

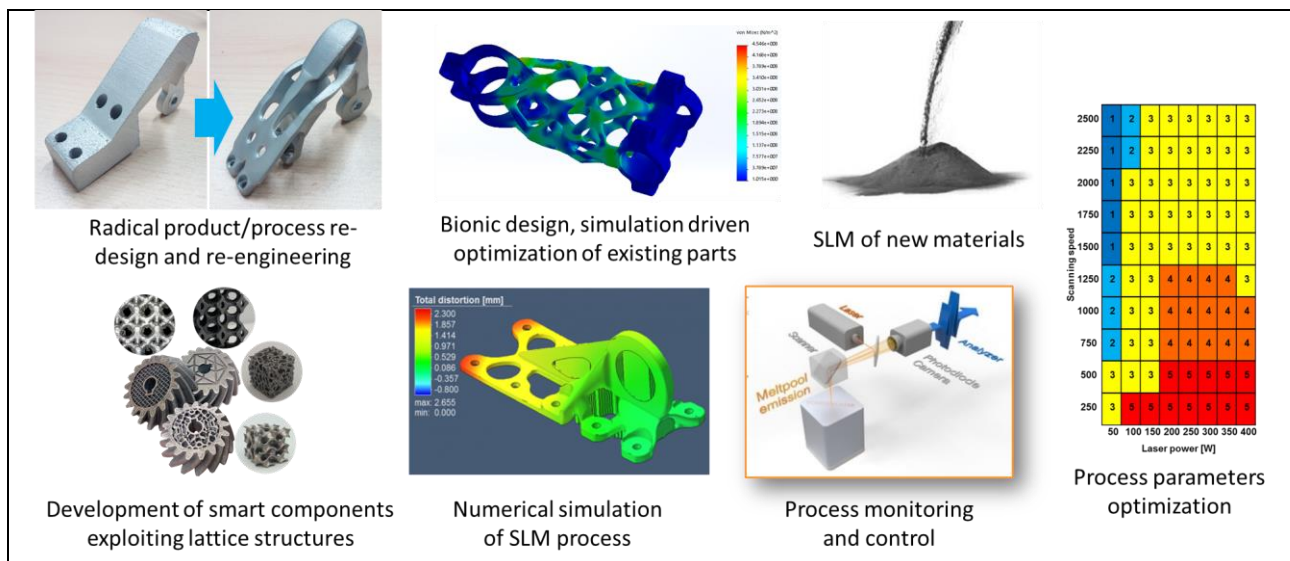


LAMA FVG

LAMA FVG: New research frontiers in Additive Manufacturing of metals

Prof. Marco Sortino, Polytechnic Department of Engineering and Architecture, University of Udine, Italy

Dr. Ing. Emanuele Vaglio, Polytechnic Department of Engineering and Architecture, University of Udine, Italy



The Laboratory for Advanced Mechatronics LAMA FVG is an international center of excellence for industrial innovation. It was born in July 2016 from the collaboration between the Universities of Udine, Trieste and the International School for Advanced Studies (Sissa), and has become the archetype of a series of laboratories that today form the Village Labs of the University of Udine. LAMA FVG is committed to frontier research, technological development, high-level technical training and technology transfer through its three operational divisions: design (virtual engineering), prototype/production (3D printing, robotics, conventional processes) and logistic/organizational (digital factory). Today LAMA FVG established itself as the regional center for metal 3D printing and is home to important collaboration with industrial and academic players on key challenges in aerospace, automotive, biomedical and others sectors, as well as to frontier research on product innovation, process optimization, development of innovative 3D printed materials, application of engineered structures in vibrations mechanics and thermofluid-dynamics, process simulation and automation. In this lecture the activities carried out at the LAMA FVG will be presented, putting special emphasis on the latest achievements in the field of industry 4.0 and of product/material optimization in Additive Manufacturing of metals.

EU FORMAT FOR CURRICULUM VITAE



PERSONAL INFORMATION

Name	Marco SORTINO
Address	Via Molin Nuovo 87, 33100 Udine(UD)
Phone	+39 335 5303028; +39 320 4366011
Fax	+39 0432 558251
E-mail	sortino@uniud.it
Nationality	Italiana
Birth location and date	Udine, 08/03/1974
Fiscal ID	SRTMRC74C08L483P

WORK EXPERIENCES

- Dates (from – to) 2018-
- Name and address of employer Università degli Studi di Udine
- Type of activity and field *University*
- Job qualification Associate Professor of *Manufacturing Technology*
- Main activity and responsibility Responsible of Manufacturing Technology research team
Member of the PhD council for Industrial and Information Engineering
Deputy Rector for higher technical education
Scientific Director of Advanced Mechatronics Laboratory LAMA FVG

