

MALLIKARJUN KANDE

Director, Space Energy Systems,
Bangalore

PHONE: 7259469639

EMAIL: Mallikarjun.kande@icloud.com

PROFILE

30 years of experience in developing technologies related to software, sensing, communication, and control. Competent system engineer with extensive experience in designing complex hardware, software, and products. Expertise in satellite control and systems. Proficient with hardware, software & system architecture applied to technology demonstrations and new product introductions. Ability to deal with design complexities with multidisciplinary engineering involving material selection, hardware/software co-design, command/control/communication(C3), monitoring and maintenance. Contribution to IEEE/IEC standards, standardization activities.

Proven business acumen with strategic incubations, creation of research eco systems, developing innovative methods, models, products, and intellectual property. Proven capability to lead and manage in a matrix organization, foster highly performing teams, product and research portfolio management.

SKILLS

- Real time Systems, Hardware, and Scheduling
- Analog, Digital, Mixed signal
- Power Conversion
- Magnetic Suspension
- System/ Software Architecture
- Autonomous Systems
- Controls and Navigation
- Mil-Std-1553
- Mil-Std-1750
- Mil-Std-217
- Cyber Security Solutions and Deployment
- Fieldbus and Devices
- Network Management
- Time Sensitive Networking
- IOT & Cloud Technologies
- Digital Twin and Information Modeling
- R&D Management
- Product Development and Innovation
- Strategic Planning, Portfolio Management
- Business development and management
- Organizational Skills

PUBLICATIONS AND IP

- > 20 international publications
- > 25 inventions and patents
- ANSI – committee member
- IEEE/IEC Standards

EDUCATION

Master's in engineering (Power Electronics)

Bachelor's in engineering (Electronics and Communication)

EXPERIENCE

Space Energy Systems Private Limited, Bangalore, INDIA.
Director, 2023–present

ABB Inc., USA

System Solutions Architect, 2020–2022

As the architect of the EL Digital Common Platform, I designed system functions for both edge and cloud platforms. I established processes and workflows for device manufacturing, commissioning, and replacement across the global team. This involved collaborating with business members and developers from teams in Europe (including Italy and the Netherlands), Hyderabad, Bangalore (India), and the USA.

Global R&D Product Manager, 2016–2020

I established the R&D roadmap for network management products and defined the software architecture for network configuration and monitoring products within Industrial Automation systems. I designed a secure and redundant network for these systems and was involved in the IEC 62443 certification process for controllers. Additionally, I designed a simulator to validate and verify the ABB Symphony Plus system's sizing, bandwidth, and performance. I also actively contributed to the standardization of Time-Sensitive Networking (TSN). As an active member of standardization efforts, I worked with members from various organizations to propose valuable solutions that created a strong value proposition for all parties involved, maintaining impartiality throughout the process.

ABB, India

Head, Corporate Research (Software and Communication), INCRC, 2008–2015

Managed research portfolio for communication and software research. Developed, and also managed development of architecture for next generation automation software, security, wired & wireless connectivity, device integration, embedded system solutions. Created research eco system, and international academic collaborations. Strategic planning developing R&D roadmaps for EL (PPMV), substation automation. As a device integration research outcome, incubated the device security assurance center (DSAC) at INCRC, ABB global lab for device communication robustness, security tests and verification.

Honeywell Technology, Inc., USA/ Bangalore

Engineering Manager/ Program Manager, 2003–2008

I managed the Unmanned Aerial Vehicle (UAV) program, developing system architecture for avionics, flight management, control, and ground control systems. I oversaw the development of a flight simulator using FlightGear OSS to verify and validate UAV functions. Additionally, I developed a vendor for carbon composite-based fuselage development and UAV productization. My responsibilities included designing hardware, software, and system architecture for autonomous vehicles and aviation/space-grade precision pressure transducers. I also supervised the software architecture and component development for the DO-178 compliant Digital Engine Control Real-Time Operating System (DEOS) and for Flight Data Recorder products.

