



**Special issue: The 1st International Symposium on
INDUSTRIAL ENGINEERING, MAINTENANCE AND SAFETY
IEMS'22**

General chair: Dr Nassima AISSANI

Preface. "IEMS'22" The IEMS is the first international symposium on industrial engineering maintenance and safety "IEMS'22" for all researchers and industrial pioneers. Organized by the Institute of Maintenance and Industrial Safety and the Industrial Safety Engineering and Sustainable Development laboratory, University of Oran 2 Mohamed Ben Ahmed the 5th and 6th of March. The aim object of this symposium is solving the main industries and environment problems, beside helping in the development of new technologies. The IEMS'22 includes variety topics related to the:

1. Environmental protection and sustainable development in the industry : During the tow last decades humans have consciously taken environmental degas that progress inflicts on the earth and human health. Its why many research have been achieved to reduce the industrial impact. In IEMS22, many research had been presented in this topic: Impact of power line on living beings, Others tried to replace toxic product in wide used equipment: Ecofriendly Single-Refrigerants as Alternatives to Replace R134a in Mechanical Vapor Compression Refrigeration Machine
2. Environmental protection Wastewater treatment: Water is live assurance on earth, its protection is fundamental, many research had been presented to preserve water from industrial effluent: hydrogels: New adsorbents for removal of copper from waste water.
3. New Challenges of Risk and RAMS Analysis in the 4.0 Industry: Risk and Industrial systems reliability are the main topic treated in LISIDD, our team had presented many actual research: Failure mode, effects, and criticality analysis improvement using a fuzzy criticality assessment-based approach. Indeed, it specially deal with failure analysis methods and inspection organization: performant Tool for Optimizing Inspection Planning in Algerian Process Plants.
4. Industrial engineering and instrumentation in the 21 century: Researcher presented useful tools in new industrial systems trends: an Automated Drug Distribution System Based on Arduino which could be used in drug industry or in hospitals. Smart glasses and augmented reality for Maintenance 4.0 that could significantly reduce operator intervention on equipment's maintenance.
5. Added value of electromechanical engineering and industrial maintenance in future industry: heavy equipment and related industry attracted researcher for many years, some new innovations and discoveries. Some of them are related to control: Nonlinear Control Method Based on an Improved Adaptive Integral-Backstepping Technique. Or related to maintenance functions: Remaining Useful Life Prediction of

a robot with 15 states in order to optimize maintenance tasks.

6. Renewable energy and thermal power generation, energy remain the main factor for each civilization and its industry. In last few years, many research are made to optimize its use and diversify its resources. In IEMS many researches were presented in that field: Study the effect of insulation on the thermal and energy levels of the building envelope. Indeed, thermal energy is new trend in renewable energy that attracted researcher attention especial regarding Algeria weather and its wide Sahara.

The IEMS'22 pondered on, through the interactions between academic researchers from different branches of industrial engineering environment, maintenance and safety. Timely research topics were discussed via presentations of the latest progresses and developments of Industrial Engineering and many conclusions was made about the research directions that our national researcher teams should explore.

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