- Dates (from – to) 2005-2018
- Name and address of employer Università degli Studi di Udine
- Type of activity and field *University*
- Job qualification Researcher and Aggregate Professor of *Manufacturing Technology*
- Main activity and responsibility Responsible of Manufacturing Technology research team
Member of the PhD council for Industrial and Information Engineering
Deputy Rector for higher technical education
Scientific Director of Advanced Mechatronics Laboratory LAMA FVG

- Dates (from – to) 2017-oggi
- Name and address of employer Italian Association of Manufacturing Technology - AITeM
- Type of activity and field *Research*
- Job qualification Member of the board of directors
- Main activity and responsibility Coordinator of Machining division

- Dates (from – to) 2014-2017
- Name and address of employer Advantech-Time Srl
- Type of activity and field *Private Company*
- Job qualification Founder and member of the board of directors
- Main activity and responsibility CTO – IT and Manufacturing

EDUCATION

- Dates (from – to) 2000-2003
 - Institution Università degli Studi di Udine
 - Topics PhD student of course in Industrial and Information Engineering
- Qualification PhD

- Dates (from – to) 1993-1999
 - Institution Università degli Studi di Udine
 - Topics Master degree in Management Engineering
- Qualification Master Management Engineer

PERSONAL SKILLS

MOTHER TONGUE **Italian**

OTHER LANGUAGES

- English**
- Reading Very good
 - Writing Very good
 - Speaking Very good

- German**
- Reading Good
 - Writing Basic
 - Speaking Basic

- RESEACH PROJECTS
- 2005-2006 “Investigation of high productivity machining on intelligent machining systems” – Croatian Ministry of Education and Science - Participant
- 2009-2011 “New Methodologies for Machining Difficult to Cut Materials” – Regione Friuli Venezia Giulia Project – Scientific responsible
- 2009-2011 “ThermoGrind - Thermally Controlled Rotational Grinding of Sapphire Wafers for Highly Efficient Manufacturing of Modern White LED Light Sources” – EU FP7 Capacities, Reseach for SMEs project – Scientific responsible of Udine Unit
- 2012-2015 “SHARTEC - Shared innovative production technologies in the border regions” – INTERREG Italia-Slovenia, Scientific responsible of Udine Unit

PUBLICATIONS

International Journals

[A1] M. Sortino, Application of Statistical Filtering for Optical Detection of Tool Wear, International Journal of Machine Tools and Manufacture, 2003, Vol. 43/5, 493-497, Birmingham, UK

[A2] E. Kuljanic, M. Sortino, TWEM – A Method Based on Cutting Forces – Monitoring Tool Wear in Face Milling, International Journal of Machine Tools and Manufacture, 2005, Vol. 45/1, 29-34, Birmingham, UK

[A3] E. Kuljanic, M. Sortino, G. Totis, Multisensor Approaches for Chatter Detection in Milling, Journal of Sound and Vibration, Vol. 312, Issue: 4-5, 672-693, May 20, 2008

- [A4] E. Kuljanic, M. Sortino, G. Totis, Development of an Intelligent Multisensor Chatter Detection in Milling, *Mechanical Systems and Signal Processing*, Volume 23, Issue 5, July 2009, 1704-1718
- [A5] G. Totis, G. Wirtz, M. Sortino, D. Veselovac, E. Kuljanic, F. Klocke, Development of a Dynamometer for Measuring Individual Cutting Edge Forces in Face Milling, *Mechanical Systems and Signal Processing*, Volume 24, Issue 6, August 2010, Pages 1844-1857
- [A6] G. Totis, M. Sortino, Development of a modular dynamometer for triaxial cutting force measurement in turning, *International Journal of Machine Tools and Manufacture*, Volume 51, Issue 1, January 2011, 34-42
- [A7] M. Sortino, G. Totis, F. Prospero, Development of a practical model for selection of stable tooling system configurations in internal turning, *International Journal of Machine Tools and Manufacture*, Volume 61, Issue 1, 2012, 58-70
- [A8] M. Sortino, G. Totis, F. Prospero, Modeling the dynamic properties of conventional and high-damping boring bars, *Mechanical Systems and Signal Processing*, Article in press
- [A9] M. Sortino, G. Totis, F. Prospero, Dry turning of sintered molybdenum, *Journal of Materials Processing Technology*, *Journal of Materials Processing Technology*, Vol. 213/7, 2013, 1179-1190, DOI: 10.1016/j.jmatprotec.2013.01.017
- [A10] M. Sortino, B. Motyl, G. Totis, Preventive evaluation of mould production cost in aluminium casting, *International Journal of Advanced Manufacturing Technology*, 2014, 1-11, DOI: 10.1007/s00170-013-5273-6
- [A11] G. Totis, P. Albertelli, M. Sortino, M. Monno, Efficient Evaluation of Process Stability in Milling with Spindle Speed Variation by Using the Chebyshev Collocation Method, *Journal of Sound and Vibration*, Elsevier, 333, 3, 2014, 646-668, DOI: 10.1016/j.jsv.2013.09.043
- [A12] M. Sortino, S. Belfio, B. Motyl, G. Totis, Compensation of Geometrical Errors of CAM/CNC Machined Parts by Means of 3D Workpiece Model Adaptation, *CAD Computer Aided Design*, 48, 2014, 28-38, DOI: 10.1016/j.cad.2013.10.010
- [A13] G. Totis, O. Adams, M. Sortino, D. Veselovac, F. Klocke, Development of an Innovative Plate Dynamometer for Advanced Milling and Drilling Applications, *Measurement: Journal of the International Measurement Confederation*, 49/1, 2014, 164-181, DOI: 10.1016/j.measurement.2013.11.049
- [A14] G. Totis, M. Sortino, Robust Analysis of Stability in Internal Turning, *Procedia Engineering* 69, 2014, 1306 - 1315, DOI: 10.1016/j.proeng.2014.03.123
- [A15] M. Sortino, G. Totis, E. Kuljanic, Comparison of Injection Molding Technologies for the Production of Micro-Optical Devices, *Procedia Engineering* 69, 2014, 1296 – 1305, DOI: 10.1016/j.proeng.2014.03.122
- [A16] M. Sortino, S. Belfio, G. Totis, An Innovative Approach for Automatic Generation, Verification and Optimization of Complex Part Programs in Turning, *Journal of Manufacturing Systems*, 36/2015, 168-181, 10.1016/j.jmsy.2014.03.002
- [A17] S. Seriani, A. Cortellessa, S. Belfio, M. Sortino, G. Totis, P. Gallina, Automatic path-planning algorithm for realistic decorative robotic painting, *Automation in Construction*, 56/2015, 67-75, 10.1016/j.autcon.2015.04.016
- [A18] M. Sortino, S. Belfio, G. Totis, L. Di Gaspero, M. Nali, An investigation on swarm intelligence methods for the optimization of complex part programs in CNC

