



Spotlight on zero defect manufacturing

Interview: Juanan Arrieta of Ideko, leader of the 4ZDM cluster, talks about the industrial impact of zero defect manufacturing (ZDM).



FOCUS has enabled us to highlight the most promising future research topics that will show the way towards achieving the ZDM paradigm.

**Juanan Arrieta, Ideko
Cluster leader: 4ZDM**



Can you explain the concept behind ZDM?

ZDM is an emerging paradigm that goes beyond six-sigma approaches to technology-intensive and strategic manufacturing sectors.

Applying a knowledge-based approach to production, ZDM brings added-value in highly demanding industrial environments, such as the mass production of “high value-added parts”, small batches, customised production and mass customisation.

The ZDM paradigm is composed of five fields and layers. On one hand you have the workpiece, the components and machines and the manufacturing process (where errors occur and ZDM tools should be implemented). And, on the other hand, the shop floor/plant and in the value-chain.

What are the benefits of a ZDM approach?

Of course, achieving zero defects in the production environment (i.e. get it right first time) is the main aim of ZDM, however there are also other objectives:

- reduce waste/scrap;
- reduce production costs and lead times;
- increase productivity and competitiveness;
- increase resource and energy efficiency.

Achieving these goals will bring significant competitive advantage and create jobs for the EU manufacturing sector.

What are the challenges that manufacturers face in implementing a ZDM approach?

Implementing a ZDM approach brings a number of challenges, including:

- highlighting the identification of error sources and types;

- identifying the most problematic phases within a LifeCycle Assessment (LCA) approach;
- clustering of errors (and subsequent solutions) according to the most common levels on the industrial shop floor;
- developing and implementing suitable ZDM tools as solutions for the upstream generation and downstream propagation of production defects.

What can you tell us about the 4ZDM cluster?

The 4ZDM cluster is composed of four former cluster projects: MIDEMMA, MUPROD, IFaCOM, MEGAFIT.

These project teams have come together to identify technical cross-cutting issues such as:

- intelligent, autonomous, and self-adaptive systems for process monitoring, control and quality management;
- system approaches for monitoring and data processing of dimensional fluctuations;
- efficient simulation tools and methods to predict machining system behaviour.

As well as defining the current state-of-the-art in ZDM, FOCUS has also enabled us to carry out a bibliographic review and highlight the most promising future research topics that will show the way towards the achieving the ZDM paradigm.

Find out more about the work of the individual 4ZDM clusters at www.focusonfof.eu.

The FOCUS Project Newsletter
Issue 3 - November 2015

Welcome to the third FOCUS on FoF newsletter. Inside this issue:

- >> Interview with Juanan Arrieta, 4ZDM cluster leader
- >> Interview with Emanuele Menegatti, robotics cluster leader
- >> Profiles - Tecnalia & University of Padua

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This project is co-funded by the European Commission as part of the European Economic Recovery Plan (EERP) adopted in 2008. The EERP proposes the launch of Public-Private Partnerships (PPP) in three sectors one of them being Factories of the Future (FoF). 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.

SPOTLIGHT on robotics

Interview: robotics cluster leader Emanuele Menegatti talks about the importance of sharing results.

What area of robotics is your cluster focusing on?

The robotics cluster encompasses a variety of projects with very different application fields, ranging from outdoor mobile robots to robot manipulators for industry, and from quality inspection robots to large-scale robots for the manipulation of large airplanes.

Every project in the cluster is aiming at advancing the state-of-the-art of robotics in its field of application and to foster the adoption of robotic technologies in industrial processes.



Increasing the transfer of knowledge among project partners enables us to generate ideas for new project proposals and new commercial products. This can lead to the further development of partial results obtained within individual projects.

Emanuele Menegatti, University of Padua
Cluster leader: robotics

What outcomes are you trying to achieve?

Some of our activities are targeted toward improving the dissemination of individual project results and highlighting the technological achievements that could be exploited by industry. Results are shared openly and made accessible to the general public and organisations outside of the cluster.

What practical steps are you taking to disseminate results?

For example, a press release containing results from different projects will be distributed to the contact list of each partner. This has much more chance of hitting the right person and triggering his or her interest.

What are the benefits of sharing knowledge between project groups?

The rest of our activities are aimed at finding cross-cutting issues common to several projects. We are also highlighting the hardware and software tools that have been developed within specific projects but which could be effectively exploited by other project groups.

Increasing the transfer of knowledge among project partners enables us to generate ideas for new project proposals and new commercial products. This can lead to the further development of partial results obtained within individual projects.



The robotics cluster comprises four projects that are researching the use of robots in the automation of post-production and other auxiliary processes.

To find out more about the work of Professor Menegatti's robotics cluster, go to www.focusonfof.eu where you can access the latest news and download information about about the work of the FOCUS partners.

Partner Profiles

The whole team at TECNALIA has one goal: to transform knowledge into GDP, meaning wealth to improve people's quality of life by generating business opportunities for industry.



TECNALIA is committed to innovation and technological development, addressed by seven business divisions: energy & environment, industry & transport, sustainable construction, health, ICT, technological services and innovation strategies.



Founded in 1222, the University of Padua is the highest ranking among leading Italian universities for the quality of its research results.

The department of Information Engineering at the university is a leading centre for education, research and technological development in the area of robotics,

computer science, instrumentation and measurement, electronics, quantum physics, automatic control, photonics, telecommunications, operation research and bioengineering.

Coming soon...

November 2015
>> Press release: robotics cluster update

December 2015
>> FOCUS FoF newsletter #4
>> Press release : clean manufacturing update

January 2016
>> Press release: high-precision manufacturing
>> Mid-term review meeting, Brussels, 28 Jan

February 2016
>> FOCUS workshop, Brussels, 15-16 Feb
>> Press release: maintenance & support