

# ENGINSOFT coordinates the new “MUSIC” European Project

After a long procedure, the “MUSIC” project (the acronym stands for: “Multi-layer control & cognitive System to drive a metal and plastic production line for Injected Components”) has finally received the positive approval of a technical and scientific Committee. The decision-makers are responsible for selecting Collaborative IP Projects in the FoF-ICT sector (Factory of Future and Information & Communication Technologies) applied to energy-aware, agile manufacturing and customization.

The core concept of the project focuses on the result of the analysis and the possible improvements that can be achieved and applied to the two most representative large-scale production-lines in the manufacturing field: High Pressure Die Casting (HPDC) of light alloys and Plastic Injection Moulding (PIM). Both are of strategic importance to the EU industry which is largely dominated by SMEs.

Due to the high number of process variables involved and the non-synchronization of the process control units, HPDC and PIM are most “defect-generating”. Moreover, “energy consumption” processes in the EU industries provide less flexibility to any changes in product and process evolution. Owing to both of these factors, sustainability requires that machines/systems are able to efficiently and ecologically support the production with higher quality, faster delivery



Fig. 1 - MUSIC PROJECT LOGO

times, and shorter intervals between successive generations of products. Therefore, MUSIC is strongly aimed at leading EU-HPDC/PIM factories, for a cost-based competitive advantage through the necessary transition to a demand-driven industry with lower waste generation, higher efficiency, robustness and minimum energy consumptions. The development and integration of a completely new ICT platform, based on

an innovative Control and Cognitive system linked to real time monitoring, allows an active control of quality, avoiding defects or over cost by directly acting on the process-machine variables optimization or equipment boundary conditions. The Intelligent Manufacturing Approach (IMA) works at machine-mould project level to optimize the production line starting from the management of manufacturing information. An Intelligent Sensor Network (ISN) monitors the real-time production acquiring the multi-layers data from different devices and an extended meta-model correlates the input and sensors data with the quality indexes, energy consumption cost function. Data homogenization, centralization and synchronization are the key aspects of a control system to collect information in a structured, modular and flexible database.

Process simulation, data management and meta-models are the key factors to generate an innovative Cognitive system to improve the manufacturing efficiency. The MUSIC project is an FP7 European project that introduces new ICT technologies at manufacturing plants with introduces significant potential impacts: (i) it can strengthen the global position of the European manufacturing industry; (ii) it can create a larger European market for advanced technologies such as electronic devices, control systems, new assistive automation and robots; (iii) it improves the intelligent management of manufacturing information for customization and environmental friendliness.

The MUSIC project's final target is the transformation of an extremely conventional manufacturing sector such as HPDC of light alloys and PIM of polymers into an Intelligent Manufacturing System, capable of zero-defect production,



Fig. 2 - MUSIC core concept

## Work Packages



Fig. 3 - MUSIC project structure in EUCOORD

energy saving and cost reduction. The achievement of this target passes through multi-level objectives, contributing to a knowledge-based and dynamic management of HPDC/PIM manufacturing data.

The MUSIC Project started on September 1st, 2012 and will run for 4 years, under EnginSoft Coordination and Management, with more than 9 million Euros of costs, two thirds funded by the European Commission.

MUSIC is a fully integrated project, since the Consortium is constituted by 16 complementary European members (ENGINSOFT SPA, ELECTRONICS GMBH, HOCHSCHULE AALEN, MAGMA GMBH, UNIVERSITA DEGLI STUDI DI PADOVA – DTG, FUNDACION TEKNIKER, FUNDACIO PRIVADA ASCAMM, OSKAR FRECH GMBH CO KG, TOOLCAST SNC, MAIER, S.Coop. AUDI AKTIENGESELLSCHAFT, RDS MOULDING TECHNOLOGY SPA, MOTUL SA, REGLOPLAS AG, FRAUNHOFER-GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V, ASSOMET SERVIZI S.R.L) which cover with their different activities and know-how, the entire value-chain, from RTD to demonstration, from prototyping to standardization, as described in the 8 work-packages into which the project is subdivided.

For a more efficient and easy management of the project, EUCOORD is proving a very useful tool, since it is a web-based collaborative tool specifically designed for Project Management and Financial Accounting.

It assists Coordinator and Partners in keeping the project on track, allowing project structure handling (details on Work-packages, Tasks, Milestones, Deliverables, in terms of technical content, leadership, duration and deadlines), correct data collection (partners information, profiles, contacts, detailed activities assignment with related resources), accounts management (inputs of costs and effort provided by partners are stored and validated by the coordinator), reports generation and disseminations planning, web-site creation, management and customization, including also a password-protected area for internal communication and document sharing, also of confidential nature. The starting point of the project was marked in Vicenza, on September 17th and 18th 2012, when the Kick-off Meeting took place. A group of 60 people representing the 16 partners engaged in the project, gathered at the University of Padova located in Vicenza, for a two-day meeting. The meeting content was articulated in three different sessions aiming respectively at:

1. Analyzing the state of the art of the control for different devices in the production line.
2. Providing attendees with general information concerning management & coordination, communication strategies, project content and structure, partners' interactions and contributions, responsibilities and duties in compliance with the contract and its annexes.
3. Presenting WP1 tasks and objective so to focus and structure the first RTD objectives to be discussed and performed.

The activities performed by now are mainly concentrated in the technical and scientific tasks of WP1 and management (WP8) as well.

First project dissemination activities have been promoted so to give visibility to project existence by presenting the public summary and objectives in two different international event, ALUMINUM 2012 (Düsseldorf Messe, 9-11 October 2012) and INTERNATIONAL CAE Conference (Lazise – Verona, 22-23 October 2012). As soon as first results and achievements will be available, further actions will be planned for targeted knowledge transfer and sharing. In this perspective the project has been submitted to NAFEMS World Congress of next year (Salzburg – June 2013). The MUSIC Project web site has been submitted to the European Commission on November



Fig. 4 - The kick-off meeting in Vicenza

15th, 2012. It describes the structure, contents and functionalities of the Project portal: <http://music.eucoord.com/> and its connection with the EUCOORD platform for Project Management.

This first meeting has been very successful, especially because all of the participants were enthusiastic to start the new challenge and at the same time could share with each other their cutting-edge technologies and knowledge. These exchanges among the partners are fundamental for a positive beginning of the project. The enthusiastic and promising assertiveness is essential for good and profitable results to move from "music" to "symphony" in manufacturing production lines!

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