turning, *International Journal of Advanced Manufacturing Technology*, 80, 2015, 657-672, 10.1007/s00170-015-7011-8

[A19] M. Sortino, S. Belfio, G. Totis, E. Kuljanic, G. Fadelli, Innovative tool coatings for increasing tool life in milling Nickel-coated Nickel-Silver alloy, *Energy Procedia*, 100, 2015, 946-952, 10.1016/j.proeng.2015.01.453

[A20] G. Totis, P. Albertelli, M. Torta, M. Sortino, M. Monno, Upgraded stability analysis of milling operations by means of advanced modeling of tooling system bending, *International Journal of Machine Tools and Manufacture*, 113, 2017, 19-34, DOI: 10.1016/j.ijmactools.2016.11.005

[A21] G. Totis, P. Albertelli, M. Torta, M. Sortino, M. Monno, Symmetry breaking in milling dynamics, *International Journal of Machine Tools and Manufacture*, 139, 2019, 37-59, DOI: 10.1016/j.ijmactools.2019.01.002

International Conferences

[B1] E. Kuljanic, M. Sortino, F. Miani, Disassembly Operation Cost-Estimating Model Concept, *CIM2000*, 2000, V/1-8, Lumbarda (HR)

[B2] F. Miani, E. Kuljanic, M. Sortino, Modelling the Mechanical Properties of Direct Metal Selectively Laser Sintered Parts, *Proceedings 3rd Laser Assisted Net Shape Engineering*, M. Geiger, A. Otto eds., 2001, 383-391, Erlangen, Germany

[B3] E. Kuljanic, M. Sortino, F. Miani, MDPE – A Method for Disassembly Process Evaluation, *CIM2001*, 2001, V/1-10, Lumbarda (HR)

[B4] E. Kuljanic, M. Sortino, Recent Developments and Trend in Tool Condition Monitoring, *6th International Conference on Advanced Manufacturing Systems and Technology - AMST'02*, CISM Courses and Lectures, Vol. 437, 2002, 15-35, Springer Wien New York

[B5] E. Kuljanic, M. Sortino, F. Miani, Application of a Rotating Dynamometer for Cutting Force Measurement in Milling, *6th International Conference on Advanced Manufacturing Systems and Technology - AMST'02*, CISM Courses and Lectures, Vol. 437, 2002, 159-166, Springer Wien New York

[B6] D.E. Dimla, M. Sortino, A New Approach to the Use of Vibration Signals in Tool-Wear Monitoring in High Speed Metal Turning, *6th International Conference on Advanced Manufacturing Systems and Technology - AMST'02*, CISM Courses and Lectures, Vol. 437, 2002, 593-600, Springer Wien New York

[B7] E. Kuljanic, M. Sortino, G. Cukor, Statistical Analysis of the Rotating Dynamometer Signals in Face Milling, *CIM2003*, 2003, Lumbarda (HR)

