



DOCUMENT TITLE	HARCO D7.2 "Final Plan for Using and Disseminating Foreground (PUDF)"
-----------------------	---

CREATION DATE	17.06.2013
LAST SAVE DATE	18.12.2013
RELEASED BY	E. Tamburini - FIDIA
APPROVED BY	G.M.Maneia - CESI
VERSION	Final
FILE NAME	HARCO_D7.2_PUDF_vf
ACCESS¹	PU Public Version

¹ Please indicate the dissemination level using one of the following codes:

PU = Public

PP = Restricted to other programme participants (including the Commission Services)

RE = Restricted to a group specified by the consortium (including the Commission Services)

CO = Confidential, only for members of the consortium (including the Commission Services)



Executive Summary	3
Section A (Public)	4
1. HARCO Dissemination Tools	4
1.1. Graphical profile and logotype	4
1.2. Project presentations template	6
1.3. Project Reports/Deliverable template	7
1.4. HARCO Website	8
1.5. HARCO Flyer	10
1.6. HARCO Poster	11
1.7. HARCO Rollup	13
2. HARCO Dissemination Channels.....	14
2.1. Journals, Conferences and Workshops.....	14
2.1.1. Publications	14
2.2. Events.....	16
2.2.1. Micronora 2010	16
2.2.2. euspen 2013 conference / exhibition	16
2.2.3. Manufuture 2013	17
2.2.4. NewTech 2013	18
2.3. Press and Media	19
2.4. Cross Project Dissemination	20
2.4.1. University of Huddersfield website	21
2.4.2. K.U.Leuven website	21
2.4.3. SMEs and LARGE consortium partners websites.....	21
2.4.4. Third parties websites	22
Table A1: list of scientific (peer reviewed) publications, starting with the most important ones.....	24
Table A2: list of dissemination activities	25

Executive Summary

This Report is the Public Section A of HARCO Plan for the Use and Dissemination of Foreground.

In Section A the Dissemination Tools created for HARCO are illustrated, as well as the activated and planned Dissemination Channels.

In particular, the second half of the project has been characterized by a higher intensity of Dissemination, as soon as the adopted IP protection measures became effective.

Section A (Public)

1. HARCO Dissemination Tools

1.1. Graphical profile and logotype

The logo has been developed starting from the following sketch

HARCO

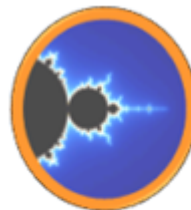
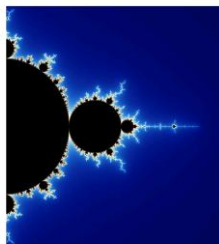
Letter	Font	Dimension
H	Marquissette BTN Bold	38
A	Marquissette BTN Bold	38
R	Marquissette BTN Bold	32
C	Marquissette BTN Bold	32
O	Marquissette BTN Bold	38

A custom orange color has been applied

HARCO



Color	R G B	HEXA
Orange	255 149 43	ff952b

A Mandelbrot fractal image (public domain) has been inscribed in the final O and a light shadow has been applied at the bottom





The final HARCO Logo is available in two basic dimensions, but it can be obviously scaled as needed

	Dimension	Suggested Use
	3,18 x 1,48 cm	A4 Documents Brochures Flyers
	9,53 x 4,45 cm	Posters Rollup

The logo can be associated to an orange arrow pointing to left



1.2. Project presentations template

Presentation templates have been distributed for each Project Meeting and can be easily customized for other purposes.

Each slide clearly reports reference to FP7 and to Contract Number (NMP2-SL-2010-260051).



Figure 1.2.1 - Main Title Slide Example



Figure 1.2.2 - Generic Slide Example

1.3. Project Reports/Deliverable template

Reports/Deliverable templates have been distributed from the beginning of the project.



DOCUMENT TITLE	HARCO D7.1 "Intermediate Plan for Using and Disseminating Foreground (PUDF)"
-----------------------	--

CREATION DATE	21.09.2011
LAST SAVE DATE	26.02.2012
RELEASED BY	A.Demichelis - FIDIA
APPROVED BY	G.M.Maneia - CESI
VERSION	DRAFT
FILE NAME	HARCO_D7.1_PUDF_v2.doc
ACCESS¹	CO

¹ Please indicate the dissemination level using one of the following codes:
 PU = Public
 PP = Restricted to other programme participants (including the Commission Services)
 RE = Restricted to a group specified by the consortium (including the Commission Services)
 CO = Confidential, only for members of the consortium (including the Commission Services)

Figure 1.3.1 - Deliverable Template

Level	Font	Example
Title	Verdana 16 (Bold)	1. Title 1
Title 2	Verdana 14 (Bold)	1.1. Title 2
Title 3	Verdana 13 (Bold)	1.1.1 Title 3
Title 4	Verdana 13 (Italic)	<i>1.1.1.1 Title 4</i>
Text	Verdana 12	AaBbCcDd
Figure Caption	Calibri 10 (Bold) Figure numbering accordingly to title level, description separated by "_"	Figure 1.1.3 - Smart

1.4. HARCO Website

HARCO Website is online at www.harcoproject.eu.com address.

The site has a public zone, with general overview of the project, description of the consortium and link to partner's institutional websites.

A news posting feature and a contact person email address are available to promote dissemination.

The private zone access is limited to Participants and EC representatives with secure login and contains all deliverables, meeting agendas, minutes and presentations.

