalasan, Duke Energy Distinguished Professor, Department of Electrical and Computer Engineering, University of North Carolina, Charlotte, USA and Prof. Bhim Singh, CEA Chair Professor, Department of Electrical Engineering, Indian Institute of Technology Delhi. The keynote speakers and the contributing authors have done justice to their roles and presented the recent innovations, trends, concerns and practical challenges that the world encounters now. They have also shared the details of their innovations towards finding the solutions, which can be adopted in the field of control systems and renewable energy, keeping sustainability in perspective. The details of keynote speakers are as follows:**

### **List of Keynote Speakers**

**Name of Speaker**

**Affiliation Educational Qualifications/ Achievements**

**Title of Talk Date Time**

**(IST)**

**Prof. Sukumar Kamalasan,**

**Duke Energy Distinguished Professor, The University of North Carolina, Charlotte, USA**

**Ph.D. University of Toledo, Toledo, OH, 2004**

**M.Eng. Asian Institute of Technology, Thailand, 1999**

**B.Tech. University of Calicut, India, 1991**

**Renewable Energy Integration to Power Grid: Challenges and Opportunities**

**23/09/2020 09.10 a.m. – 10.10 a.m.**

**Prof. Bhim Singh**

**CEA Chair Professor, Department of**

**Electrical Engineering,**

**B. E. University of Roorkee (now I.I.T. Roorkee),**

**M.Tech. IIT Delhi, Ph.D. IIT Delhi.**

**Solar Water Pumping: An Engineering Innovation for Agriculture**

**24/9/2020 09.00 a.m. - 10.00 a.m.**

**Indian Institute of Technology, Delhi, India.**

**The technical Program of ICFCR 2020 consisted of six technical sessions which were chaired by active researchers from reputed institutes. Details of Six technical sessions were as follows.**

**Sl No Technical Session Session Chair**

**1 Power Electronics**

**Dr Biju K, Vice Chair, IEEE IA/IE.PELS Jt. Chapter Kerala**

**2 Biomedical Engineering**

**Dr.MohammedShanir P P Asst.professor,TKMCE,Kollam**

**3 Control System**

**Dr.Abraham T Mathew, Professor, NIT, Calicut.**

#### **4 Soft Computing Techniques**

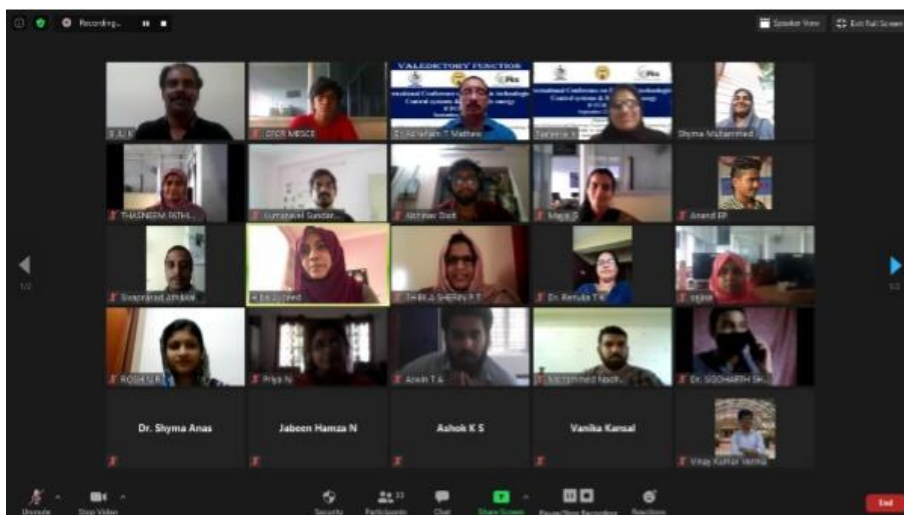
**Dr.Shibabudheen K.V, Assistant Professor, NIT, Calicut.**

#### **5 Industrial Applications**

**Dr. Ramesh Kumar, Asst. Professor, GEC, Thrissur**

#### **6 Power system**

**Kumaravel S, Asst. Professor, NIT, Calicut**




Recording... Total non-video participants: 52

**UNICHAIR**  
UNIVERSITY OF CHANGCHUN  
Division of Computer Engineering


## Typical Oscillations in the Power Grid

- Common mode - 0.005 – 0.1Hz
- Plant modes – 0.01 - 0.1Hz
- Local area modes - 0.15 – 1Hz
- Inter-area modes – 0.7 - 2Hz
- Voltage control modes - 1.5 – 6Hz
- Power Electronics, HVDC 5.0 -14Hz
- Others:
  - Sub-synchronous resonance


Modeling, Measurement, Monitoring and Control



Takumar Kamalakaran



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P. O. J. Lebb

Windows taskbar icons: File Explorer, Edge, Teams, etc.


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