

15/07/2015 - FOCUS Cluster “Maintenance & Support”

Introduction

Creating clusters of FoF project activities is an effective way to enhance the impact of FoF projects. The five participating clusters in FOCUS will share experiences and best-practices to stimulate the take-up of project results and investigate how to best exploit synergies. The goal is not only to support the actual participating projects but also to define an approach that can work for future clusters.

The “Maintenance & Support” cluster consists of 3 FoF projects involving 25 partners from 8 European countries: **iMAIN** (8 partners from Germany, Spain, Sweden, Slovenia), **Power-OM** (7 partners from Spain, Germany, France, UK, Sweden), and **SUPREME** (10 partners from France, Czech Republic, Switzerland, Germany, Spain). The cluster “Maintenance & Support” brings together these European-funded projects working on Condition based and predictive maintenance systems to improve the overall effectiveness, system lifetime, energy consumption and reliability of machine tools. The aim is to strengthen the connection between these projects in order to stimulate technology exchange, and to facilitate the implementation of research results in the industry. Through increased dissemination and dialog promotion, the visibility and external perception of the projects will be increased.

Projects in cluster “Maintenance & Support”



iMAIN – Intelligent Maintenance (www.imain-project.eu)

iMain is a European level research project aiming to develop a novel decision support system for predictive maintenance. Its objective is to develop a novel and advanced concept with a practical verified solution for an information based predictive maintenance system. It will include an embedded condition & energy monitoring system that will nearly operate personal self-sufficient, a smart service life prediction system that will complement the ECEM system through a number of virtual sensors, and a novel e-maintenance strategy using cloud e-maintenance. To that end, a multi-layer solution integrating embedded information devices and artificial intelligence techniques for knowledge extraction and novel reliability & maintainability practices will be developed. The resulting solution will provide extended capabilities compared to those achievable with current state-of-the-art maintenance practices, increasing system lifetime of the production equipment at least 30%, energy efficiency at least 20%, availability of whole process at least 30%, while decreasing maintenance costs at least 40%.

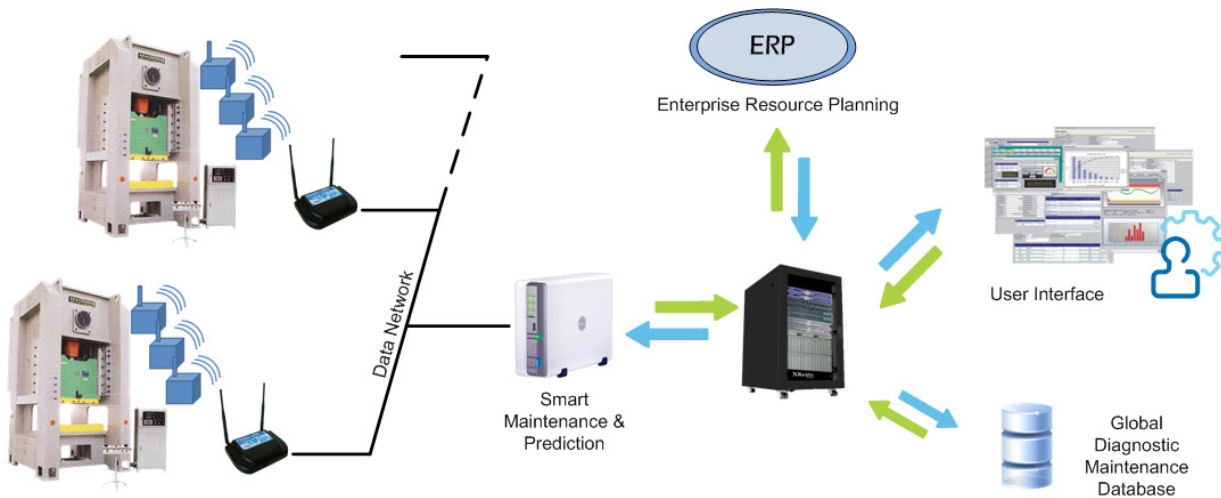


Fig 1: iMAIN predictive maintenance concept



Power-OM - (www.power-om.eu)

Power-OM works on machine tools, particularly on the critical components spindle and linear axis as responsible for the most common and cost-intensive downtimes. The aim for Power-OM is to use energy consumption monitoring and profiling as condition based maintenance technique, and to manage it to improve the overall business effectiveness in terms of Maintenance, Operation, and Product Reliability. The main idea behind Power-OM is not to achieve the best condition based maintenance platform, but to get the most cost effective and easy to implement platform possible. The main scientific and technological objectives are: to develop a method for data processing and analyzing mechanisms for early detection of faults in a production machine using current and voltage data; to complement the power based predictions with the added value information that could come from the Computerized Numerical Control (CNC) and other sensors if they are present in the machine; to set-up an eMaintenance platform to provide openness and connectivity towards the Power-OM components installed in each machine; and to develop added value services on top of the e-Maintenance platform.



SUPREME - Sustainable Predictive Maintenance For Manufacturing Equipment (www.supreme-fof.eu)

The objective of SUPREME is to provide new tools to dynamically adapt maintenance and operation strategies to the current conditions of critical components in production equipment and to achieve an integrated approach for optimal energy consumption by means of predictive maintenance tools. Technical challenges of the project are to develop new methods for condition and risk based maintenance, new deterioration models for Residual Life Prediction, new signal processing methods integrated in the Embedded CM and RT failure prediction and RT operation optimization. As outcome a reference model and three modules providing the maintenance functionality will be created: embedded condition monitoring modules, reliability and maintainability modules, and intelligent control and data mining modules.



Cluster advances

Increase availability of production systems & OEE; energy consumption reduction; reduction of renovation and repair costs; at the end-of-life stage, contribution towards reuse of production system components in new life cycles; cost reduction due to re-use of existing modular equipment when setting-up production systems for new product variants; renovation of outdated plants and structures, safe production sites.

For more information about the “Maintenance & Support” cluster within FOCUS please contact:
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For further information please visit:

http://ec.europa.eu/research/industrial_technologies/factories-of-the-future_en.html

Factories of the Future is a EUR 1.2 billion program in which the European Commission and industry are collaborating in research to support the development and innovation of new enabling technologies for the EU manufacturing sector.

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