

**JCM**  
**2016**  
SEPTEMBER  
**14<sup>TH</sup> - 16<sup>TH</sup>**  
**2016 CATANIA ITALY**

International  
Joint Conference on  
Mechanics, Design Engineering &  
Advanced Manufacturing

**Conference Program**



Università degli  
Studi di Catania





**JCM**  
**2016**  
SEPTEMBER  
**14<sup>TH</sup> - 16<sup>TH</sup>**  
2016 CATANIA ITALY



On behalf of the Organizing Committee of the  
JCM 2016 International Conference,  
I am pleased to welcome you to Catania.  
Here is the detailed program of the Conference.

I hope you will enjoy both the opportunity  
of an exciting and challenging scientific debate and one  
of the most wonderful locations in the world. In addition,  
I have a particularly interesting social program so  
you can discover some of the most beautiful places in Catania.  
Finally, I would like to thank University of Catania and all  
Sponsors/Partners that have contributed  
to the success of JCM 2016.

*Enjoy your stay*  
**Salvatore Massimo Oliveri**  
*Conference Chair*



**Wednesday 14th September 2016**  
*Monastero dei Benedettini*

	Lecture Hall "Santo Mazzarino"	Room A8	Room A9
9.00 - 11.00	<i>Registration</i>		
11.00 - 12.00	<i>Welcome and conference opening</i> (Lecture Hall "Santo Mazzarino")		
12.00 - 12.30	<i>Invited keynote - Ing. Francesco Caizzone - ST</i> (Lecture Hall "Santo Mazzarino")		
12.30 - 14.15	<i>Lunch</i>		
14.15 - 16.15	<b>Session 1/1</b> Track: IP&PD Paper id: 114, 136, 121, 62, 5	<b>Session 1/2</b> Track: GPC Paper id: 53, 41, 30, 102, 112, 69	<b>Session 1/3</b> Track: E&RT Paper id: 46, 81, 60, 61, 52, 31
16.15 - 16.45	<i>Invited keynote - Prof. Antonio Gloria - CNR</i> (Lecture Hall "Santo Mazzarino")		
16.45 - 17.00	<i>Coffee break</i>		
17.00 - 18.15	<b>Session 1/4</b> Track: PM&AM Paper id: 7, 116, 138, 84	<b>Session 1/5</b> Track: NAAD&M Paper id: 66, 76, 98, 110, 19	<b>Session 1/6</b> Track: CAD&VS Paper id: 86, 21, 26, 75, 115
18.15 - 18.30	EOS		
18.30 - 20.30	<i>Tour of the "Monastero dei Benedettini"</i>		



**Thursday 15th September 2016**  
*Cittadella Universitaria - Ingegneria - Building 14*

	Lecture Hall	Room D01	Room D02	Hall SUD/EST
8.45 - 10.15	<i>Session 2/1</i> Track: PM&AM Paper id: 87, 91, 101, 119, 140	<i>Session 2/2</i> Track: ID Paper id: 16, 18, 94, 146	<i>Session 2/3</i> Track: CAD&VS Paper id: 48, 130, 59, 14, 50, 74	
10.15 - 10.30	ALTAIR			
10.30 - 11.00	Coffee break			Poster Session
11.00 - 11.30	Invited keynote - Prof. Frédéric Noël - Grenoble-INP (Lecture Hall)			
11.30 - 12.45	<i>Session 2/4</i> Track: CAD&VS Paper id: 45, 139, 109	<i>Session 2/5</i> Track: EMM Paper id: 118, 132, 133, 54	<i>Session 2/6</i> Track: ID Paper id: 27, 4, 82, 126, 22	
12.45 - 13.00	MSC Software			
13.00 - 14.30	Lunch			
14.30 - 16.00	<i>Session 2/7</i> Track: IP&PD Paper id: 97, 108, 135, 89	<i>Session 2/8</i> Track: EMM Paper id: 24, 25, 34, 67	<i>Session 2/9</i> Track: CAD&VS Paper id: 40, 99, 33, 51, 64	
16.00 - 16.30	Invited keynote - Prof. Emmanuel Duc - IFMA (Lecture Hall)			
16.30 - 17.00	Coffee break			Poster Session
17.00 - 18.45	ADM Meeting	INGEGRAF Meeting	AIP-PRIMECA Meeting	
21.00	Gala Dinner - Palazzo Biscari			

**Friday 16th September 2016**  
***Cittadella Universitaria - Ingegneria - Building 14***

	Lecture Hall	Room D01	Room D02	Hall SUD/EST
9.00 - 10.45	<b>Session 3/1</b> Track: CAD&VS Paper id: 15, 17, 9, 11	<b>Session 3/2</b> Track: PM&AM Paper id: 8, 44, 70, 2, 123, 129	<b>Session 3/3</b> Track: NAAD&M Paper id: 20, 65, 83, 111, 128, 23	
10.45 - 11.00	Softech - PTC			
11.00 - 11.30	Coffee break			Poster Session
11.30 - 12.00	Invited keynote - Ing. Pierangelo Misani - PIRELLI (Lecture Hall)			
12.00 - 13.00	Conference conclusion (Lecture Hall)			
13.00 - 15.00	Lunch			
18.00 - 19.30	Visit to Catania Center			