The website has been updated at project end and will be maintained alive for at least one year to promote the project exploitable results.



The screenshot shows the HARCO website home page. At the top left is the HARCO logo. To its right are links for 'LOGIN' and 'CONTACT US'. Below these are the European Union flag and the 'SEVENTH FRAMEWORK PROGRAMME' logo. A navigation menu contains 'About HARCO', 'The Consortium', 'News', 'Events', and 'Media'. The main content area features a text block: 'The HARCO project aims to achieve the hierarchical combination of lower level units named "Functional Bricks" to generate higher level modules called "Adaptronic Modules" which in turn are used and integrated into machine parts to generate the master "Adaptive Smart Components" or ASC'. To the right of this text is a fractal image. Below the text is a 'Read more about this project' button. The page is divided into three columns: 'QUICK LINKS' (with links to Cordis, EFFRA, and HARCO Project Movie), 'NEXT EVENT' (listing 'MANUFUTURE 2013' on 06 October 2013), and 'LATEST NEWS' (with two news items from October and June 2013). The footer contains a 'MEMBER LOGIN' form, a 'NOT A MEMBER?' section with contact information, and a 'FUNDING' section with the European Commission logo and text.

Figure 1.4.1 - HARCO Website Home Page

Exploitable results

HARCO has a multi-sector character: the project findings besides the MT may have important fallout on Automotive, Aerospace and other Industrial transportation sectors with a global dimension.



SMM test bed - Courtesy of UoH

MORE ABOUT HARCO

- ▶ [The Project](#)
- ▶ [Our Objectives](#)
- ▶ [What are Functional Bricks?](#)
- ▶ [What are Adaptronic Modules?](#)
- ▶ [Adaptive Smart Components explained](#)
- ▶ [The five HARCO Demonstrators](#)
- ▶ [Impact on EU Industry - HARCO Video](#)
- ▶ [Exploitable results](#)
- ▶ [Gender and Diversity](#)

Some of the project exploitable results are:

- ▶ [Adaptronic Platform for Active Vibration Control \(AVC\)](#)
- ▶ [MagLo Piezo](#)
- ▶ [Adaptive Fixturing](#)
- ▶ [Milling Machine for high precision moulds&dies](#)
- ▶ [Smart system implemented in a high speed PKM robot for pick&place](#)
- ▶ [VibraSpin](#)
- ▶ [Smart Joint](#)
- ▶ [Planar PKM](#)
- ▶ [Control architecture for AVC](#)
- ▶ [Structural monitoring module \(SMM\)](#)
- ▶ [PassiveTuned damper](#)
- ▶ [Low profile sensors and actuators](#)
- ▶ [Self balancing milling spindle](#)
- ▶ [MicropositioningTable](#)

Figure 1.4.2 - HARCO Exploitable Results Page

Proper links to the HARCO video and to published articles have been created.

The website Google Rank at current date is 4/10, it is expected it can grow further in the next months tanks to the recent increase of online citations.

1.5. HARCO Flyer

A project Flyer has been released in A4 format (210x297 mm) accordingly to the propose EFFRA template for the PPP FoF Brochure.

**Plug and Produce components
for adaptive controls**

HARCO

*Adaptive smart components
developed under the 'Factories of
the Future' initiative.*

The HARCO project was given the go-ahead by the European Commission in July 2010.

Adaptive structures will be at the frontier of knowledge and will revolutionize machine tool and manufacturing machinery design and construction in the 21st century.

The challenge in this area is to realise availability of "extremely" stiff, light and well damped structures with fully and deeply integrated new adaptronic devices based on electromechanical and electronic devices, measuring systems, sensors and actuators. Getting more intelligent and integrated structural solutions in a cost-effective way is essential to meet performance targets in commercially viable machines and really introduce enormous benefits in machine tool design and development.

Therefore the primary goal of HARCO is to achieve cost-effective structural solutions consisting of a new class of **Smart Components** (belonging to machine tools applications) based on plug-and-produce **"Modular Adaptronic Devices"** which integrate **smart and multifunctional** actuators/sensors capable of performing a wide array of multiple functions, ranging from high and adaptable damping and

stiffness characteristics to more demanding new requirements, such as active structural measurement and control function to achieve extremely high dynamic/thermal stability required in fast and precision machining.

The results of HARCO will be illustrated through several working demonstrators, some examples are:

- 1) Serial Robot with active wrist that aims increasing actively the robot's stiffness to allow serial robot performing machining tasks.

The approach followed by HARCO is the hierarchical combination of lower level units named **"Functional Bricks"** to generate higher level modules called **"Adaptronic Modules"** which in turn are used and integrated into machine parts to generate the master **"Adaptive Smart Components"** or **ASC**.

Then the basic idea is to design and develop a sort of "fractal" and "hierarchical" elements (not only mechanical hardware but also controllers and software) that can be easily put together (plugged-in) to form/produce higher level modules/components (modules that build modules) for active vibration control, thermal compensation and adaptive fixturing in precision machine tools applications.

The ASC is an "intelligent" structure which contains highly integrated control logic and electronics that provide the cognitive element of a distributed or hierarchic control architecture (high level control link to machine CNC), which enables the changing of structural properties and/or characteristics to properly adapt the structure behaviour itself to a specific operative/environmental condition.