[B8] E. Kuljanic, M. Sortino, Dynamic Characteristics of the Cutting Force Measuring System in Milling, *Intelligent Computation in Manufacturing Engineering, CIRP-ICME'04*, 2004, 425-430, Sorrento, Italy

[B9] E. Kuljanic, M. Sortino, Some Approaches in the Machining Research, *7th International Conference on Advanced Manufacturing Systems and Technology - AMST'05*, CISM Courses and Lectures, Vol. 486, 2005, 41-56, Springer Wien New York

[B10] E. Kuljanic, M. Sortino, G. Totis, Application of Wavelet Transform of Acoustic Emission Signal for Tool Condition Monitoring in Face Milling, *39th CIRP International Seminar on Manufacturing Systems*, 2006, 39-44, Ljubljana, Slovenia

[B11] E. Kuljanic, G. Cukor, M. Sortino, G. Totis, Modelling of Cutting Forces in Milling by Using Evolutionary Algorithms, *CIM2007*, 2007, Biograd (HR)

- [B12] E. Kuljanic, G. Totis, M. Sortino, Vibrations and Chatter in Machining: State of the Art and New Approaches, 8th International Conference on Advanced Manufacturing Systems and Technology - AMST'08, CISM, Udine, 2008, 15-36
- [B13] E. Kuljanic, M. Sortino, G. Totis, Influence of Cutter Position on Cutting Forces and Tool Life in Face Milling, 8th International Conference on Advanced Manufacturing Systems and Technology - AMST'08, CISM, Udine, 2008, 169-180
- [B14] E. Kuljanic, S. Sinesi, M. Sortino, G. Cattelan, G. Totis, Micromachining of Molds for Manufacturing Optical Devices, 8th International Conference on Advanced Manufacturing Systems and Technology - AMST'08, CISM, Udine, 2008, 393-404
- [B15] F. Klocke, E. Kuljanic, D. Veselovac, M. Sortino, G. Wirtz, G. Totis, Development of an Intelligent Cutter for Face Milling, 8th International Conference on Advanced Manufacturing Systems and Technology - AMST'08, CISM, Udine, 2008, 267-280
- [B16] M. Sortino, G. Totis, E. Kuljanic, G. Cukor, Simulation of Cutting Forces and Cutting Conditions in Complex Turning Operations, CIM2009, 2009, Biograd (HR)
- [B17] E. Kuljanic, M. Sortino, G. Totis, Machinability of Difficult Machining Materials, 14th International Research/Expert Conference "Trends in the Development of Machinery and Associated Technology" - TMT 2010, Keynote paper
- [B18] E. Kuljanic, M. Sortino, G. Totis, M. Nali, Optimization of Machining Processes: Past - Present - Future, 9th International Conference on Advanced Manufacturing Systems and Technology - AMST'11, RITEH, Rijeka, 2011, 1-24
- [B19] G. Totis, M. Sortino, E., Kuljanic, F. Prosperi, Identification of Machining System Dynamics in Internal Turning, 9th International Conference on Advanced Manufacturing Systems and Technology - AMST'11, RITEH, Rijeka, 2011, 225-236
- [B20] M. Sortino, S. Belfio, G. Totis, E. Kuljanic, An Innovative Vision System for Automatic Tool Wear Classification, 9th International Conference on Advanced Manufacturing Systems and Technology - AMST'11, RITEH, Rijeka, 2011, 283-294
- [B21] F. Klocke, E. Kuljanic, O. Dambon, M. Sortino, M. Herben, G. Totis, IR-Based Temperature Measurement in Rotational Grinding of Sapphire Wafers, 9th International Conference on Advanced Manufacturing Systems and Technology - AMST'11, RITEH, Rijeka, 2011, 623-634
- [B23] F. Klocke, O. Dambon, M. Herben, D. Veselovac, O. Adams, E. Kuljanic, M. Sortino, G. Totis, Chuck System for Integrated IR-Based Temperature Measurement in Rotational Grinding of Sapphire Wafers, Euspen 2012, Stockholm, 2012, 332-335
- [B24] M. Sortino, S. Belfio, G. Totis, M. Nali, Increasing the Efficiency of Manufacturing Plants by Process Simulation and Lean Thinking, PEM 2015 – Production Engineering and Management, 2015, Trieste
- [B25] G. Totis, M. Sortino, S. Belfio, Wavelet-like analysis in the frequency-damping domain for modal parameters identification, Annals of DAAAM and Proceedings of the International DAAAM Symposium, 2015, 580-588, DOI: 10.2507/26th.daaam.proceedings.079
- [B26] M. Sortino, G. Totis, F. Scalzo, E. Vaglio, Preliminary Investigation of Static and Dynamic Properties of SLM Lattice Structures for Robotic Applications, 4th IFToMM Symposium on Mechanism Design for Robotics, 2018, Udine