## Wednesday, 14<sup>th</sup> September

Registration 09.00 - 11.00

Lecture Hall "Santo Mazzarino"  
*Welcome and conference opening* 11.00 - 12.00

Lecture Hall "Santo Mazzarino" 12.00 - 12.30

Invited keynote

*Ing. Francesco Caizzone*

STMicroelectronics

*"Microelectronics: a key enabling technology"*

Lunch 12.30 - 14.15

Lecture Hall "Santo Mazzarino"

**Session 1/1 - "Integrated Product and Process Design" - (IP&PD)** 14.15 - 16.15

*Chairman: Prof. Paolo Di Stefano*

A systematic methodology for Engineered Object Design:  
The P-To-V Model of Functional Innovation  
*Geoffrey Matthews*

Influence of the evolutionary optimization parameters  
on the optimal topology  
*Tommaso Ingrassia, Antonio Mancuso, Giorgio Paladino*

Some Hints for the Correct Use of the Taguchi Method in Product Design  
*Sergio Rizzuti, Luigi De Napoli*

Subassembly identification method for complex product based on CAD data  
*Belhadj Imen, Trigui Moez, Benamara Abdelmajid*

An integrated approach to customize the packaging of heritage artefacts  
*Gabriele Fatuzzo, Gaetano Sequenzia, Salvatore Massimo Oliveri,  
Raffaele Barbagallo, Michele Cali*



## Wednesday, 14<sup>th</sup> September

14.15 - 16.15

Room A8

**Session 1/2 - “Geometric Product Characteristics” - (GPC)**

**Chairman: Prof. Gianmaria Concheri**

ISO Tolerancing of hyperstatic mechanical systems with deformation control  
**Oussama Rouetbi, Laurent Pierre, Bernard Anselmetti, Henri Denoix**

Comparison of mode decomposition methods tested on simulated surfaces  
**Alex Ballu, Rui Gomes, Pedro Mimoso, Claudia Cristovão, Nuno Correia**

How to trace the significant information in tolerance analysis with polytopes  
**Vincent Delos, Denis Teissandier, Santiago Arroyave-Tobón**

Integrated design method for optimal tolerance stack evaluation for top class automotive chassis  
**Davide Panari, Cristina Renzi, Alberto Vergnano, Enrico Bonazzi, Francesco Leali**

Segmentation of secondary features from high-density acquired surfaces  
**Luca Di Angelo, Paolo Di Stefano, Anna Eva Morabito**

Analysis of deformations induced by manufacturing processes of fine porcelain whiteware  
**Luca Puggelli, Yary Volpe, Stefano Giurgola**

14.15 - 16.15

Room A9

**Session 1/3 - “Education and Representation Techniques” - (E&RT)**

**Chairman: Prof. José Ignacio Rojas-Sola**

Best practices in teaching technical drawing: experiences of collaboration in three Italian Universities  
**Domenico Speranza, Barbara Motyl, Stefano Filippi, Gabriele Baronio, Valerio Villa**

Gamification in a Graphical Engineering course - Learning by playing  
**Valentin Gomez-Jauregui, Cristina Manchado, César Otero**

How to teach interdisciplinary: case study for Product Design in Assistive Technology  
**Guillaume Thomann, Fábio Moraes Borges, Christine Werba**

Geometric locus associated with thriedra axonometric projections. Intrinsic curve associated with the ellipse generated  
**Pedro Gonzaga, Faustino Gimena, Lázaro Gimena, Mikel Goñi**

Developing students' skills through real projects and service learning methodology  
**Natalia Muñoz Lopez, Anna Maria Biedermann, Ana Serrano Tierz**

Development of virtual metrology laboratory based on skin model shape simulation  
**Xingyu Yan, Alex Ballu, Antoine Blanchard, Serge Mouton, Halidou Niandou**



## Wednesday, 14<sup>th</sup> September

Lecture Hall “Santo Mazzarino”

16.15 - 16.45

Invited keynote

**Prof. Antonio Gloria**

National Research Council of Italy (CNR)

**“Additive Manufacturing towards the design of 3D complex structures”**

Coffee Break

16.45 - 17.00

Lecture Hall “Santo Mazzarino”

17.00 - 18.15

**Session 1/4 - “Product Manufacturing and Additive Manufacturing” - (PM&AM)**

**Chairman: Prof. Luc Mathieu**

Extraction of features for combined additive manufacturing and machining  
processes in a remanufacturing context  
**Van Thao Le, Henri Paris, Guillaume Mandil**

Comparative Study for the Metrological Characterization  
of Additive Manufacturing artefacts  
**Charyar Mehdi-Souzani, Antonio Piratelli-Filho, Nabil Anwer**

Flatness, circularity and cylindricity errors in 3D printed models  
associated to size and position on the working plane  
**Massimo Martorelli, Salvatore Gerbino, Antonio Lanzotti,  
Stanislao Patalano, Ferdinando Vitolo**

Optimization of lattice structures for Additive Manufacturing Technologies  
**Gianpaolo Savio, Gianmaria Concheri, Roberto Meneghello**

SPONSOR PRESENTATION

18.15 - 18.30

EOS  
Advanced Engineering for Advanced Additive Manufacturing  
**Fabio Ciciani - Roberto Saponelli**