- 2) Milling Machine equipped with the Adaptive Table and the Adaptive Spindle which integrates one or more adaptronic AVC (Active Vibration Control) interface modules. The arrangement is completely modular and scalable to the one related to the spindle. In fact in this case the adaptronic interface will be exactly the same; from one side it is linked to the Table plate (instead of spindle) and from the other side it will be fixed to the ground (or to the machine base) instead of the Ram;
- 3) PKM Robots, based on smart adaptive components (active struts and compact adaptronic joints) in order to drive the mobile platforms offering a promising alternative for delivering high damping and high stiffness with low weight. The active fibres can be actuated to damp overshoot and oscillation and reduce settling time of the robot.

Start:	July 2010
Duration:	3 years
Project leader:	G.M. Manela, Ce.S.I.
Contact:	manela@cesl.net

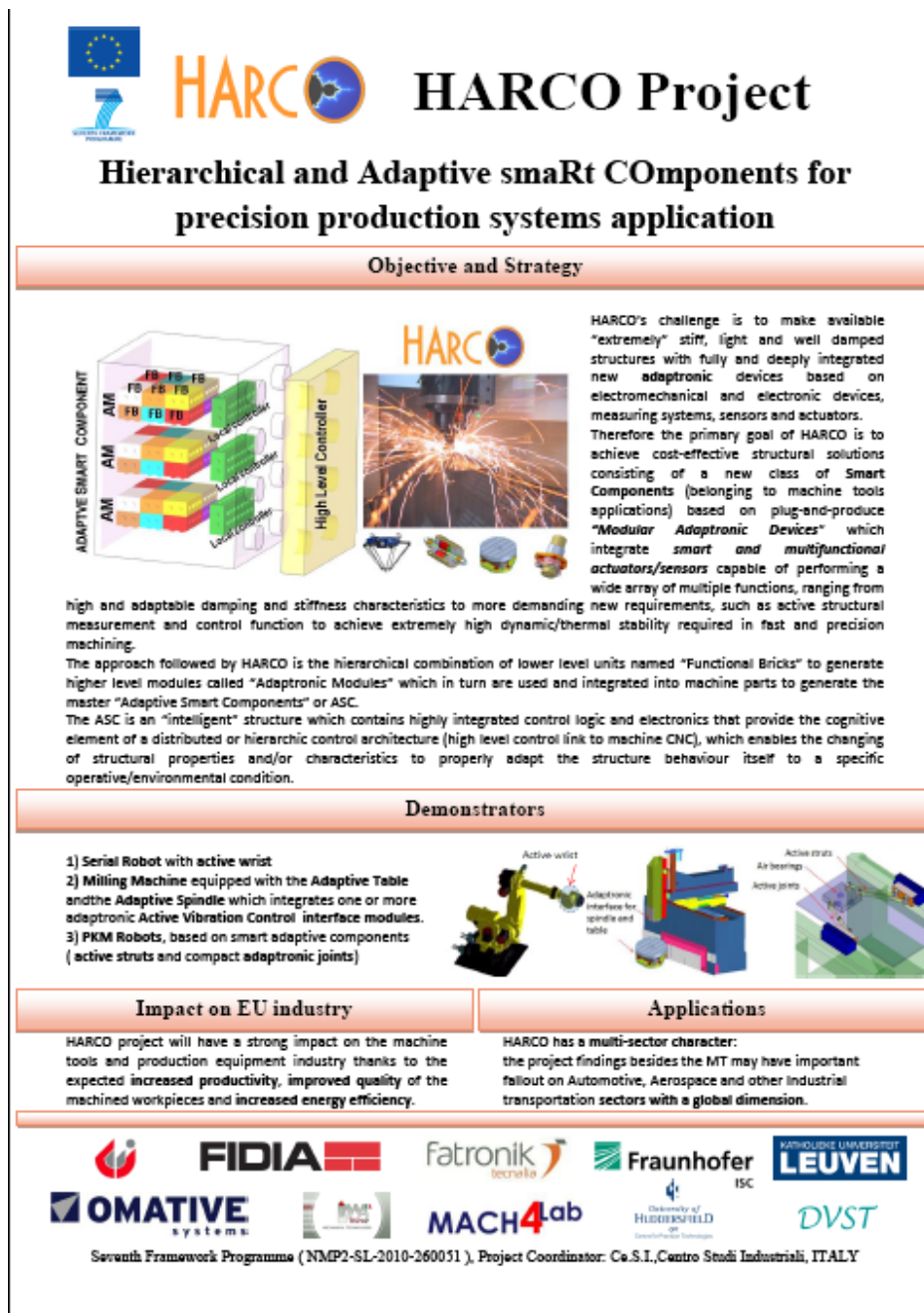
Figure 1.5.1 - HARCO Flyer

1.6. HARCO Poster

A first project poster in A0 format (841 x 1189 mm) has been released at project start.

The poster shows the FP7 Logo and the EC flag, the HARCO Logo and all the partners Logos.

At the bottom, clear reference to FP7 and to Contract Number (NMP2-SL-2010-260051) is duly reported.