Udine, 21/02/2022

MARCO SORTINO




Emanuele Vaglio

Date of birth: 19 Apr 1988 | **Nationality:** Italian | **Gender:** Male | (+39) 3409709403 |

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● WORK EXPERIENCE

10 JAN 2022 – CURRENT – Udine, Italy

FIXED-TERM RESEARCHERS - TYPE A (RTDA) – UNIVERSITY OF UDINE

Scientific research in the field of manufacturing technologies:

1. Optimization of the Selective Laser Melting process
2. Monitoring and automation of the Selective Laser Melting process
3. Development of sensory and Digital-Twin methodologies
4. Minimization of production waste
5. Product and process innovation
6. Development of innovative strategies for technical training in additive manufacturing
7. Analysis of the impacts of additive manufacturing and study of integration models of the same in the traditional industrial context

Polytechnic Department of Engineering and Architecture | Via delle Scienze 206, 33100, Udine, Italy

8 JAN 2020 – CURRENT – Udine, Italy

ADJUNCT PROFESSOR – MALIGNANI HIGH TECHNICAL INSTITUTE - NEW TECHNOLOGIES FOR MADE IN ITALY

Adjunct Professor of Additive Manufacturing - Course for Automation and Mechatronic Systems

Viale Leonardo Da Vinci 10, 33100, Udine (UD), Italy

16 FEB 2016 – 9 JAN 2022 – Udine, Italy

RESEARCH FELLOW – UNIVERSITY OF UDINE

- Preparation of the Laboratory for Advanced Mechatronics of the University of Udine
- Technical activities at the Laboratory for Advanced Mechatronics of the University of Udine
- Scientific research in the field of manufacturing technologies:
 1. Optimization of the Selective Laser Melting process
 2. Benchmarking and characterization of the Selective Laser Melting process
 3. Design for Additive Manufacturing, characterization of trabecular structures and topology optimization
 4. Models for the production cost estimation in Selective Laser Melting technology

Polytechnic Department of Engineering and Architecture | Via delle Scienze 206, 33100, Udine, Italy

6 MAY 2020 – 31 MAR 2021 – Trieste, Italy

ASSOCIATED MANUFACTURING TECHNOLOGIST – NATIONAL INSTITUTE FOR NUCLEAR PHYSICS - SECTION OF TRIESTE

Development and manufacturing of parts of the cooling system of the pixel detector for the ATLAS experiment at CERN

Padriciano 99, 34149, Trieste, Italy

5 MAR 2019 – 30 SEP 2019 – Pordenone, , Italy

ADJUNCT PROFESSOR – UNIVERSITY OF TRIESTE

Adjunct Professor of Production planning and control - master degree in Production Engineering and Management

Department of Engineering and Architecture, branch of Pordenone |

Via Prasecco 3, 33170, Pordenone (PN), Italy

10 OCT 2015 – 31 DEC 2015 – Udine, Italy

RESEARCH AND DEVELOPMENT ENGINEER – ADVANTECH - TIME S.R.L.

Research and development for the digitalization of production plants:

- Design and manufacture of tools for industrial sensorization
- Introduction of additive manufacturing in production lines and optimization of production processes
- Implementation of systems for machine tools monitoring and digitalization of production processes

Via Pracchiuso 44, 33100, Udine, Italy

● **EDUCATION AND TRAINING**

1 NOV 2015 – 31 OCT 2018 – Via delle Scienze 206, Udine, Italy

DOCTOR OF PHILOSOPHY IN INDUSTRIAL AND INFORMATION ENGINEERING – University of Udine

Thesis: Research on Process Parameter Optimization in Selective Laser Melting

SEP 2012 – JUL 2015 – Via delle Scienze 206, Udine, Italy

MASTER DEGREE IN MECHANICAL ENGINEERING – University of Udine

Thesis: Analysis of fiber-wall interaction in turbulent fibrous suspensions

110/110

SEP 2007 – MAR 2012 – Via delle Scienze 206, Udine, Italy

BACHELOR DEGREE IN MECHANICAL ENGINEERING – University of Udine

Thesis: Analisi fluidodinamica della canalitiasi

103/110

SEP 2002 – JUN 2007 – Via Vittorio Veneto 62, Tarvisio (UD), Italy

DIPLOMA OF SCIENTIFIC HIGH SCHOOL – Scientific High School I. Bachmann

87/100

● LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	B1	B1	B1	B1	B1
GERMAN	A2	A2	A2	A2	A2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● PUBLICATIONS

Plasma Carburizing of Laser Powder Bed Fusion Manufactured 316 L Steel for Enhancing the Surface Hardness

<https://doi.org/10.3390/coatings12020258> – 2022

Montanari, R., Lanzutti, A., Richetta, M., Tursunbaev, J., Vaglio, E., Varone, A., Verona, C. (2022). Plasma Carburizing of Laser Powder Bed Fusion Manufactured 316 L Steel for Enhancing the Surface Hardness. *Coatings*, 12, 258. <https://doi.org/10.3390/coatings12020258>

Heat transfer and pressure loss performances for additively manufactured pin fin arrays in annular channels

<https://doi.org/10.1016/j.applthermaleng.2021.117851> – 2022

Lorenzon, A., Vaglio, E., Casarsa, L., Sortino, M., Totis, G., Saragò, G., Lendormy, E., Raukola, J. (2022). Heat transfer and pressure loss performances for additively manufactured pin fin arrays in annular channels. *Applied Thermal Engineering*, 202, 117851.