## Wednesday, 14<sup>th</sup> September

17.00 - 18.30

Room A8

### **Session 1/5**

**"Nautical, Aeronautics and Aerospace Design and Modelling" - (NAAD&M)**

**Chairman: Prof. Luca Piancastelli**

Numerical modelling of the cold expansion process in mechanical stacked assemblies

**Victor Achard, Alain Daidié, Manuel Paredes, Clément Chirol**

A preliminary method for the numerical prediction of the behavior of air bubbles in the design of Air Cavity Ships

**Filippo Cucinotta, Vincenzo Nigrelli, Felice Sfravara**

Stiffness and slip laws for threaded fasteners subjected to a transversal load

**Rémi Thanwerdas, Emmanuel Rodriguez, Alain Daidié**

Refitting of an eco-friendly sailing yacht: numerical prediction and experimental validation

**Antonio Mancuso, Giuseppe Pitarresi, Giovan Battista Trinca, Davide Tumino**

Geometric Parameterization Strategies for shape Optimization Using RBF Mesh Morphing

**Ubaldo Cella, Corrado Groth, Marco Evangelos Biancolini**

17.00 - 18.30

Room A9

### **Session 1/6 - "Computer Aided Design and Virtual Simulation" - (CAD&VS)**

**Chairman: Prof. Vincent Cheutet**

Design and analysis of a spiral bevel gear

**Charly Lagresle, Jean-Pierre De Vaujany, Michèle Guingand**

Three-dimensional face analysis via new geometrical descriptors

**Federica Marcolin, Maria Grazia Violante, Sandro Moos, Enrico Vezzetti, Stefano Tornincasa, Nicole Dagnes, Domenico Speranza**

Agustin de Betancourt's plunger lock: Approach to its geometric modeling with Autodesk Inventor Professional

**José Ignacio Rojas-Sola, Eduardo de La Morena-De La Fuente**

Designing a Stirling engine prototype

**Fernando Fadón, Enrique Ceron, Delfin Silio, Laida Fadon**

Design and analysis of tissue engineering scaffolds based on open porous non stochastic cells

**Rita Ambu, Anna Eva Morabito**

18.30 - 20.30

**Tour of the "Monastero dei Benedettini"**



**“Product Manufacturing and Additive Manufacturing” - (PM&AM)**

**Chairman: Prof. Massimo Martorelli**

Standardisation Focus on Process Planning and Operations  
Management for Additive Manufacturing  
**Jinhua Xiao, Nabil Anwer, Alexandre Durupt,  
Julien Le Duigou, Benoît Eynard**

Comparison of some approaches to define a CAD model from topological  
optimization in design for additive manufacturing  
**Pierre-Thomas Doutre, Elodie Morretton,  
Thanh Hoang Vo, Philippe Marin,  
Franck Pourroy, Guy Prudhomme, Frédéric Vignat**

Review of Shape Deviation Modeling for Additive Manufacturing  
**Zuowei Zhu, Safa Keimasi, Nabil Anwer, Luc Mathieu, Lihong Qiao**

Design for Additive Manufacturing of a non-assembly robotic mechanism  
**Francesca De Crescenzo, Francesca Lucchi**

Process parameters influence in additive manufacturing  
**Tommaso Ingrassia, Vincenzo Nigrelli, Vito Ricotta, Claudio Tartamella**

**Sponsor Presentation**

**ALTAIR**  
Thinking outside of the box getting the most from  
Additive Manufacturing: Topology Optimization  
**Carlo Secli**

**Session 2/2 - “Innovative Design” - (ID)**

**Chairman: Prof. Sandro Barone**

A design methodology to predict the product energy  
efficiency through a configuration tool  
**Paolo Cicconi, Michele Germani, Daniele Landi, Anna Costanza Russo**

Design knowledge formalization to shorten the time to  
generate offers for Engineer To Order products  
**Andrea Savoretti, Roberto Raffaeli, Michele Germani**

Customer/supplier Relationship: reducing uncertainties in commercial offers  
thanks to readiness, risk and confidence considerations  
**Abdourahim Sylla, Elise Vareilles, Michel Aldanondo,  
Thierry Coudert, Laurent Geneste, Konstantinos Kirytopoulos**

The Role of Knowledge Based Engineering in Product Configuration  
**Giorgio Colombo, Francesco Furini, Marco Rossoni**

**08.45 - 10.30**

Room D02

**Session 2/3 - "Computer Aided Design and Virtual Simulation" - (CAD&VS)**

**Chairman: Prof. Luca Di Angelo**

Virtual reality to assess visual impact in wind energy projects  
**Piedad Eliana Lizcano, Cristina Manchado,  
Valentin Gomez-Jauregui, César Otero**

Visual Aided Assembly of Scale Models  
**Alessandro Ceruti, Leonardo Frizziero, Alfredo Liverani**

A survey of methods to detect and represent the human symmetry line from 3D scanned human back  
**Nicola Cappetti, Alessandro Naddeo**

Semiautomatic Surface Reconstruction in Forging Dies  
**Rikardo Minguez Gabiña, Olatz Etxaniz, Agustín Arias,  
Nestor Goikoetxea, Inaki Zuazo**