EUROPEAN UNION
Seventh Framework Programme

HARCO **HARCO Project**

Hierarchical and Adaptive smaRt COmponents for precision production systems application

Objective and Strategy

HARCO's challenge is to make available "extremely" stiff, light and well damped structures with fully and deeply integrated new adaptronic devices based on electromechanical and electronic devices, measuring systems, sensors and actuators. Therefore the primary goal of HARCO is to achieve cost-effective structural solutions consisting of a new class of Smart Components (belonging to machine tools applications) based on plug-and-produce "Modular Adaptronic Devices" which integrate smart and multifunctional actuators/sensors capable of performing a wide array of multiple functions, ranging from high and adaptable damping and stiffness characteristics to more demanding new requirements, such as active structural measurement and control function to achieve extremely high dynamic/thermal stability required in fast and precision machining.

The approach followed by HARCO is the hierarchical combination of lower level units named "Functional Bricks" to generate higher level modules called "Adaptronic Modules" which in turn are used and integrated into machine parts to generate the master "Adaptive Smart Components" or ASC.

The ASC is an "intelligent" structure which contains highly integrated control logic and electronics that provide the cognitive element of a distributed or hierarchic control architecture (high level control link to machine CNC), which enables the changing of structural properties and/or characteristics to properly adapt the structure behaviour itself to a specific operative/environmental condition.

Demonstrators

- 1) Serial Robot with active wrist
- 2) Milling Machine equipped with the Adaptive Table and the Adaptive Spindle which integrates one or more adaptronic Active Vibration Control interface modules.
- 3) PKM Robots, based on smart adaptive components (active struts and compact adaptronic joints)

Impact on EU industry

HARCO project will have a strong impact on the machine tools and production equipment industry thanks to the expected increased productivity, improved quality of the machined workpieces and increased energy efficiency.

Applications

HARCO has a multi-sector character: the project findings besides the MT may have important fallout on Automotive, Aerospace and other industrial transportation sectors with a global dimension.

Partners: FIDIA, Fatronik, Fraunhofer, LEUVEN, OMATIVE, MACH4lab, University of Huddersfield, DVST

Seventh Framework Programme (NMP2-SL-2010-260051), Project Coordinator: Ce.S.I., Centro Studi Industriali, ITALY

Figure 1.6.1 - HARCO Poster

A second project poster in A0 format (841 x 1189 mm) has been released at project end, focussing on Exploitable Results.

Project

Hierarchical and Adaptive smart COmponents for precision production systems application

Objective and Approach

HARCO's challenge is to make available "extremely" stiff, light, highly damped and thermally stable structures which deeply integrates new **adaptronic** devices based on electromechanical and electronic devices, measuring systems, sensors and actuators. The approach followed by HARCO is the hierarchical combination of lower level units named "Functional Bricks" to generate higher level modules called "Adaptronic Modules" which in turn are used and integrated into machine parts to generate the master "Adaptive Smart Components" or ASC.

Exploitable Results

Adaptronic modules

- Adaptronic Platform for AVC
- Smart Controller for AVC and thermal drift compensation
- Structural Monitoring Module
- Micro-positioning Table
- Self balancing milling spindle
- Smart Joint for PKM

Machine demonstrators

- Milling Machine
- PKM robot for pick & place
- Anthropomorphic robot

Impact on EU Industry

Performance

- Increased productivity (+20%)
- Improved machining quality
- Modularity & interchangeability

Sustainability

- Reduced consumables and related cost (e.g. cutting tools)
- Machine renovation with lower environmental cost



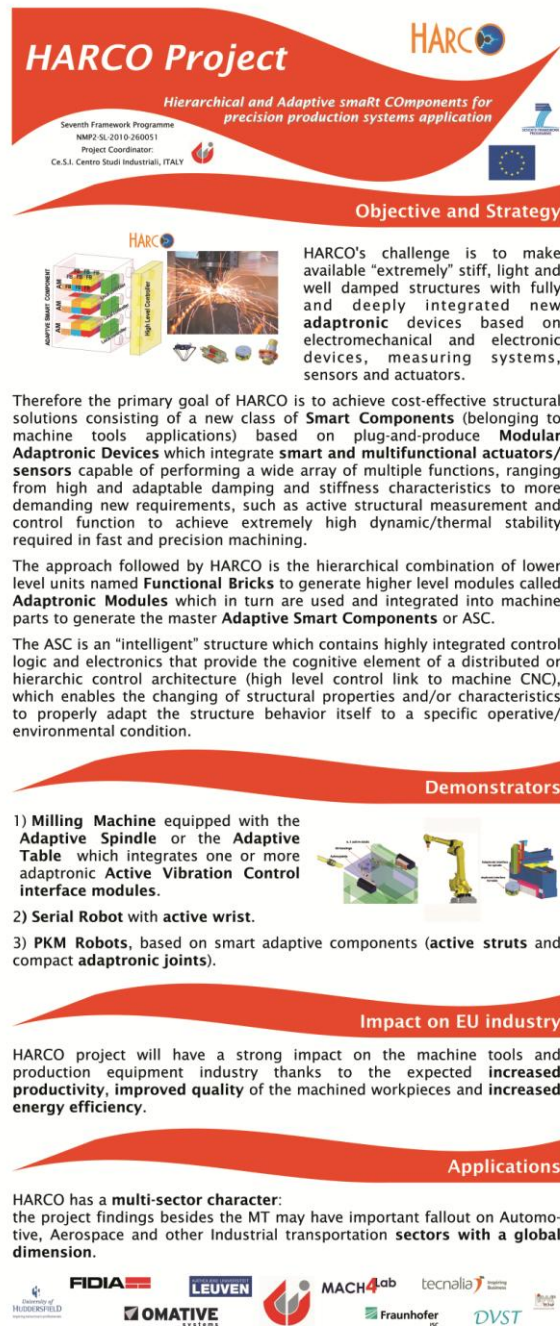
Figure 1.6.2 - HARCO Poster - Results version

1.7. HARCO Rollup

A Project Rollup (85 x 205 cm format) has been released.

