

ACTION PLAN

The SMEDIP project aims to implement a complete system of predictive diagnostics provided of custom miniaturized vibration sensors, wireless communication system and algorithms for signal analysis to recognize malfunctions and the progressive wear of components. The entire system will be tested first on a bench with calibrated actuators then on machinery functional parts and finally on working machines.

The sensors will be produced thanks to the experience gained inside the regional strategic project MICRONET and to the partnership with CNR-IMM, Institute of the National Research Council with outstanding competence in the field of microsystems and microelectronics. The companies involved in the project, I.M.A. Industria Macchine Automatiche S.p.A. and SACMI IMOLA S.C., are world leading companies in the packaging machinery.

Sensors and Methodologies for Predictive Diagnostics

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SMeDiP

Sensors and Methodologies
for Predictive Diagnostics

www.smedip.it

PROJECT BACKGROUND

In an increasingly competitive market, where new features are required to produce more and more smart machines, monitoring the conditions of an automatic machine is a fundamental issue.

Thanks to proper techniques, able to evaluate the working parameters of both systems and machines under test, it is possible to schedule the right maintenance service thus making possible a predictive maintenance strategy.

AIMS

The construction of a complete predictive diagnostics system for automatic packaging machinery expects the achievement of the following objectives:

- Implementation of an integrated triaxial accelerometer on a single chip
- Electronic communication implementation and possible wireless power
- Development of diagnostic algorithms
- Development and industrialization of the project's output

RESULTS

Development of sensors and innovative methods for automatic machinery predictive diagnostics in the packaging sector. This system, together with condition monitoring, is of great interest to all regional engineering companies, in particular for automotive sector.



PARTNER

MIST E-R s.c.r.l. - Laboratorio di micro e submicro tecnologie abilitanti dell'Emilia Romagna

MIST E-R is an industrial research and technology transfer laboratory accredited to the High Technology Network of Emilia-Romagna. It is a public-private consortium of industrial research and technology transfer. Its partners include the National Research Council, the University of Ferrara and Parma, the Democenter-Sipe Foundation and companies operating in various manufacturing sectors. Main operating sectors of MIST E-R are the development of Micro and Nano Technologies of inorganic and organic materials, nanostructures and interfaces for biondiagnostic and biomedical devices and products based on nanostructured materials.

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Consorzio L.I.A.M.

LIAM is a research laboratory, accredited to the High Technology Network of Emilia-Romagna, which was born and developed through the experience of imported local firms (Sitma SpA, IMA SpA and Sacmi SC, Selcom SpA and IEMA srl, with support of Tetra Pak Packaging solutions), with the aim of finding better solutions to automation problems, merging the industrial know-how with the valuable contribution of university research.

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REDOX S.R.L.

Redox s.r.l. is a company that operates in the field of electronic design, prototyping and assembly of third parties electronic equipment. Redox is able to offer rapid samples and production lots of electronic boards, with the possibility of working with automated parametric test benches. In addition, Redox focuses, in professional field, in the application of the Bluetooth technology to the remote and auto-powered sensors, the Internet of things and the predictive diagnostics. Redox is accredited, as an industrial research laboratory, to the High Technology Network of Emilia-Romagna.

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Fondazione Democenter-Sipe

Democenter-Sipe Foundation is an innovation center of the High Technology Network of Emilia-Romagna Region. Democenter-Sipe supports innovation acting as a facilitator and interface between research centers, public bodies and companies, dealing with the dissemination and transfer of the research activities and results.

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SACMI IMOLA S.C.

Sacmi is a cooperative corporation with more than 4 thousand employees and 80 manufacturing, distribution and service companies, located in 30 countries around the world. The company is leader in the fields of ceramics, packaging, automation and food processing. Technological and productive heart of the company is located in Imola, where since 1989 is operative the Research Centre. Industrial automation and process, sensors and IT simulations on production lines represent some of the main challenges of the company.

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IMA S.p.A.

IMA is world leader in the design and manufacture of automatic machines for the processing and packaging of pharmaceuticals, cosmetics, food, tea and coffee. Its position of leadership is the result of significant investments in R&D, regular and constructive dialogue with the end-users in its sectors and the Group's ability to expand internationally, conquering new markets. The IMA Group owns more than 1,400 patents and patent applications in the world; over 500 designers are committed to product innovation. IMA has launched many new machine models over the last years.

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