



INTERNATIONAL

INVITED SESSION SUMMARY

Title of Session:

Sustainability in industrial plant design & management: applications & experiences from practice

Name, Title and Affiliation of Chairs:

Marco Bortolini, Eng., Ph.D.
Researcher in Industrial Engineering and Logistics
Department of Industrial Engineering
Alma Mater Studiorum - Bologna University

Riccardo Accorsi, Eng., Ph.D.
Researcher in Industrial Engineering and Logistics
Department of Industrial Engineering
Alma Mater Studiorum - Bologna University

Emilio Ferrari, Prof., Eng.
Full Professor of Industrial Engineering and Logistics
Department of Industrial Engineering
Alma Mater Studiorum - Bologna University

Details of Session (including aim and scope):

The **aim** of this session is to bring together experiences related to the sustainable design and management of industrial plants, production and distribution systems. The focus is on applications and win-win experiences from practice. Outcomes from past and in-progress research and technology transfer projects are expected as fair and replicable examples of solutions leading to significant improvements in products and operations toward the achievement of sustainability goals.

Growing demand experienced by increasingly larger industrial sectors is forcing the conversation on reconciling economic growth with sustainability. The target is thereby cross-sectorial and multidisciplinary, embracing contributions from a broad range of fields within industrial engineering, mechanics, automation, management, energy & power, chemical, storage, distribution, packaging, etc. Due to its practical rationale, a mid-advanced technology readiness level of the proposed solutions is required, making the results of strong interest for applied researchers and industrial practitioners.

Within this session, sustainability is intended to be related to some of these aspects: technology efficiency, economic sustainability, environmental friendliness, social acceptance. Methods, processes and experiences embracing multiple of such aspects are particularly welcomed as examples of best balance of possible divergent trends.

Specific themes may include but are not limited to:

- Design/Re-design for Sustainability of industrial plants to increase the economic, environmental and social acceptance of products and processes;
- Applications of multi-criteria design and management theory to jointly increase technological, economic, environmental and social performances of industrial and service processes;
- Case studies from the industrial engineering sector about sustainability transition;
- Actions to increase safety and to reduce risks within industry operations;
- Simulation and optimization of processing, storage and distribution operations toward sustainability;
- Waste management in industry and the tertiary sector.

References

- Accorsi, R., Cholette, S., Manzini, R., Pini, C., Penazzi, S. (2016) The land-network problem: ecosystem carbon balance in planning sustainable agro-food supply chains. *Journal of Cleaner Production* 112(1), 158-171.
- Jones, J., Corral de Zubielqui, G. (2016) Doing well by doing good: A study of university-industry interactions, innovationness and firm performance in sustainability-oriented Australian SMEs. *Technological Forecasting and Social Change* [in press].
- Bolis, I., Brunoro, C.M., Sznclwar, L.I. (2016) Work for sustainability: Case studies of Brazilian companies. *Applied Ergonomics* 57, 72-79.
- Boutkhoul, O., Hanine, M., Boukhriss H., Agouti, T., Tikniouine, A. (2016) Multi-criteria decision support framework for sustainable implementation of effective green supply chain management practices. *SpringerPlus* 5:644, 1-24.
- Cherrafi, A., Elfezazi, S., Chiarini, A., Mokhlis, A., Benhida, K. (2016) The integration of lean manufacturing, Six Sigma and sustainability: A literature review and future research directions for developing a specific model. *Journal of Cleaner Production* 139, 828-846.
- Journeault, M. (2016) The Integrated Scorecard in support of corporate sustainability strategies. *Journal of Environmental Management* 182, 214-229.
- Morioka, S.N., Carvalho, M.M. (2016) Measuring sustainability in practice: exploring the inclusion of sustainability into corporate performance systems in Brazilian case studies. *Journal of Cleaner Production* 136(A), 123-133.
- Accorsi, R., Manzini, R., Pini, C., Penazzi, S. (2015) On the design of closed-loop networks for product life cycle management: economic, environmental and geography considerations. *Journal of Transport Geography* 48, 121-134.
- Bortolini, M., Gamberi, M., Gamberini, R., Graziani, A., Lolli, F., Regattieri, A. (2015) Retrofitting of R404a commercial refrigeration systems using R410a and R407f refrigerants. *International Journal of Refrigeration* 55, 142-152.
- Bortolini, M., Cascini, A., Gamberi, M., Mora, C., Regattieri, A. (2014) Sustainable design and life cycle assessment of an innovative multi-functional haymaking agricultural machinery. *Journal of Cleaner Production* 82, 23-36.
- Bovea, M.D., Pérez-Belis, V. (2012) A taxonomy of ecodesign tools for integrating environmental requirements into the product design process. *Journal of Cleaner Production* 20(1), 61-71.
- United Nation Environment Programme - UNEP. (2009) Ecosystem Management: Part of the Climate Change Solution. UNEP Research Brief.

Main Contributing Researchers / Research Centres (tentative, if known at this stage):

Researchers and professors from the Bologna and Padua university industrial plant research group
Researchers and professors from the Bologna university industrial ecology research group (tentative)
Researchers and professors from the Italian Academic Industrial Plant Association (tentative)
Food & Wine Supply Chain Council, International Research Group
Industrial managers and practitioners

Website URL of Call for Papers (if any):

Dedicate posting on <http://warehousing.diem.unibo.it/index.html>
Dedicate posting on <http://safetyengineering.din.unibo.it/>
Dedicate posting on <http://foodsupplychain.din.unibo.it/>
Dedicate posting on <http://www.aidi-impianti-industriali.it/> (tentative)
Dedicate note within the newsletter of the Italian Academic Industrial plant community (tentative)

Email & Contact Details:

E-Mail:

marco.bortolini3@unibo.it
riccardo.accorsi2@unibo.it
emilio.ferrari@unibo.it

Tel. +39 (0)51 2090468 or +39 (0)51 2093429 or +39 (0)51 2093408