The Rollup shows the FP7 Logo and the EC flag, the HARCO Logo and all the partners Logos.

At the top, clear reference to FP7 and to Contract Number (NMP2-SL-2010-260051) is duly reported.



HARCO Project
Hierarchical and Adaptive smaRT Components for precision production systems application

Seventh Framework Programme
 NMP2-SL-2010-260051
 Project Coordinator:
 Ce.S.I. Centro Studi Industriali, ITALY

Objective and Strategy

HARCO's challenge is to make available "extremely" stiff, light and well damped structures with fully and deeply integrated new **adaptronic** devices based on electromechanical and electronic devices, measuring systems, sensors and actuators.

Therefore the primary goal of HARCO is to achieve cost-effective structural solutions consisting of a new class of **Smart Components** (belonging to machine tools applications) based on plug-and-produce **Modular Adaptronic Devices** which integrate **smart and multifunctional actuators/sensors** capable of performing a wide array of multiple functions, ranging from high and adaptable damping and stiffness characteristics to more demanding new requirements, such as active structural measurement and control function to achieve extremely high dynamic/thermal stability required in fast and precision machining.

The approach followed by HARCO is the hierarchical combination of lower level units named **Functional Bricks** to generate higher level modules called **Adaptronic Modules** which in turn are used and integrated into machine parts to generate the master **Adaptive Smart Components** or ASC.

The ASC is an "intelligent" structure which contains highly integrated control logic and electronics that provide the cognitive element of a distributed or hierarchic control architecture (high level control link to machine CNC), which enables the changing of structural properties and/or characteristics to properly adapt the structure behavior itself to a specific operative/ environmental condition.

Demonstrators

- 1) **Milling Machine** equipped with the **Adaptive Spindle** or the **Adaptive Table** which integrates one or more adaptronic **Active Vibration Control interface modules**.
- 2) **Serial Robot** with active wrist.
- 3) **PKM Robots**, based on smart adaptive components (**active struts** and compact **adaptronic joints**).

Impact on EU industry

HARCO project will have a strong impact on the machine tools and production equipment industry thanks to the expected **increased productivity, improved quality** of the machined workpieces and **increased energy efficiency**.

Applications

HARCO has a **multi-sector character**: the project findings besides the MT may have important fallout on Automotive, Aerospace and other Industrial transportation **sectors with a global dimension**.




Figure 1.7.1 - HARCO Rollup

2. HARCO Dissemination Channels

2.1. Journals, Conferences and Workshops

During the first 18 Months, as a consequence of IPR strategy, articles have not been submitted yet for publication.

Nevertheless, for the second half of the project, the following target journals have been considered for publication.

The target readers are both academic and industrial researchers.

Title	Imprint	ISSN
The International Journal of Advanced Manufacturing Technology	Springer	0268-3768 (Print) 1433-3015 (Online)
Precision Engineering	Elsevier	0141-6359
Mechanical Systems and Signal Processing	Elsevier	0888-3270

2.1.1. Publications

The following articles have been submitted so far for publication.

Full details are given in publicly accessible D7.7 "Consolidated Report on Set up of outreach articles and releases".

PUBLICATIONS				
TITLE	AUTHOR	EDITORIAL	JOURNAL	DATE
QUATTRO, robot de manipulación de alta velocidad y precisión	María de la O Rodríguez Mijangos Yon San Martín Ugarte Iñigo Martínez de Marañón	CIC Network	CIC Network nº9 Abril 2011, page 60- 63	Abril 2011
Desarrollo de un brazo activo para cancelar las vibraciones en robots de manipulación de muy alta aceleración	María de la O Rodríguez Mijangos Mildred Puerto Josu Larrañaga	Basque Government BI-941 /2011	BerriMat nº5	Abril 2012
Components of innovation	A.Merlo G.M.Maneia	Research Media	International Innovation	March 2013

<p>Application of GNNMCI(1, N) to environmental thermal error modelling of CNC machine tools</p>	<p>Ali Abdulshahed Andrew P Longstaff Simon Fletcher Alan Myers</p>	<p>The 3rd International Conference on Advanced Manufacturing Engineering and Technologies. KTH Royal Institute of Technology, Stockholm, Sweden</p>	<p>Conference Proceedings</p>	<p>27-30 October 2013</p>
<p>Development of a LabVIEW based modular machine tool structural monitoring system</p>	<p>Potdar, A., Longstaff, A. P., Fletcher, S. and Myers, A.</p>	<p>The 3rd International Conference on Advanced Manufacturing Engineering and Technologies. KTH Royal Institute of</p>	<p>Conference Proceedings</p>	<p>27-30 October 2013</p>

2.2. Events

2.2.1. Micronora 2010

(Besançon 28th September – 1st October 2010)

HARCO Poster has been shown and HARCO Flyer has been distributed to visitors at CeSI's stand during Micronora Trade Fair in Besançon.

www.micronora.com



Figure 2.1 - CeSI stand at Micronora

2.2.2. euspen 2013 conference / exhibition

(Berlin 27th – 31st May 2013)

euspen (the European society for precision engineering and nanotechnology) is a leading technical body in the field of ultra-precision and nano manufacturing technologies. It links leading industrialists and researchers worldwide and has representation across over 32 countries.