A RGB-D based instant body-scanning solution for compact box installation  
**Rocco Furferi, Lapo Governi, Francesca Ucheddu, Yary Volpe**

Recent strategies for 3D reconstruction using Reverse Engineering: a bird's eye view  
**Francesco Buonamici, Monica Carfagni, Yary Volpe**

**10.30 - 11.00**

Hall SUD/EST

**Poster Session**

**10.30 - 11.00**

**Coffee Break (at Hall SUD/EST)**

**11.00 - 11.30**

Lecture Hall

Invited keynote

**Prof. Frédéric Noël**

Grenoble Institute of Technology, France

**"Added value of Virtual Reality and Augmented Reality within product development process"**



**Session 2/4 - "Computer Aided Design and Virtual Simulation" - (CAD&VS)**

**Chairman: Prof. César Otero**

Engineering methods and tools enabling reconfigurable  
and adaptive robotic deburring

**Giovanni Berselli, Michele Gadaleta, Andrea Genovesi,  
Marcello Pellicciari, Margherita Peruzzini, Roberto Razzoli**

Solder Joint Reliability: Thermo-mechanical analysis  
on Power Flat Packages

**Alessandro Sitta, Michele Calabretta, Marco Renna, Daniela Cavallaro**

An effective model for the sliding contact forces in a multibody environment

**Michele Cali, Salvatore Massimo Oliveri,  
Gaetano Sequenzia, Gabriele Fatuzzo**

**Sponsor Presentation**

**MSC SOFTWARE**

MSC Software Solutions: Simulating the Complete  
Product Engineering Process

**Daniele Catelani**

**Session 2/5 - "Engineering Methods in Medicine" - (EMM)**

**Chairman: Prof. Monica Carfagni**

Design and Rapid Manufacturing of a customized foot  
orthosis: a first methodological study

**Massimiliano Fantini, Francesca De Crescenzo,  
Lorenzo Brognara, Nicola Baldini**

Influence of the metaphysis positioning in a new reverse shoulder prosthesis

**Tommaso Ingrassia, Lorenzo Nalbone, Vincenzo Nigrelli,  
Domenico Pisciotta, Vito Ricotta**

Digital human models for gait analysis: experimental validation of static  
force analysis tools under dynamic conditions

**Teodorico Caporaso, Giuseppe Di Gironimo, Andrea Tarallo,  
Giuseppina De Martino, Marco Di Ludovico, Antonio Lanzotti**

TPMS for interactive modelling of trabecular scaffolds  
for Bone Tissue Engineering

**Massimiliano Fantini, Marco Curto, Francesca De Crescenzo**



## Thursday, 15<sup>th</sup> September

11.30 - 13.00

Room D02

**Session 2/6 - "Innovative Design" - (ID)**

**Chairman: Prof. Francesco Leali**

Safety of Manufacturing Equipment: Methodology Based on a Work Situation Model and Need Functional Analysis

**Remiel Feno, Patrick Martin, Bruno Daille Lefevre, Alain Etienne, Jacques Marsot, Ali Siadat**

Identifying Sequence Maps or Locus to Represent the Genetic Structure or Genome Standard of Styling DNA in Automotive Designs

**Shahriman Zainal Abidin, Azlan Othman, Zafruddin Shamsuddin, Zaidi Samsudin, Halim Hassan, Wan Asri Wan Mohamed**

Generating a user manual in the early design phase to guide the design activities

**Xiaoguang Sun, Rémy Houssin, Mickael Gardoni, Jean Renaud**

Robust Ergonomic Optimization of Car Packaging in Virtual Environment

**Antonio Lanzotti, Amalia Vanacore, Chiara Percuoco**

Design of an electric tool for underwater archaeological restoration based on a user centred approach

**Loris Barbieri, Fabio Bruno, Luigi De Napoli, Alessandro Gallo, Maurizio Muzzupappa**

13.00 - 14.30

Lunch

14.30 - 16.00

Lecture Hall

**Session 2/7 - "Integrated Product and Process Design - (IP&PD)**

**Chairman: Prof. Antonio Lanzotti**

Modeling of a three-axes MEMS gyroscope with feedforward PI quadrature compensation

**Alessandro Cammarata, Rosario Sinatra, Gabriele Fichera, Davide Marano, Daniele Prati**

A disassembly Sequence Planning Approach for maintenance

**Maroua Kheder, Moez Trigui, Nizar Aifaoui**

User-centered design of a Virtual Museum system: a case study

**Loris Barbieri, Fabio Bruno, Fabrizio Mollo, Maurizio Muzzupappa**

Multi-objective conceptual design: an approach to make cost-efficient the design for manufacturing and assembly in the development of complex products

**Claudio Favi, Michele Germani, Marco Mandolini**



**Session 2/8 - "Engineering Methods in Medicine"- (EMM)**

**Chairman: Prof. Rikardo Minguez Gabiña**

A new method to capture the jaw movement  
**Lander Barrenetxea, Eneko Solaberrieta, Mikel Iturrate,  
Jokin Gorozika, Egoitz Sierra**

Computer aided engineering of auxiliary elements for enhanced  
orthodontic appliances

**Roberto Savignano, Sandro Barone, Alessandro Paoli,  
Armando Viviano Razionale**

Finite Element analysis of TMJ disks stress level due to orthodontic  
Eruption Guidance Appliances

