AIR IN VET

Applied Innovation and Research in Vocational Education and Training

DIGEST 3

APPLIED RESEARCH INITIATIVES IN MANUFACTURING, URBAN GREENING, AND DIGITALIZATION

This case studies from the Basque Country, the Netherlands and Germany showcase applied research and practical implementations, addressing unique challenges within manufacturing, urban greening, and digitalization, offering solutions and disseminating knowledge to stakeholders and the wider community.

Armeria Eskola focuses on machine-to-machine communication for "Zero Defects" in manufacturing, achieved through workshops and training sessions.

Yuverta's Practorate aims to prepare for climate-proof urban areas by bridging practice, research, and education, exemplified by the Diopsis insect camera test.

Orange GmbH's Diginet.Air supports SMEs in digital transformation in the aviation sector by implementing innovative training systems.

More case studies available at **https://airinvet.eu/outcomes/**

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

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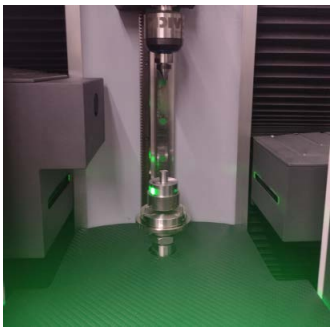
Co-funded by the European Union

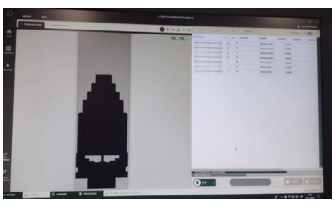
Organisation	**Armeria Eskola**
Type of organisation	**VET centre / University of Applied Science/...**
Region/County/Municipality	**Eibar, Basque Country**
Name of initiative	**INTELLIGENT MANUFACTURING CELL**
"Sector (Manufacturing, energy, healthcare, agriculture)"	**Manufacturing**
Short description of the initiative	**VERIFICATION BY MEANS OF OPTICAL SYSTEMS AUTOMATIC COMPENSATION ON THE MACHINE TOOL ITSELF**
Geographical scope	**Regional, Basque country**
Public info:	**Web SARIKI**
Participants	**Teachers**
Funding	**Public** **SMEs funding**

Initiative

This project is based on the communication and automatic compensation between 2 machines. Specifically, between a CNC Lathe with Fanuc 32i control and a Vici Vision Machine. The measuring machine measures the part and automatically sends to the production machine the corrections to be made if the part is out of tolerance. Possibility of generating an intelligent cell, since the compensation between the measuring machine and the production machine is automatic.

Generating an intelligent Manufacturing Cell since there is communication and automatic compensation between 2 machines, with the purpose of producing "Zero Defects".





Achievements

- Communication between production and measuring machines
- Communication for FANUC 32I control.
- Automatic compensation of dimensional errors automatically between measuring machine and production machine
- Compensation and communication between machines is possible, opening a very interesting and wide field to generate several possibilities (INTELLIGENT CELLS robotizing both machines, automatic process control with the aim of making "ZERO DEFECTS" key points in the context of industry 4.0.

Results assessment

- Machine-to-machine communication achieved once the two machines have been parameterized.
- Automatic compensation performed, correcting the part errors automatically.

Transfer of knowledge

- Workshop held at the Armeria Eskola on 19/05/2023 (companies / centres)
- Training of the project to the group of the Metrology Specialization, of the Armeria Eskola.
- Dissemination:
  - Web SARIKI (full day video)
  - Web Armeria Eskola
  - LINKEDIN
  - INSTAGRAM

Organisation	**Yuverta**
Type of organisation	**VET provider**
Region/County/Municipality	**Netherlands**
Name of initiative	**Practorate Green Liveable Cities**
"Sector (Manufacturing, energy, healthcare, agriculture)"	**Urban Greening**
Short description of the initiative	**Climate change, increasing urbanisation and biodiversity decline call for a different design of urban areas. There will be more focus on green, blue, biodiversity and circularity. As a result, there is a different demand on the green labour market. The Practorate Green Liveable City responds to this changing green labour market and aims to prepare students, teachers and professionals for these developments. The unit consists of Heidi Kamerling and three teacher-researchers.**
Geographical scope	**Central part of the Netherlands**
Public info:	**https://www.groenehotspothouten.nl/leren/practoraat-groene-leefbare-stad and https://www.practoraten.nl/practoraten/groene-leefbare-stad/**

