INTERNATIONAL

INVITED SESSION SUMMARY

Title of Session:
Energy Efficiency Opportunities in Manufacturing Processes and Systems

Name, Title and Affiliation of Chair:
Emanuele Pagone, Research Fellow, Sustainable Manufacturing Systems Centre, School of Aerospace Transport and Manufacturing, Cranfield University

Co-chairs:
Mark Jolly, Professor, Sustainable Manufacturing Systems Centre, School of Aerospace Transport and Manufacturing, Cranfield University

Konstantinos Salonitis, Reader, Sustainable Manufacturing Systems Centre, School of Aerospace Transport and Manufacturing, Cranfield University

Details of Session (including aim and scope):
Resource scarcity and environmental issues are well-known, significant constraints affecting the design and implementation of manufacturing processes. Energy efficient practices mitigate such constraints and have been shown to improve competitiveness in some cases. Moreover, regulations have been implemented to enforce resource-resilient and clean practices also to internalise environmental costs otherwise burdening the society. At the same time, the choice of energy-efficient solutions in manufacturing systems may not necessarily impact positively the energy consumption over the full life cycle of products and, thus, a Life Cycle Assessment (LCA) is a valuable, complementary tool to identify energy efficient practices from a more comprehensive point of view.

This special session aims at driving a focussed discussion based on research contributions to improve the energy efficiency of manufacturing processes at different levels.

In particular, the scope of the expected studies includes the following aspects.

- Different scales: from single processes to manufacturing systems and up to LCA level.
- Levels or type of abstraction: the boundaries of the analyses may not be limited to physical features.
- Potential inclusion of material and energy flows encompassing all or several life cycle phases.
- Potential consideration of sustainability instances in any aspect of the traditional “triple bottom line” approach (economic, environmental and societal instances).
- Multi-criteria considerations where also other traditional manufacturing metrics (e.g. cost or productivity) are weighted.
- Both theoretical and experimental works are welcomed.

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

Website URL of Call for Papers (if any):

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