**Paolo Neri, Sandro Barone, Alessandro Paoli,  
Armando Viviano Razionale**

Characterization of mechanical and geometrical properties  
of thermoplastic materials for orthodontic applications

**Sandro Barone, Alessandro Paoli, Armando Viviano Razionale,  
Paolo Neri, Michele Giannese**

**Session 2/9 - "Computer Aided Design and Virtual Simulation" - (CAD&VS)**

**Chairman: Prof. Francesca De Crescenzo**

Data aggregation architecture "Smart-Hub" for heterogeneous  
systems in industrial environment

**Ahmed Ahmed, Lionel Roucoules, Rémy Gaudy, Bertrand Larat**

Applying PLM approach for supporting collaborations in medical sector:  
case of prosthesis implantation

**Thanh-Nghi Ngo, Farouk Belkadi, Alain Bernard**

3D Coastal Monitoring from very dense  
UAV-based Photogrammetric Point Clouds

**Fernando J. Aguillar, Ismael Fernández, Juan A. Casanova,  
Francisco J. Ramos, Manuel Angel Aguilar,  
José L. Blanco, José C. Moreno**

BiMov: BIM-Based Indoor Path Planning

**Ahmed Hamieh, Dominique Deneux, Christian Tahon**

Error control in UAV image acquisitions for 3D reconstruction  
of extensive architectures

**Michele Calì, Salvatore Massimo Oliveri,  
Gabriele Fatuzzo, Gaetano Sequenzia**

## Thursday, 15<sup>th</sup> September

16.00 - 16.30

Lecture Hall

Invited Keynote

*Prof. Emmanuel Duc*

IFMA, France

*“Some keys for the future of manufacturing”*

16.30 - 17.00

Hall SUD/EST

**Poster Session**

16.30 - 17.00

Coffee break (at Hall SUD/EST)

17.00 - 18.45

Lecture Hall

**ADM Meeting**

17.00 - 18.45

Room D01

**INGEGRAF Meeting**

17.00 - 18.45

Room D02

**AIP-PRIMECA Meeting**

21.00

**Gala Dinner (at Palazzo Biscari)**



## Friday, 16<sup>th</sup> September

Lecture Hall

09.00 - 10.45

### **Session 3/1 - "Computer Aided Design and Virtual Simulation" - (CAD&VS)**

**Chairman: Prof. Alfredo Liverani**

An integrated approach to design an innovative motorcycle rear suspension with eccentric mechanism  
**Raffaele Barbagallo, Gaetano Sequenzia, Alessandro Cammarata, Salvatore Massimo Oliveri**

Design of Active Noise Control Systems for Pulse Noise  
**Alessandro Lapini, Massimiliano Biagini, Francesco Borchì, Monica Carfagni, Fabrizio Argenti**

Disassembly Process Simulation in Virtual Reality Environment  
**Peter Mitrouchev, Cheng-Gang Wang, Jing-Tao Chen**

Development of a methodology for performance analysis and synthesis of control strategies of multi-robot pick & place applications  
**Gaël Humbert, Minh Tu Pham, Xavier Brun, Mady Guillemot, Didier Noterman**

Sponsor Presentation

10.45 - 11.00

**SOFTECH - PTC**

Digital Twin: PTC Global Product Development Solution in the IoT Era  
**Angelo Corti**

Room D01

09.00 - 11.00

### **Session 3/2 - "Product Manufacturing and Additive Manufacturing" - (PM&AM)**

**Chairman: Prof. Benoît Eynard**

Simulation of laser-sensor digitizing for on-machine part inspection  
**Nguyen Duy Minh Phan, Yann Quinsat, Claire Lartigue**

Tool/Material Interferences Sensibility to Process and Tool Parameters in Vibration-Assisted Drilling  
**Vivien Bonnot, Yann Landon, Stéphane Segonds**

The implementation of a new method for robotic repair operations on composite structures  
**Elodie Paquet, Sébastien Garnier, Mathieu Ritou, Benoît Furet, Vincent Desfontaines**

Mechanical steering gear internal friction: effects on the drive feel and development of an analytic-experimental model for friction prediction  
**Giovanni Gritti, Franco Peverada, Stefano Orlandi, Marco Gadola, Stefano Uberti, Daniel Chindamo, Matteo Romano, Andrea Olivi**

Accurate 3D reconstruction of a rubber membrane inflated during a Bulge Test to evaluate anisotropy  
**Michele Cali, Fabio Lo Savio**

B-Scan image analysis for position and shape defect definition in plates  
**Donatella Cerniglia, Tommaso Ingrassia, Vincenzo Nigrelli, Michele Scafidi**



## Friday, 16<sup>th</sup> September

09.00 - 11.00

Room D02

### **Session 3/3**

**"Nautical, Aeronautics and Aerospace Design and Modelling" - (NAAD&M)**

**Chairman: Prof. Manuel Paredes**

Sail Plan Parametric CAD Model for an A-Class Catamaran  
Numerical Optimization Procedure Using Open Source Tools  
**Ubaldo Cella, Filippo Cucinotta, Felice Sfravara**

A reverse engineering approach to measure the deformations  
of a sailing yacht

**Francesco Di Paola, Tommaso Ingrassia, Mauro Lo Brutto, Antonio Mancuso**

A novel design of cubic stiffness for a Nonlinear Energy Sink (NES)  
based on conical spring