The University of Huddersfield took an exhibition stand for the 2013 exhibition in Berlin <http://www.berlin2013.euspen.eu/>. The HARCO project poster was displayed in the centre of the stand, framed by two rollups representing other

work being carried out by the University. The HARCO flyers were also distributed from the exhibition stand.

All exhibitors had the opportunity to give a five-minute presentation to delegates about their organisation. This was used to provide an overview of the EPSRC Centre and promote our studentships and areas of collaboration, including the HARCO project.



Figure 2.2 UoH stand at euspen 2013

2.2.3. Manufuture 2013

(Vilnius 6th-8th October 2013)

Despite the event was after project end, HARCO has been properly represented at Manufuture 2013 in Vilnius by Mr. Angelo Merlo during the Parallel Workshop Session W1.1 Flexible and High Performance Manufacturing: Impact through Clustering Activities.

The HARCO presentation is available online for download at

http://www.manufuture2013.eu/images/MF/presentations_PDF/W11/2-Harco-W11.pdf

A proper stand with HARCO poster, brochures, information material and personnel has been set up for the whole duration of the event.



Figure 2.3 - Ce.S.I. stand at Manufuture 2013

2.2.4. NewTech 2013

(Stockholm 27th-30th October 2013)

HARCO results have been presented by UoH during the International Conference on Advanced Manufacturing Engineering hosted by KTH Royal Institute of Technology in Stockholm, Sweden

Two University of Huddersfield publications have been submitted and included in the program of NEWTECH 2013. The articles contain substantive work from the HARCO project and give due acknowledgement to the EU funding.

Potdar, A., Longstaff, A. P., Fletcher, S. and Myers, A. (2013) "Development of a LabVIEW based modular machine tool structural monitoring system ." International Conference on Advanced Manufacturing Engineering and Technologies (NewTech2013)

Abdulshahed, A. M., Longstaff, A. P., Fletcher, S., Myers, A. (2013) "Application of GNNMC(1, N) to environmental thermal error modelling of CNC machine tools." International Conference on Advanced Manufacturing Engineering and Technologies (NewTech2013)

2.3. Press and Media

HARCO has been included in the first EFFRA Brochure "Developing technologies for 'Factories of the Future'" and in the second EFFRA Brochure "Progress through partnership".

Regular updates have been submitted upon each EFFRA request.

It is important to recognize the key role of the Association as multiplier and facilitator for the promotion of the funded FoF projects.



Figure 2.3.1 - EFFRA Brochure

Other selected publications such as CICNetwork, BerriMat and International Innovation have been chosen in due course of the project to promote HARCO results.

2.4. Cross Project Dissemination

The structural monitoring module has been discussed as part of the University of Huddersfield's UK-government funded EPSRC Centre for Innovative Manufacturing in Advanced Metrology

(<http://www.hud.ac.uk/research/researchcentres/cimam/>).

Due recognition of the European funding and consortium partnership has been made, including reference in the Centre's annual report

(<http://www.hud.ac.uk/media/universityofhuddersfield/content/documents/research/epsrccimam/EPSRC%20Centre%20Report%202011-12%20-%20web%20optimised.pdf>)

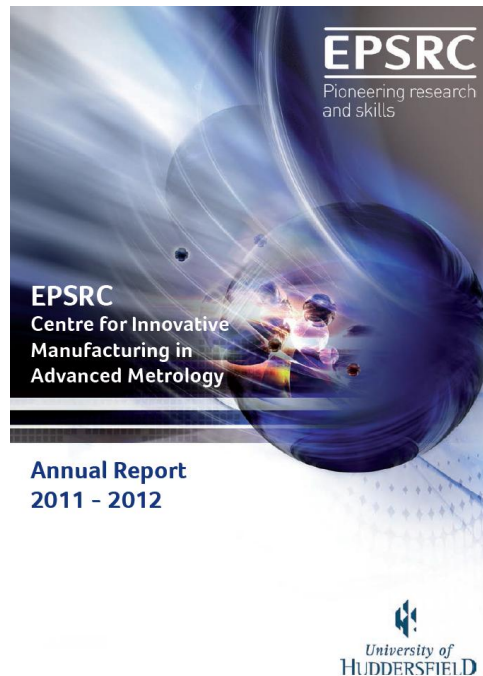


Figure 2.4.1 - Uoh Annual Report

The structural monitoring module has been discussed as part of the University of Huddersfield's industrially-funded project with Rolls-Royce. It is foreseen that they could be a potential end-user of the system on some of their high-value machines.

2.4.1. University of Huddersfield website

News items have been published on the University website as and when appropriate. For example, a brief story on the meeting in Huddersfield:

<http://www.hud.ac.uk/research/researchcentres/cimam/news/europeanresearchprojectmeetingathuddersfield.php>

A video of the meeting held at the University of Huddersfield March 2013, has been compiled showing interviews, meeting presentations and the UoH & DVST demonstrators. The video has been uploaded onto the UoH website ready for viewing on 18-June-2013, then published on You Tube and linked from HARCO website.

2.4.2. K.U.Leuven website

News items have been published on the University website. In the following example the article on International Innovation has been made available for download in pdf version.

