

ASDA Seminar 2010

ABSTRACT PROPOSAL

Title : Development of an Ant Colony Optimization Algorithm to Improve Maintenance Process Efficiency.

Authors: Egidio D'Amato - Università degli Studi di Napoli "Parthenope", Dipartimento di Scienze Applicate (egidio.damato@uniparthenope.it)

Prof. Giuseppe Del Core - Università degli Studi di Napoli "Parthenope", Dipartimento di Scienze Applicate (delcore@uniparthenope.it)

Gabriella Duca - Università degli Studi di Napoli "Federico II" - LEAS Laboratorio di Ergonomia Applicata Sperimentale (duca@unina.it)

Efficient maintenance policies are of fundamental importance because of their fallbacks into the safety and economics of air traffic operations. Usually the optimization of maintenance process is limited to a resource optimization in position and number. But maintenance tasks are performed by man that cannot support an excessive workload. So, to optimize maintenance process it is necessary to take into account of ergonomic aspects on workplace. This gives rise to an optimization of the maintenance process by using an ergonomic approach. In this way, the result of the optimization could permit improvements in the quality of the work of maintenance, but also a greater efficiency of the global system.

An ant colony optimization algorithm has been developed in order to optimize the system efficiency. This kind of algorithm natively permits to improve man movements into the workplace; furthermore the optimization of the workplace ergonomics has been added.

To do this, it's necessary to determine an objective function of efficiency levels linked to any task performed by man. Some protocols have been created on the basis of literature resources and experimental results.

This paper illustrates an applied research in which a method for the optimization of the maintenance process efficiency has been developed in order to show the applicability of a tool capable of working on both sides: the maintenance process and the related human factor.