**Donghai Qiu, Sébastien Seguy, Manuel Paredes**

Design of the stabilization control system of a high-speed craft

**Antonio Giallanza, Luigi Cannizzaro, Mario Porretto, Giuseppe Marannano**

Dynamic spinnaker performance through digital photogrammetry, numerical  
analysis and experimental tests

**Michele Calì, Domenico Speranza, Massimo Martorelli**

GA multi-objective and experimental optimization for a tail-sitter small UAV

**Luca Piancastelli, Leonardo Frizziero, Marco Cremonini**

11.00 - 11.30

Hall SUD/EST

### **Poster Session**

11.00 - 11.30

Coffee break (at Hall SUD/EST)

11.30 - 12.00

Lecture Hall

Invited keynote

**Ing. Pierangelo Misani**

Pirelli Tyre S.p.A

**"Innovative automated manufacturing processes for flexibility and  
productivity: a key for competitive tyre production in Western Europe"**

12.00 - 13.00

Lecture Hall

**Conference conclusion**

13.00 - 15.00

Lunch

18.00 - 19.30

Visit to Catania Center



# Poster Session

**Hall SUD/EST**

**Thursday, 15<sup>th</sup> September 10.30 - 11.00 / 16.30 - 17.00**

**Friday, 16<sup>th</sup> September 11.00 - 11.30**

**Chairman: Prof. Sergio Rizzuti**

Design of structural parts for a racing solar car  
**Esteban Betancur, Ricardo Mejía-Gutiérrez,  
Gilberto Osorio-Gómez, Alejandro Arbelaez**

Neuro-separated meta-model of the scavenging process  
in 2-Stroke Diesel engine  
**Stéphanie Cagin, Xavier Fischer**

A comparative Life Cycle Assessment of utility poles manufactured  
with different materials and dimensions  
**Filippo Cucinotta, Felice Sfravara, Sandro Barone**

Prevision of Complex System's Compliance during System Lifecycle  
**Jean-Philippe Gitto, Magali Bosch-Mauchand, Amelie Ponchet Durupt,  
Zohra Cherfi, Isabelle Guivarch**

Mobile manufacturing system design framework proposal  
**Youssef Benama, Thécle Alix, Nicolas Perry**

An automated manufacturing analysis of plastic parts using faceted surfaces  
**Jorge Manuel Mercado-Colmenero, Jose Angel Moya-Muriana,  
Miguel Angel Rubio-Paramio, Cristina Martín Doñate**

Applying sustainability in product development  
**Rosana Sanz Segura, Jose Luis Santolaya, Enrique Lacasa**

Towards a new collaborative framework supporting the design process  
of industrial Product Service Systems  
**Elaheh Maleki, Farouk Belkadi, Yicha Zhang, Alain Bernard**

Information model for tracelinks building in early design stages  
**David Rios-Zapata, Jérôme Pailhès, Ricardo Mejía-Gutiérrez**

Multi-scale surface characterization in additive manufacturing using CT  
**Yann Quinsat, Claire Lartigue, Christopher A. Brown, Lamine Hattali**

Testing three techniques to elicit additive manufacturing knowledge  
**Christelle Grandvallet, Franck Pourroy, Guy Prudhomme, Frédéric Vignat**

Topological Optimization in Concept Design: starting approach and a validation case study  
**Michele Bici, Francesca Campana, Giovanni B. Broggiato**

CAD-CAM integration for 3D Hybrid Manufacturing  
**Daniela Francia, Gianni Caligiana, Alfredo Liverani**

Analysis and comparison of Smart City models  
**Aranzazu Fernández-Vázquez, Ignacio López Fornies**



# Poster Session

## Hall SUD/EST

**Thursday, 15<sup>th</sup> September 10.30 - 11.00 / 16.30 - 17.00**

**Friday, 16<sup>th</sup> September 11.00 - 11.30**

**Chairman: Prof. Sergio Rizzuti**

Involving Autism Spectrum Disorder (ASD) affected people in design  
**Stefano Filippi, Daniela Barattin**

Patient-specific 3D modelling of heart and cardiac structures workflow:  
an overview of methodologies  
**Monica Carfagni, Francesca Uccheddu**

Design process of a knee prosthesis through the Finite Element Analysis  
**Saul Iñiguez Macedo, Fátima Somovilla-Gómez, Ruben Lostado Lorza,  
Marina Corral Bobadilla, Maria Angeles Martínez Calvo, Félix Sanz-Adan**

Using the Finite Element Method to analyze the Influence of Age, Height and Weight  
on the Vertebrae and Ligaments of the Human Spine  
**Fátima Somovilla-Gómez, Ruben Lostado Lorza, Saul Iñiguez Macedo,  
Marina Corral Bobadilla, Maria Angeles Martinez Calvo, Daniel Tobalina Baldeon**

Tolerances and uncertainties effects on interference fit of automotive steel wheels  
**Stefano Tornincasa, Elvio Bonisoli, Marco Brino**

Systems engineering and hydroacoustic modelling applied in  
simulation of hydraulic components  
**Arnaud Maillard, Eric Noppe, Benoît Eynard, Xavier Carniel**