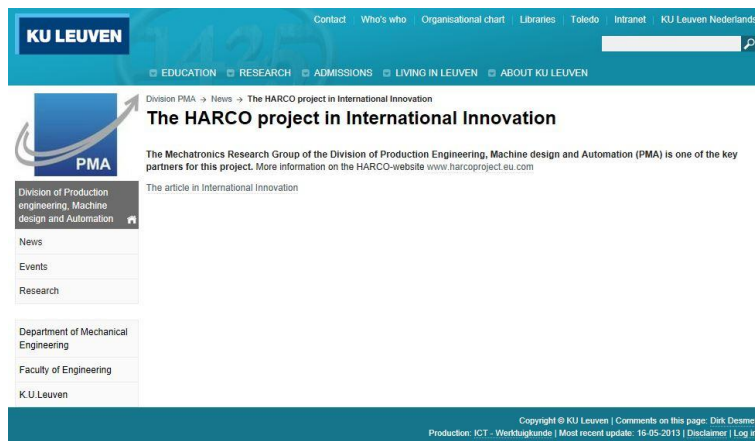


Figure 2.4.2 HARCO on K.U.Leuven News

2.4.3. SMEs and LARGE consortium partners websites

Each partner communicated the participation to the project according to its own policies, some examples from FIDIA, OMATIVE and DVST are shown below



Figure 2.4.3 Samples of HARCO citations on partner websites

2.4.4. Third parties websites

News about HARCO are bouncing and can be found on third parties websites. For instance COMPUTE SCOTLAND is reproposing the UoH newsletter



Figure 2.4.4 News on COMPUTE SCOTLAND

HARCO is also cited as related project by IDEAS project website



Figure 2.4.5 IDEAS Project website

Finally HARCO appears on EFFRA facebook and twitter communication



Figure 2.4.6 EFFRA facebook communication



Table A1: list of scientific (peer reviewed) publications, starting with the most important ones

NO.	Title	Main author	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers ² (if available)	Is/Will open access ³ provided to this publication ?
1	<i>Application of GNNMCI(1, N) to environmental thermal error modelling of CNC machine tools</i>	<i>Ali Abdulshahed, Andrew P Longstaff, Simon Fletcher, Alan Myers</i>	<i>Proceeding of the 3rd International Conference on Advanced Manufacturing Engineering and Technologies. KTH Royal Institute of Technology, Stockholm, Sweden</i>	<i>Volume 1</i>	<i>KTH Royal Institute of Technology</i>	<i>Stockholm</i>	<i>2013</i>	<i>253-262</i>		<i>yes</i>
2	<i>"Development of modular machine tool structural monitoring"</i>	<i>Potdar, A., Longstaff, A. P., Fletcher, S. and Myers, A</i>	<i>Proceeding of the 3rd International Conference on Advanced Manufacturing Engineering and Technologies. KTH Royal Institute of Technology, Stockholm, Sweden</i>	<i>Volume 1</i>	<i>KTH Royal Institute of Technology</i>	<i>Stockholm</i>	<i>2013</i>	<i>263-272</i>		<i>yes</i>

² A permanent identifier should be a persistent link to the published version full text if open access or abstract if article is pay per view) or to the final manuscript accepted for publication (link to article in repository).

³ Open Access is defined as free of charge access for anyone via Internet. Please answer "yes" if the open access to the publication is already established and also if the embargo period for open access is not yet over but you intend to establish open access afterwards.

Table A2: list of dissemination activities

NO.	Type of activities ⁴	Main leader	Title	Date	Place	Type of audience ⁵	Size of audience	Countries addressed
1	<i>Flyers</i>	<i>MACH4</i>	<i>HARCO Flyer release</i>	<i>17/06/2010</i>	<i>Cologno Monzese</i>	<i>Scientific Community, Industry Professional, Medias</i>		<i>Europe</i>
2	<i>Posters</i>	<i>MACH4</i>	<i>HARCO Poster release</i>	<i>29/08/2010</i>	<i>Cologno Monzese</i>	<i>Scientific Community, Industry Professional, Medias</i>		<i>Europe</i>
3	<i>Exhibitions</i>	<i>CESI</i>	<i>Micronora 2010</i>	<i>28/09-1/10 2010</i>	<i>Besancon (FR)</i>	<i>Industry Professional, Research</i>	<i>14206 visitors</i>	<i>Europe</i>
4	<i>Oral presentations to a scientific event</i>	<i>CESI</i>	<i>HARCO presentation at Impact of PPP-FoF workshop</i>	<i>24-11-2010</i>	<i>Bruxelles (BE)</i>	<i>Industry Professional, Research</i>	<i>100 FoF Projects Coordinators</i>	<i>Europe</i>
5	<i>Websites / Applications</i>	<i>CESI</i>	<i>HARCO Website</i>	<i>13 December 2010</i>	<i>Web</i>	<i>Scientific Community, Industry, Civil Society, Policy makers, Medias</i>		<i>World</i>
6	<i>Articles published in the popular press</i>	<i>TECNALIA</i>	<i>QUATTRO, robot de manipulación de alta velocidad y precisión</i>	<i>April 2011</i>	<i>CIC Network n°9 Abril 2011, page 60-63</i>	<i>Scientific Community, Industry Professional,</i>		<i>World</i>
7	<i>Posters</i>	<i>CESI MACH4</i>	<i>HARCO Rollup release</i>	<i>10-12-2011</i>	<i>Cologno Monzese</i>	<i>Scientific Community, Industry Professional,</i>		<i>Europe/English speaking</i>

⁴ A drop down list allows choosing the dissemination activity: publications, conferences, workshops, web, press releases, flyers, articles published in the popular press, videos, media briefings, presentations, exhibitions, thesis, interviews, films, TV clips, posters, Other.