Initiative

Testing of the Diopsis insect camera in practice. Methodology

Achievements

The Diopsis Insect camera is developed by knowledge institute Naturalis. This instrument automaticcaly takes pictures of insects, to measure biodiversity, and automatically sends the image to an online database. At the Green Hotspot of VET college Yuverta, the practor Heidi Kamerling is testing this instrument in practice, together with VET students and teachers, to see how the instrument works in practice and checking the results with manual biodiversty measurement methods.

Result assessment

The results of the instrument are being checked by students, to see if the results are being determined correctly.
The project monitors the practical implications and constraints of the instrument, such as: how do you prevent the instrument being stolen, how to implement it without disturbing the environment

Transfer of knowledge

The results of the applied research are being shared with the developer of the instrument, as well as with all landscaping companies connected to the Green Hotspot, so they can use it in their daily work.

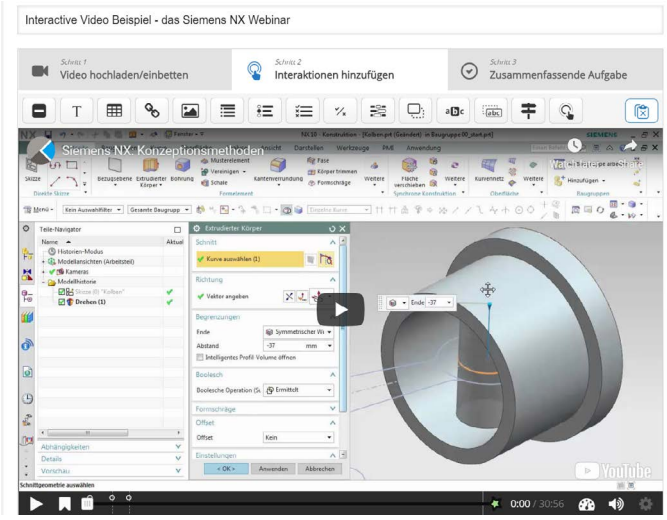
This case study belongs to the Practorate Green Liveable City. This practorate is embedded in the Green Hotspot Houten, a public private partnership in VET on landscaping and urban greening.

https://www.groenehotspothouten.nl/projecten/monitoring-vegetatie-en-insecten-houten

Organisation	**Orange GmbH**		
Type of organisation	**Company**		
Region/County/Municipality	**Germany Hamburg Bremen**		
Name of initiative	**Diginet.Air**		
"Sector (Manufacturing, energy, healthcare, agriculture)"	**Engineering and CAD Manufacturing**		
Short description of the initiative	**Digitalisation of SME**		
Geographical scope	**Metropolregion Hamburg**		
Public info:	**https://orange-engineering.de**		
Participants	**Researchers**	**Company trainers**	**Employess**
Funding	**Public**	**Own funding of company**	**Own funding of company**

Initiative

The project "DigiNet.Air – Digital Learning Network in the Aviation Industry of the Hamburg Metropolitan Region" aims to support and accompany small and medium-sized companies in digital structural change. To this end, DigiNet.Air develops low-threshold and project-like formats that are directly geared to operational issues and are intended to support small and medium-sized enterprises (SMEs) in dealing with Industry 4.0 and Work 4.0 topics.



In this case study a process analysis was carried out at the Bremen location of Orange Engineering. The aim was to find out whether the desired target state of making the training of new employees faster and more efficient can be achieved with the H5P technology. For this purpose, H5P was presented and this solution approach was discussed together.

Methodology and results

The research methods were Work Process Analysis and Competence Profiling.

- Analysing actual status
- Defining new status together Identification of training needs
- Solution: H5P-Videos
- Technical guidance and training
- Implementation at work environment
- Results
    - Achievements: a new digitalized training System with interactive technology H5P for the training of new employees,
    - Results assessment
    - Transfer of knowledge