Linde's Ice-Making Machine. An Example of Industrial Archeology Study  
**Belen Perez Delgado, José Ramón Andrés Díaz, Maria L. García Ceballos,  
Miguel A. Contreras Lopez**

Geometric Shape Optimization of Organic Solar Cells for Efficiency Enhancement  
by Neural Networks  
**Grazia Lo Sciuto, Giacomo Capizzi, Salvatore Coco, Raphael Shikler**

Machine Learning Techniques to address classification issues in Reverse Engineering  
**Jonathan Dekhtiar, Alexandre Durupt, Dimitris Kiritsis, Matthieu Bricogne,  
Harvey Rowson, Benoît Eynard**

Preparation of CAD model for collaborative design meetings: proposition of a CAD add-on  
**Ahmad Al Khatib, Damien Fleche, Morad Mahdjoub,  
Jean-Bernard Bluntzer, Jean-Claude Sagot**

Reliable low-cost alternative for modeling and rendering 3D Objects in  
Engineering Graphics Education  
**Jacinto Santamaria-Peña, Marco Antonio Benito Martín, Félix Sanz-Adan,  
David Arancon, Maria Angeles Martínez Calvo**

Learning engineering drawing and design through the study of machinery and tools  
from Malaga's industrial heritage  
**M. Carmen Ladrón de Guevara Muñoz, Francisco Montes Tubio,  
Elidia Beatriz Blázquez Parra, Francisca Castillo Rueda**



## Poster Session

Integration of marketing activities in the mechanical design process  
**Cristina Martín Doñate, Fermin Lucena-Muñoz, Francisco Javier Gallego-Alvarez**

Pohlke Theorem: Demonstration and Graphical Solution.  
**Faustino Gimena, Lázaro Gimena, Mikel Goñi, Pedro Gonzaga**

Product model for Dimensioning, Tolerancing and Inspection  
**Luca Di Angelo, Paolo Di Stefano, Anna Eva Morabito**

Characterization of a Composite Material Reinforced with Vulcanized Rubber  
**Daniel Tobalina, Félix Sanz-Adan, Rubén Lostado-Lorza, Marian Martinez-Calvo, Jacinto Santamaria, Iñigo Sanz-Pena, Fátima Somovilla-Gómez**

Definition of geometry and graphics applications in product packaging  
**Anna Biedermann, Aranzazu Fernández-Vázquez, María Elípe**

Collaborative Design and Supervision Processes Meta-Model  
for Rationale Capitalization  
**Widad Es-Soufi, Esma Yahia, Lionel Roucoules**

Design Archetype of Gears for Knowledge Based Engineering  
**Mariele Peroni, Alberto Vergnano, Francesco Leali, Andrea Brentegani**

Human-centred design of ergonomic workstations on interactive digital mock-ups  
**Margherita Peruzzini, Stefano Carassai, Marcello Pellicciari, Angelo Oreste Andrisano**

Ergonomic-driven redesign of existing work cells:  
the “Oerlikon Friction System” case  
**Alessandro Naddeo, Mariarosaria Vallone, Nicola Cappetti, Rosaria Califano, Fiorentino Di Napoli**





# Social Conference Activities

14<sup>th</sup> September | 18.30- 20.30

## Tour of the “Monastero dei Benedettini”

Meeting Point: Main Entrance of the Monastery, Piazza Dante n° 3

The “Traditional” visit to the Benedictine Monastery will discover the most important spaces of the Monastery: the two cloisters, the cellars of the XVI century today transformed into the faculty library, the roman domus (house), the ‘Night Choir’ with its ‘balcony’ on the main altar of San Nicolò l’Arena Church, the Novices Garden and the kitchen and cellars of the XVIII century realised by the architect Vaccarini.

The Monastery of San Nicolò l’Arena is a late baroque monument and one of the biggest Benedictine monastery in Europe. The construction of the building started in 1500 and has continued until today. It is an example of architectonical integration of different styles through different epoch and the monastery is a UNESCO World Heritage Site.

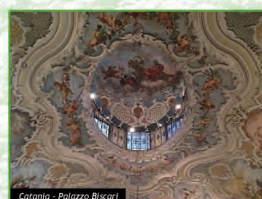
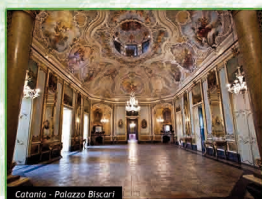


15<sup>th</sup> September | 21.00

## Gala Dinner at “Palazzo Biscari”

Meeting Point: Main Entrance of the Palace, Via Museo Biscari n° 10

“Palazzo Biscari” is a private palace in Catania and it was built by will of the Paternò Castello family, the princes of Biscari. It is one of the most magnificent private building in Catania, is unique in terms of structure, outlay and decoration. From the sea, the palace afforded a view of decorated balconies and flowered pilasters. Decorative vestments, putti and telamons emerge from the black lavic base.





# Social Conference Activities

16<sup>th</sup> September | 18.00 - 19.30

## *A Walk in Catania center*

**Meeting Point: Cappella Bonajuto, Via Bonajuto n°9/13**

The visit to Catania center will explore the well known Baroque architecture and urban design. The downtown area is a World Heritage Site, Baroque from Catania has several unique features such as use of dark lava stone (basalt), the Bell in the facade itself and grotesque masks and putti.