⁵ A drop down list allows choosing the type of public: Scientific Community (higher education, Research), Industry, Civil Society, Policy makers, Medias ('multiple choices' is possible).

8	Flyers	CESI	HARCO on EFFRA brochure update and short project presentation	14 February 2012	Bruxelles	Scientific Community, Industry, Civil Society, Policy makers, Medias		World
9	Oral presentations to a scientific event	CESI	HARCO at Impact of PPP-FoF workshop	15-16 March 2012	Bruxelles (BE)	Industry Professional, Research	FoF Projects Coordinators	Europe
10	Websites / Applications	CESI	FP7 Real time monitoring	6 July 2012	Bruxelles	EC, policy makers		Europe
11	Articles published in the popular press	TECNALIA	"Desarrollo de un brazo activo para cancelar las vibraciones en robots de manipulación de muy alta aceleración"	April 2012	BerriMat	Industry Professional, Research		Spain, Europe
12	Articles published in the popular press	MACH4	"Components of innovation"	March 2013	"International Innovation" Editor: Research Media	Scientific Community, Industry, Civil Society, Policy makers, Medias		Europe
13	Oral presentations to a scientific event	CESI	"HARCO as a success story" at Impact of PPP-FoF workshop	11-12 March 2013	Bruxelles	Industry Professional, Research	FoF Projects Coordinators	Europe
14	Flyers	MACH4	Brochure version of article on "International Innovation"	11-12 March 2013	Bruxelles	Industry Professional, Research	FoF Projects Coordinators	Europe
15	Web sites/Applications	UoH	"European Research Project Meeting at Huddersfield"	29 March 2013	UoH website	Scientific Community, Industry, Civil Society, Policy makers, Medias		UK, Europe
16	Web sites/Applications	KU Leuven	Post of the "International Innovation"	16 May 2013	KU Leuven website	Scientific Community, Industry Professional, Research		Belgium, Europe

			<i>article</i>					
17	<i>Exhibitions</i>	<i>UoH</i>	<i>Stand at Euspen 2013 International Conference for Precision Engineering</i>	<i>27 /31 – May - 2013</i>	<i>Euspen 2013 International Conference for Precision Engineering Berlin</i>	<i>Research Industry Professional</i>	<i>Delegates and audience - c300</i>	<i>Germany, World</i>
18	<i>Oral presentations to a scientific event</i>	<i>TECNALIA</i>	<i>Presentation at EFFRA workshop</i>	<i>7 June 2013</i>	<i>Bruxelles</i>	<i>Scientific Community, Industry, Civil Society, Policy makers, Medias</i>	<i>EFFRA associates, EC representatives</i>	<i>Europe</i>
19	<i>Video (web publication)</i>	<i>UoH, HARCO consortium</i>	<i>"The HARCO Project"</i>	<i>18 June 2013</i>	<i>Published on You Tube</i>	<i>Scientific Community, Industry, Civil Society, Policy makers, Medias</i>		<i>World</i>
20	<i>Newsletter(web publication)</i>	<i>UoH</i>	<i>" €3.9m project hailed success by the EC"</i>	<i>18 June 2013</i>	<i>UoH website</i>	<i>Scientific Community, Industry, Civil Society, Policy makers, Medias</i>		<i>World</i>
21	<i>Oral presentations to a scientific event</i>	<i>KU Leuven</i>	<i>Smart Adaptronic Elements for Active Vibration Control , PhD Thesis</i>	<i>18 June 2013</i>	<i>Leuven</i>	<i>Scientific Community Research Industry</i>		<i>Belgium, Europe</i>
22	<i>Oral presentations to a scientific event</i>	<i>Ce.S.l.</i>	<i>"HARCO project" presentation</i>	<i>8 October 2013</i>	<i>Manufature 2013 Vilnius</i>	<i>Scientific Community, Industry, Civil Society, Policy makers, Medias</i>		<i>Europe</i>
23	<i>Oral presentations to a scientific event</i>	<i>UoH</i>	<i>"Application of GNNMCI(1, N) to environmental thermal error modelling of CNC machine tools"</i>	<i>27-30 October 2013</i>	<i>The 3rd International Conference on Advanced Manufacturing Engineering and Technologies. KTH Royal Institute of Technology,</i>	<i>Scientific Community, Industry Professional, Research</i>		<i>Europe</i>



					Stockholm, Sweden			
24	Oral presentations to a scientific event	UoH	"Development of a LabVIEW based modular machine tool structural monitoring system ."	27-30 October 2013	The 3rd International Conference on Advanced Manufacturing Engineering and Technologies. KTH Royal Institute of Technology, Stockholm, Sweden	Scientific Community, Industry Professional, Research		Europe
25	Article	CESI	HARCO Success story	Early 2014	EC initiative Editor: RETELL	Scientific Community, Industry, Civil Society, Policy makers, Medias		Europe
26	Project Website	CESI MACH4	HARCO Website revamping and maintenance after project end	2013-2014		Scientific Community, Industry, Civil Society, Policy makers, Medias		World