Experimental study on the high-damping properties of metallic lattice structures obtained from SLM

<https://doi.org/10.1016/j.precisioneng.2021.02.010> – 2021

Scalzo, F., Totis, G., Vaglio, E., Sortino, M. (2021). Experimental study on the high-damping properties of metallic lattice structures obtained from SLM. *Precision Engineering*, 71, 63-77.

Single tracks data obtained by selective laser melting of Ti6Al4V with a small laser spot diameter

<https://doi.org/10.1016/j.dib.2020.106443> – 2020

Vaglio, E., De Monte, T., Lanzutti, A., Totis, G., Sortino, M., Fedrizzi, L. (2020). Single tracks data obtained by selective laser melting of Ti6Al4V with a small laser spot diameter. *Data in Brief*, 33, 106443.

Passive Chatter Suppression of Thin-Walled Parts by Means of High-Damping Lattice Structures Obtained from Selective Laser Melting

<https://doi.org/10.3390/jmmp4040117> – 2020

Scalzo, F., Totis, G., Vaglio, E., Sortino, M. (2020). Passive Chatter Suppression of Thin-Walled Parts by Means of High-Damping Lattice Structures Obtained from Selective Laser Melting. *Journal of Manufacturing and Materials Processing*, 4(4), 117.

High temperature study of the evolution of the tribolayer in additively manufactured AISI 316L steel

<https://doi.org/10.1016/j.addma.2020.101258> – 2020

Lanzutti, A., Marin, E., Tamura, K., Morita, T., Magnan, M., Vaglio, E., Andreatta F., Sortino, M., Totis, G., Fedrizzi, L. (2020). High temperature study of the evolution of the tribolayer in additively manufactured AISI 316L steel. *Additive Manufacturing*, 34, 101258.

Corrosion behaviour of 316L stainless steel manufactured by selective laser melting

<https://doi.org/10.1002/maco.201910792> – 2019

Andreatta, F., Lanzutti, A., Vaglio, E., Totis, G., Sortino, M., Fedrizzi, L. (2019). Corrosion behaviour of 316L stainless steel manufactured by selective laser melting. *Materials and Corrosion*, 70(9), 1633-1645.

Preliminary Investigation of Static and Dynamic Properties of SLM Lattice Structures for Robotic Applications

https://doi.org/10.1007/978-3-030-00365-4_31 – 2018

Sortino, M., Totis, G., Scalzo, F., Vaglio, E. (2018). Preliminary Investigation of Static and Dynamic Properties of SLM Lattice Structures for Robotic Applications. In *IFTToMM Symposium on Mechanism Design for Robotics* (pp. 260-267). Springer, Cham.

● CONFERENCES AND SEMINARS

17 JAN 2022 – 19 JAN 2022 – Milan

An innovative approach for predicting the Keyhole porosity in Selective Laser Melting

Vaglio, E., Totis, G., Sortino, M. An innovative approach for predicting the Keyhole porosity in Selective Laser Melting. XV Conference of the Italian Manufacturing Technologies Association - AITEM, Milan, Italy, 17-19 Jan 2022.

1 JUN 2021 – 5 JUN 2021 – Vienna

Study on the effect of heat treatment and SLM technique temporal evolution on the microstructural and mechanical properties of additively manufactured Ti gr.5

Lanzutti, A., Salatin, E., Nazzi, D., Magnan, M., Sortino, M., Totis, G., Vaglio, E., Fiorese, A., Fedrizzi, L. Study on the effect of heat treatment and SLM technique temporal evolution on the microstructural and mechanical properties of additively manufactured Ti gr.5. *International Conference on Processing and Manufacturing of Advanced Materials - Thermec 2021*, Vienna, Austria, 01 - 05 Jun 2021.

7 SEP 2020 – 11 SEP 2021 – Virtual

Corrosion behaviour of the as printed surface of 316L stainless steel manufactured by selective laser melting

Andreatta, F., Revilla, R. I., Lanzutti, A., Vaglio, E., Totis, G., Sortino, M., De Graeve, I., Fedrizzi, L. Corrosion behaviour of the as printed surface of 316L stainless steel manufactured by selective laser melting. European Corrosion Congress - EUROCORR 2020, virtual Congress, 7 - 11 Sep 2020.