GE Research, Bangalore

Electronics Engineer, 2002–2003

Designed and developed system architecture, hardware and software and algorithm for rail-road grade crossing system, pipeline inspection system navigation, gas turbine stall/surge detection, automatic transfer switch and autoscope.

- OPC-FLC
- TSN-Expert Committee Member
- DO-178B

**Indian Space Research Organization, Bangalore
Scientist (SB-SD), 1993-2002**

Design and development of architecture, hardware, and software for Indian remote sensing satellite control system. Member of system configuration committee for next generation satellites. Active participation in satellite qualification tests and operations. Architect and incubation of new technologies such as magnetic suspension, Ion thruster, multiprocessing system, data handling (MIL-STD-1553B). Deputed to DLR, Berlin as control system expert for BIRD satellite.

Member secretary for satellite on board data handling, coordinated activities across the ISRO organizations. Defining the common hardware, software components, validation procedures, interface control and documentation.

PUBLICATIONS

1. R. Gore and M. Kande, "Analysis of Wide Area Monitoring System architectures," *2015 IEEE International Conference on Industrial Technology (ICIT)*, Seville, Spain, 2015, pp. 1269-1274, doi: 10.1109/ICIT.2015.7125272.
2. A. Ingalalli, H. Satheesh and M. Kande, "Platform for Hardware In Loop Simulation," *2016 International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM)*, Capri, Italy, 2016, pp. 41-46, doi: 10.1109/SPEEDAM.2016.7525843.
3. S. Vellingiri, A. Ray and M. Kande, "Wireless infrastructure for oil and gas inventory management," *IECON 2013 - 39th Annual Conference of the IEEE Industrial Electronics Society*, Vienna, Austria, 2013, pp. 5461-5466, doi: 10.1109/IECON.2013.6700025.
4. P. Gaonkar and M. Kande, "Challenges and opportunities of automation system for water and waste water applications," *2014 IEEE International Conference on Industrial Technology (ICIT)*, Busan, Korea (South), 2014, pp. 682-688, doi: 10.1109/ICIT.2014.6894913.
5. R. Kumar, A. Ray and M. Kande, "WirelessHART device integration challenges and solutions in industrial automation," *2013 IEEE 18th Conference on Emerging Technologies & Factory Automation (ETF A)*, Cagliari, Italy, 2013, pp. 1-4, doi: 10.1109/ETF A.2013.6648088.
6. M. Kande, P. Meena, R. S. Aarathi and R. Hegde, "Smart condition monitoring in an industrial automation — Wireless performance evaluation," *IECON 2017 - 43rd Annual Conference of the IEEE Industrial Electronics Society*, Beijing, China, 2017, pp. 1-6, doi: 10.1109/IECON.2017.8216817.
7. S. Vellingiri, D. Tandur and M. Kande, "Energy efficient wireless infrastructure solution for open pit mine," *2013 International Conference on Advances in Computing, Communications and Informatics (ICACCI)*, Mysore, India, 2013, pp. 1463-1467, doi: 10.1109/ICACCI.2013.6637395.
8. S. Vellingiri, D. Tandur and M. Kande, "Communication architecture for Remote Monitoring and Diagnostics in Open Pit Mine," *2013 IEEE 18th Conference on Emerging Technologies & Factory Automation (ETF A)*, Cagliari, Italy, 2013, pp. 1-6, doi: 10.1109/ETF A.2013.6648073.
9. R. Gore, H. Satheesh and M. Kande, "Platform analysis in embedded systems," *2014 2nd International Conference on Emerging Technology Trends in Electronics, Communication and Networking*, Surat, India, 2014, pp. 1-6, doi: 10.1109/ET2ECN.2014.7044944.
10. M. Kande, J. Sundaravaradan, A. Ray and V. Narayanan, "Energy efficient environment control system using wireless condition monitoring," *2011 8th International Conference & Expo on Emerging Technologies for a Smarter World*, Hauppauge, NY, USA, 2011, pp. 1-4, doi: 10.1109/CEWIT.2011.6135880.
11. M. Kande and N. Taylor, "Automation System Generic Security Key Manager," *IECON 2018 - 44th Annual Conference of the IEEE Industrial Electronics Society*, Washington, DC, USA, 2018, pp. 2867-2871, doi: 10.1109/IECON.2018.8592776.

