



### **Railway Division India Learned Society lectures in Bengaluru on 16 December 2018**

The Railway Division India and the Southern India Panel held a learned society event on 16<sup>th</sup> December 2018 at the Chancery hotel, Residency Road Bengaluru. Pradeep Agrawal, RD Chair, presided at the meeting. Of the 50 persons who attended the event 39 were IMechE members and 3 were staff.

**Sreenivasa Rao Ganapa** gave the first lecture. After his Master's Degree in Microwave Engineering from the Indian Institute of Technology Varanasi (Banaras Hindu University), worked in the Indian Railway Service of Signal Engineers, including as Joint Director at the Research Designs and Standards Organisation of Indian Railways. He has since become a "serial entrepreneur" establishing five companies from start up to developing products. In his sixth venture he is the Co-Founder of Lab To Market Innovations Private Limited ([www.lab-to-market.com](http://www.lab-to-market.com)). This company is seed funded by the Indian Institute of Science, to develop IoT based Freight Control Systems. His company is located at the Society for Innovation & Development at the IISc campus.

His lecture was on "**IOT for Railways**". It discussed IoT and AI technologies and solutions for real time condition monitoring of trains and railway infrastructure to enhance safety and efficiency of trains. There was a spirited discussion following the presentation. Several concepts and nuances were discussed that could assist the author with his ongoing research and development.

**Sudhanshu Mani**, IEng, FIMechE, made the second learned society presentation. He belongs to the Indian Railways Service of Mechanical Engineers and is currently the General Manager of the Integral Coach Factory, Chennai. He has worked in several railway units in India including its Research, Designs & Standards Organization, Lucknow and Diesel Locomotive Works Varanasi. One of his assignments was as the Railway Advisor in the Embassy of India, Berlin. He was recently in additional charge of the South Western Railway as well. He has special expertise in the design of diesel locomotives, which he oversaw while at DLW & RDSO. After joining ICF as General Manager, it has increased production substantially from 2,500 coaches a year to 3,200. He has also been the main force behind the design and manufacture of the "Train 18", which is the first indigenous trainset in India.

He started the art movement "Safar" in 2011, which is growing in the Indian Railways today. It has been chronicled in a book "Art and Railways, A Bangalore Saga" that he co-authored with Ms. Lily Pandeya. He has continued this experiment, even in industrial settings, and narrated his experiences in two more books.

In "**Train 2018**" he described the features of the new trainset that has been evolved at ICF in a short period of about eighteen months from scratch. The process by which this interesting development was conceptualized, designed and taken to the stage of successfully building the prototype is an inspiring achievement. The trainset is undergoing extensive testing now and

has the potential to enter serial production. Other matters being equal, it can provide higher speeds for inter-city services, with greater comfort for passengers. There is bound to be public demand for enhancing track maintenance standards and other infrastructure to match train technology for higher quality services. Several aspects of post-development maintenance were discussed by the audience.

Of these, an interesting long-term possibility could be to shift to composites for the nose section, on considerations of strength and life cycle fuel (weight) savings, vs the high cost of material. Base composite materials are not manufactured in India because annual aerospace demands are not of the scale to justify it. However, the aerospace industry is skilled in fabrication and forming structures. Rail use of composites could bring synergy to this process through scale and add a key composite material manufacturing sub-sector in India.

Pradeep Agrawal presented mementos to the distinguished lecturers.



Pradeep Agrawal, Railway Division India Chair, introducing the Speakers