7 SEP 2020 – 11 SEP 2020 – Virtual

Evaluation of corrosion and tribocorrosion resistance of CoCrW alloy produced by SLM technology

Lanzutti, A., Andreatta, F., Magnan, M., Vaglio, E., Totis, G., Sortino, M., Fedrizzi, L. Evaluation of corrosion and tribocorrosion resistance of CoCrW alloy produced by SLM technology. European Corrosion Congress - EUROCORR 2020, virtual Congress, 7 - 11 Sep 2020.

23 JUN 2020 – 24 JUN 2020 – Virtual

3D Printing for cooling prototypes

Vaglio, E., Coelli, S. 3D Printing for cooling prototypes. UK-IT ITk Integration Meeting, Virtual seminar concerning the development of the pixel detector of the Large Hadron Collider for the ATLAS experiment at CERN, 23-24 Jun 2020.

9 SEP 2019 – 13 SEP 2019 – Seville

Effect of thermal treatment on microstructure and corrosion behavior of 316L stainless steel manufactured by selective laser melting

Andreatta, F., Revilla, R. I., Lanzutti, A., Vaglio, E., Clocchiatti, L., Totis, G., Sortino, M., De Graeve, I., Fedrizzi, L. Effect of thermal treatment on microstructure and corrosion behavior of 316L stainless steel manufactured by selective laser melting. European Corrosion Congress - EUROCORR 2019, Seville, Spain, 9 - 13 Sep 2019.

9 SEP 2019 – 11 SEP 2019 – Padua

Preliminary investigation on mechanical properties of SS316L specimens produced by Selective Laser Melting

Vaglio, E., De Monte, T., Lanzutti, A., Scalzo, F., Totis, G., Sortino, M., Fedrizzi, L. Preliminary investigation on mechanical properties of SS316L specimens produced by Selective Laser Melting. XIV Conference of the Italian Manufacturing Technologies Association - AITEM, Padua, Italy, 9-11 Sep 2019.

9 SEP 2018 – 13 SEP 2018 – Krakow

Corrosion behavior of AM 316L stainless steel

Lanzutti, A., Vaglio, E., Andreatta, F., Magnan, M., Totis, G., Sortino, M., Fedrizzi, L. Corrosion behavior of AM 316L stainless steel. European Corrosion Congress - EUROCORR 2018, Krakow, Poland, 9 - 13 Sep 2018.

21 NOV 2018 – 23 NOV 2018 – Vienna

High temperature tribological behavior of AISI 316L produced by SLM technique

Lanzutti, A., Vaglio, E., Andreatta, F., Magnan, M., Totis, G., Sortino, M., Fedrizzi, L. High temperature tribological behavior of AISI 316L produced by SLM technique. Metal Additive Manufacturing Conference 2018, Vienna, Austria, 21 - 23 Nov 2018.

Corrosion behavior of AM 316L stainless steel

Lanzutti, A., Vaglio, E., Andreatta, F., Magnan, M., Totis, G., Sortino, M., Fedrizzi, L. Corrosion behavior of AM 316L stainless steel. Metal Additive Manufacturing Conference 2018, Vienna, Austria, 21 - 23 Nov 2018.

● **TITLES**

3 FEB 2021 – CURRENT

Subject Expert in Manufacturing technology and systems

Subject Expert in Manufacturing technology and systems at the Polytechnic Department of Engineering and Architecture of the University of Udine, 03 Feb 2021 - 02 Feb 2024.

3 DEC 2020 – CURRENT

Qualified industrial engineer

Qualified industrial engineer - section A, Qualification issued by the University of Udine on 03 Dec 2020.

● **CERTIFICATION**

6 FEB 2020 – CURRENT

Additive manufacturing metal: application engineer

Certified qualification in System Engineer in Additive manufacturing metal: application engineer. Certification issued by Bureau Veritas Italia S.p.A. in accordance with Bureau Veritas IT-IND-REG-01_ADM Regulation. Validity: 06 February 2020 - 05 February 2023.

4 APR 2019 – CURRENT

Additive manufacturing metal: operator

Certified qualification in System Engineer in Additive manufacturing metal: operator. Certification issued by Bureau Veritas Italia S.p.A. in accordance with Bureau Veritas IT-IND-REG-01_ADM Regulation. Validity: 04 April 2019 - 03 April 2022.

EOS M290 system operator

Certified qualification of EOS M290 system operator. Certification issued by Electro Optical Systems (EOS) GmbH on 08 Nov 2018.

Reference Point Calibration for EOS Metal Systems

Certificate of participation in the course "Reference Point Calibration for EOS Metal Systems" (21 - 22 Jul 2020), issued by Electro Optical Systems (EOS) GmbH.