12. J. O. Blech et al., "Efficient incident handling in industrial automation through collaborative engineering," 2015 IEEE 20th Conference on Emerging Technologies & Factory Automation (ETFA), Luxembourg, Luxembourg, 2015, pp. 1-8, doi: 10.1109/ETFA.2015.7301533.
13. J. O. Blech et al., "Collaborative engineering through integration of architectural, social and spatial models," Proceedings of the 2014 IEEE Emerging Technology and Factory Automation (ETFA), Barcelona, Spain, 2014, pp. 1-4, doi: 10.1109/ETFA.2014.7005271.
14. S. Valsan, S. Vellingiri and M. Kande, "Wireless communication based phase balancing to integrate PHEVs in a smart parking lot," 2016 Biennial International Conference on Power and Energy Systems: Towards Sustainable Energy (PESTSE), Bengaluru, India, 2016, pp. 1-6, doi: 10.1109/PESTSE.2016.7516505.
15. R. Kumar, D. Tandur and M. Kande, "Performance evaluation of Field Device Integration (FDI) framework," 2013 International Conference on Control, Automation and Information Sciences (ICCAIS), Nha Trang, Vietnam, 2013, pp. 178-183, doi: 10.1109/ICCAIS.2013.6720550.
16. Kande, Mallikarjun, Alf J. Isaksson, Rajeev Thottappillil, and Nathaniel Taylor. 2017. "Rotating Electrical Machine Condition Monitoring Automation—A Review" *Machines* 5, no. 4: 24. <https://doi.org/10.3390/machines5040024>.

PATENTS

SI No	ID	Title	Assignee
1	US-7778744-B2	Avionics framework	Honeywell International Inc.
2	EP-3072275-B1	A method and a system for replacing and commissioning a field device	ABB Schweiz AG
3	US-9699270-B2	Method for commissioning and joining of a field device to a network	ABB Schweiz AG
4	EP-3903454-B1	A tsn enabled controller	ABB Schweiz AG
5	US-2013170378-A1	Method and a system for localization in industrial wireless sensor network	ABB Research Ltd
6	US-2007130834-A1	Electronically controlled grade crossing gate system and method	General Electric Company
7	CA-2972187-C	An inter-operable remote terminal unit	ABB Schweiz AG
8	EP-3820121-A1	Time-sensitive networking for industrial automation	ABB Schweiz AG
9	EP-2710469-A1	A method and a system for online and dynamic distribution and configuration of applications in a distributed control system	ABB Research Ltd.
10	US-2018191241-A1	A method for correcting effect of saturation in current transformer and an intelligent electronic device therefor	ABB Schweiz AG
11	WO-2014094981-A3	Process automation system and commissioning method for a field device in a process automation system	ABB Schweiz AG
12	US-2018013507-A1	A method for time synchronization of devices in a control network	ABB Schweiz AG
13	US-2021409482-A1	Application modelling and resource management in fog networks	ABB Schweiz AG
14	US-2014310435-A1	Relay interface module for a distributed control system	ABB Research Ltd

