Proposal for an invited session on "Sustainability, Automation, and advances in Manufacturing of 21st Century" for IFAC MIM 2019

Invited session identification code i8att

Session Chair

Prof. Dr. Nand K Jha, Manhattan College, New York, USA

Sustainability has emerged as an important research area for system scientist for sustainable development of society on our planet earth. Manufacturing, automation, cognitive manufacturing including digital manufacturing have become most important advances in recent days. For sustainable development of any society in particular or the planet earth itself sustainable manufacturing must be attempted. Mathematical foundation of sustainability manufacturing including advanced robotics and Internet of Things (IoT) need to be explored more rigorously and thoroughly. Session will explore the impact of investing in advanced robotics, automaton and digital manufacturing on sustainable development of technologies as well as society. The topic of green manufacturing comes up; energy-efficient machine tools are not usually what is envisioned. Therefore, the energy demand of a machine tool is a key consideration for investment, but it does not stand alone but such other considerations such as the ecological footprint is also important.

The session will provide unique platform to academics, scientists, and engineers from manufacturing industries to present their researches in advanced manufacturing technologies and practice in 21 st century. It will A serious attempt will be made to attract not only academia but practicing manufacturing engineers to the conference. The link between the technological innovation in IoT, blockchain and artificial intelligence in manufacturing and sustainability need to be explored. It is likely that by 2020 large number of industries will depend on digital manufacturing and it must be able to enhance ecosystem, ecology, and support sustainable development. I think it would be of great interest to large number of theoretical and practicing engineers and should attract large number of submissions.

Topics of interest for the sessions are presented below:

1. Mathematical Foundation of Manufacturing Sustainability:
2. Cognitive Manufacturing; from product development to use to end-of-life to customer support.
3. Sustainability of data across systems, green equipment, and green manufacturing to derive interrelationships for actionable intelligence across the entire value chain.
4. Advanced manufacturing technologies; industrial Internet of things (IoT) , analytics, and advanced robotics for the society in particular and planet earth in general.
5. Flexible Manufacturing Systems and Internet of Things (IoT) ; an unique relation of more flexible machine tools.
6. Advances in manufacturing automation: Clod storage for wireless data, 3D printing, Nanomanufacturing, Sensing, measurement, and sophisticated control.
7. Development of Green Technologies and Manufacturing equipment through IT, OT, IoT, and data analytics.
8. Embedded Intelligence in Manufacturing: development and integration of CAD, CAM, and Life cycle analysis (LCA); Green cutting tools for drilling, milling, turning, and shaping, and various additive technologies.
9. Maximization of sustainability; lean manufacturing and zero defect manufacturing through embedded intelligence.,
10. Carbon neutral footprint for sustainable manufacturing development; through integration and interoperation of innovation in industrial technologies.
11 Profiting from Sustainability; design of predictive manufacturing tool and manufacturing analytics, data from sensorized cutting tools and processes.
12. Advanced robotics: Revolutionize the sustainable manufacturing; Robots leveraged by IoT and sensors enabling data collection from manufacturing and sent to dashboard for the machinist and engineers to examine.
13. Manufacturing of 21st century; Combined power of IoT, Blockchain and artificial intelligence and machine learning.
14. Solar Manufacturing and technological innovation; a unique concept whose time has come; green manufacturing.

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15. Manufacturing Predictions; customer driven design, ecosystems and ecology, embedded intelligence, data capitalization and industry clouds, the circular economy, energy-saving technologies, embedded metrology, advanced materials, and smart factory.
16. Design for Manufacturing and Life Cycle Analysis (DFMLCA): Product development process, sustainability considerations, Life cycle analysis, Life Cycle cost analysis, materials selection and sustainability based on carbon footprint consideration, Ecological and environmental considerations in product development, Design for Assembly and disassembly, Design for Environment.,

Some of the topics of interest in the proposed session are presented above. The science of sustainability has assumed great interest and it is important that we in advanced manufacturing field should integrate with technologies of 21 st century. I hope we discuss these advances thoroughly at IFAC MIM 2019.

Submission

Authors interested in submitting their research, refer to www.ifac.control.org. All papers should be two column format as per IFAC manuscript style. The full length draft paper must be submitted by December 15, 2018. All submitted papers will be peer reviewed by IPC members. The corresponding author submits the paper on line as **an invited paper session** with code**i8att**

Deadline for submission December 15, 2018
Notification of acceptance/rejection February 20, 2019
Deadline for final submission March 15, 2019