Advanced Supports and Orientation

Certificate of participation in the course "Advanced Supports and Orientation" (28 - 29 Jan 2020), issued by Electro Optical Systems (EOS) GmbH.

Topology Optimization for Additive Manufacturing

Certificate of participation in the course "Topology Optimization for Additive Manufacturing" (25 - 26 Jun 2019), issued by Electro Optical Systems (EOS) GmbH.

Parameter Editor Training

Certificate of participation in the course "Parameter Editor Training" (16 - 17 Jan 2019), issued by Electro Optical Systems (EOS) GmbH.

Design for AM - Metal

Certificate of participation in the course "Design for AM - Metal" (6 - 7 Dec 2018), issued by Electro Optical Systems (EOS) GmbH.

Part Screening and Selection

Certificate of participation in the course "Part Screening and Selection" (26 - 27 Nov 2018), issued by Electro Optical Systems (EOS) GmbH.

EOS-M-Safety Instruction

Certificate of participation in the course "EOS-M-Safety Instruction" (Nov 2018), issued by Electro Optical Systems (EOS) GmbH.

Concept Laser M2 Cusing system operator

Certified qualification of Concept Laser M2 Cusing system operator. Certification issued by Concept Laser GmbH on 05 May 2016.

CL WRX Advanced training

Certificate of participation in the course "CL WRX Advanced training" (28 Feb - 02 Mar 2017), issued by Concept Laser GmbH.

LabVIEW Core 1

Certificate of participation in the course "LabVIEW Core 1" (14 - 15 Dec 2017), issued by National Instruments Corp.

Data Acquisition Using NI-DAQmx and LabVIEW

Certificate of participation in the course "Data Acquisition Using NI-DAQmx and LabVIEW" (11 - 13 Dec 2017), issued by National Instruments Corp.

PC-DMIS CAD+

Certificate of participation in the course "PC-DMIS CAD+" (06 - 07 Aug 2020), issued by Hexagon AB.

UNIUD-corso base Manipolazione in Sicurezza dei Gas Puri e Gas Tecnici-02

Certificate of participation in the course "UNIUD-corso base Manipolazione in Sicurezza dei Gas Puri e Gas Tecnici-02" (06 Mar 2019), issued by Rivoira Gas s.r.l.

Shot peening course

Certificate of participation in the Shot peening course (21 Nov 2018), issued by Norblast s.r.l.

La simulazione numerica dei processi di formatura dei metalli con Simufact

Certificate of participation in the course "La simulazione numerica dei processi di formatura dei metalli con Simufact" (01 and 08 Jun 2017), issued by the University of Udine.

English for Academic Purposes

Certificate of participation in the course "English for Academic Purposes" (16 Feb - 17 May 2016), issued by the University of Udine.

Salute e sicurezza sul lavoro

Certificate of participation in the course "Salute e sicurezza sul lavoro" (01 Dec 2015), issued by the University of Udine.

European Computer Driving Licence (ECDL)

"European Computer Driving Licence" (ECDL), issued by the Scientific High School I. Bachmann (UD) on 24 May 2007.

● **TECHNICAL COMPETENCIES**

SLM machine EOS M290

Excellent expertise in operating the SLM machine EOS M290

SLM machine Concept Laser M2 Cusing

Excellent expertise in operating the SLM machine Concept Laser M2 Cusing

FDM machine Ultimaker 2

Excellent expertise in operating the FDM machine Ultimaker 2

Machining center Haas VF-2TR

Good expertise in operating the machining center Haas VF-2TR

Microscope Sensofar S neox five axis 3D

Excellent expertise in operating the Microscope Sensofar S neox five axis 3D

Laser measuring system Hexagon RS5 + Romer absolute arm

Excellent expertise in operating the laser measuring system Hexagon RS5 + Romer absolute arm

CMM machine Hexagon Global S

Good expertise in operating the CMM machine Hexagon Global S

FeatureCAM - CAM

Good expertise

Netfabb - Slicer

Excellent expertise

Solidworks - CAD

Excellent expertise

Solid edge - CAD

Excellent expertise

Magics RP - Slicer

Excellent expertise

Cura - Slicer

Excellent expertise

ISO standard language

Good expertise

Cloudcompare - Point cloud processing

Excellent expertise

PC_DMIS - Point cloud processing

Excellent expertise

Inspire - Topology optimization

Excellent expertise

Element - Topology optimization, generative design, architected materials

Excellent expertise

GOM Inspect - Point cloud processing

Excellent expertise

GNU/Linux operating systems

Good expertise

Ansys - multiphysics simulation

Good expertise

Matlab

Excellent expertise

Microsoft office

Excellent expertise

LaTeX

Excellent expertise

● **DRIVING LICENCE**

Driving Licence: B

I hereby consent to the processing of the data I provided in this CV. I declare my agreement with the data protection regulations in the data privacy statement

Udine, 21 Feb 2022

Vaglio Emanuele