“Piazza del Duomo” is Catania's principal square, it is a set piece of contrasting lava and limestone, surrounded by buildings in the unique local baroque style and crowned by the grand “Cattedrale di Sant'Agata”.

At its centre stands “Fontana dell'Elefante” (1736), a naive, smiling black-lava elephant dating from Roman times and surmounted by an improbable Egyptian obelisk. Legend said that the elephant belonged to the 8th-century magician Eliodorus, who reputedly made his living by turning people into animals.

Much younger is the 19th-century Amenano fountain. Created by Neapolitan sculptor Tito Angelini, the splash-happy piece commemorates the Amenano River, which once ran above ground and on whose banks the Greeks first founded the city of Katâne.

The “Fontana dell'Amenano” is located in the piazza's southwest corner and it marks the entrance to Catania's fish market.



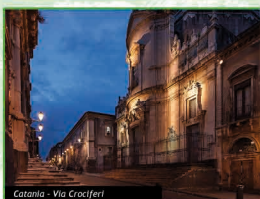
Catania - Porto



Catania - Piazza Duomo



Catania - Fontana dell'Amenano



Catania - Via Crocifissi



Catania - Piazza Stesicoro



Catania - Teatro Massimo V. Bellini

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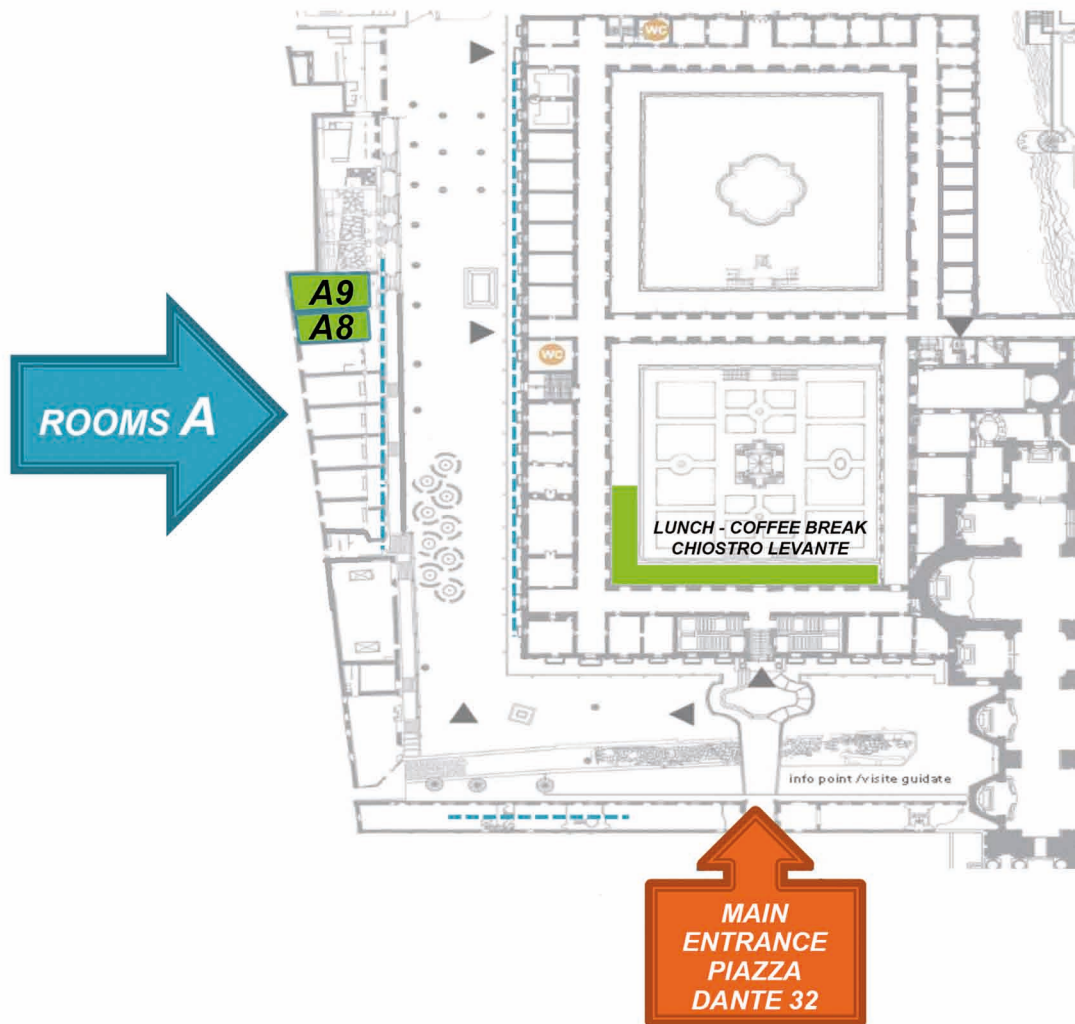
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# Monastero dei Benedettini







## Cittadella Universitaria





**JCM**  
**2016**  
SEPTEMBER  
**14<sup>TH</sup> - 16<sup>TH</sup>**  
2016 CATANIA ITALY

CONFERENCE SECRETARIAT

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