15	WO-2016051294-A1	System and method for advising wireless computer networks on inter-network interference	ABB Technology Ltd.
16	WO-2020128683-A1	A device and method for scheduling data transmission for non-tsn devices over time sensitive networking (tsn)	ABB Schweiz AG
17	WO-2021180656-A1	Establishing time-sensitive communications between industrial end devices and an ethernet network	ABB Schweiz AG
18	WO-2014091336-A1	A system and a method for generating secure key	ABB Research Ltd
19	US-2023052998-A1	Systems and methods for configuring industrial devices through a secured wireless side channel	ABB Schweiz Ag
20	US-2015270697-A1	Self supplied protection relay with a module to boost performance	ABB Research Ltd
21	WO-2014202676-A1	Commissioning system and method	ABB Technology Ag
22	WO-2014102706-A1	A method for operating renewable energy power plant and a system therefor	ABB Research Ltd
23	WO-2017115163-A1	A method and an apparatus for communicating a condition of a power line	ABB Schweiz AG
24	EP-3933594-A1	A method for detecting system problems in a distributed control system and a method for allocating foglets in a fog network	ABB Schweiz AG
25	WO-2015075614-A1	Power management in a self-supplied protection relay	ABB Technology Ltd.
26	WO-2021180657-A1	Transporting a message from an industrial end device over an ethernet network	ABB Schweiz AG
27	WO-2014202664-A1	Network commissioning and control system and method	ABB Technology Ag
28	WO-2014091337-A1	A system and a method for registration of devices in a plant	ABB Research Ltd
29	WO-2017002020-A1	System and method for detecting a fault in an overhead power line	ABB Schweiz AG
30	WO-2011121388-A1	A method of secure multiple joining for a device to join wireless system network and a wireless device thereof	ABB Research Ltd
31	EP-3935458-A1	Systems and methods for controller diagnostics and service	ABB Schweiz AG
32	IN-2013CH05389-A	Patent in2013ch05389a	ABB Research Ltd
33	IN-2013CH05391-A	Patent in2013ch05391a	ABB Technology Ltd
34	US-2005132712-A1	Method and apparatus for detecting compressor stall precursors	General Electric Company
35	US-20230052998-A1	Systems and methods for configuring industrial devices through a secured wireless side channel	ABB Schweiz AG
36	US-11522627-B2	Tsn enabled controller	ABB Schweiz AG
37	US-20220171368-A1	Systems and methods for controller diagnostics and service	ABB Schweiz AG
38	US-11159435-B2	Time-sensitive networking for industrial automation	ABB Schweiz AG

46	US2023006939A1	Establishing time-sensitive communications between industrial end devices and an ethernet network	ABB Schweiz AG
47	WO2017002020A1	System and method for detecting a fault in an overhead power line	ABB Schweiz AG
48	WO2014091336A1	A system and a method for generating secure key	ABB Research Ltd
49	US11159435B2 US2021144098A1	Time-sensitive networking for industrial automation	ABB Schweiz AG
50	WO2014202664A1	Network commissioning and control system and method	ABB Technology Ltd
51	WO2014094981A2 WO2014094981A3 WO2014094981A8	Process automation system and commissioning method for a field device in a process automation system	ABB AG [DE]
52	WO2017115163A1	A method and an apparatus for communicating a condition of a power line	ABB Schweiz AG
53	WO2014091337A1	A system and a method for registration of devices in a plant	ABB Research Ltd
54	US2023069976A1	Transporting a message from an industrial end device over an ethernet network	ABB Schweiz AG
55	US2021409482A1	Application modelling and resource management in fog networks	ABB Schweiz AG
56	US2021406081A1	Method for detecting system problems in a distributed control system and a method for allocating foglets in a fog network	ABB Schweiz AG
57	IN-201741007362	A method and an apparatus for the detection of misalignment in pump shaft	ABB Schweiz AG
58	IN201741044116	A method for plant condition monitoring using controllers	ABB Schweiz AG
59	IN4556/CHE/2011	Seamless io access across controllers for distributed control applications	ABB Research Ltd
60	IN6546/CHE/2014	Method of time synchronization of non networked ieds	ABB Technology Ltd
61	IN201841028471	Method and system for monitoring condition of plurality of equipment in an industrial plant	ABB Schweiz AG
62	IN5489/CHE/2012	A method for operating renewable energy power plant and a system therefor	ABB Technology Ltd
63	IN1588/CHE/2015	Improved bus bar protection for increased availability of substation automation system	ABB Technology Ltd
64	IN201841025714	Method and system of routing data in bluetooth low energy network for plant condition monitoring	ABB Schweiz AG
65	IN4955/CHE/2014	Common multi-network operation advisor	ABB Schweiz AG