

Matteo STRANO is a *researcher* at the Dipartimento di Meccanica, Politecnico di Milano. In year 2013 he received the Italian national habilitation to *associate professor*. Formerly, from 2001 until 2008, he had been assistant professor at the University of Cassino (Italy).

He leads a research group at the lab MUSP (Macchine Utensili e Sistemi di Produzione), a public-private consortium located in Piacenza.

He is one of the coordinators for industrial stages and internships of Mechanical Engineering students of Dipartimento di Meccanica.

He is the author of about 70 publications of different kinds in the field of manufacturing systems and processes, including 22 papers in peer reviewed international journals, chapters in 4 research and textbooks and one patent.

He has taught a very large number of university classes at all levels of studies (undergraduate, graduate and Ph.D.) with full responsibility, with an average of about 12 credits per year since 2001. He currently teaches the following classes: “Advanced manufacturing processes” for the Master program in Mechanical Engineering, “Principi di progettazione e Tecnologia Meccanica” for the bachelor in Mechanical Engineering. The full list is reported below.

He regularly organises and teaches courses of continuous education for industrial personnel. He has worked with several companies (e.g. Agusta, Fiat, Coxa, BLM and several others).

His current research interests are aimed at 1) the study and improvement of tube and sheet metal forming processes (e.g. hydroforming and bending), 2) advanced machining processes (e.g. cryogenic machining), 3) innovation in machine tools (e.g. design of machine tools with new materials such as cellular metals), 4) new methods for optimization under uncertainty of processes through the FEM. He has personally proposed, obtained funding and managed several research projects both with public and private funding.

He frequently works with the industry and many of the theses he has supervised have been developed in cooperation with industrial companies.

## EDUCATION

He took his Master degree in 1996 at the Politecnico di Milano in Industrial engineering with a thesis on Abrasive Waterjet Cutting of Aluminum Sheets.

He took his Ph.D. in 2002 at the Politecnico di Milano with a thesis on FEM Simulation of the Tube Hydroforming Processes. He spent half of the doctoral studies at the Ohio State University (Engineering Research Center for Net Shape Manufacturing).

## MEMBERSHIPS

He is a member of the editorial board of the technical magazine “Macchine Utensili and of the scientific board of ESAFORM (European Scientific Association for Material Forming).

He is a stable reviewer for international journals such as: “Journal of Manufacturing Processes”, “Journal of Cleaner Production”, “International Journal of Machine Tools and Manufacture”, “Int. J. of Materials and Product Technology”, “International Journal of Material Forming”, “Journal of Manufacturing Science and Engineering”.

He is a member of the Scientific-Technical Committee of MUSP.

He is the former Secretary of the AITeM (Associazione Italiana di Tecnologia Meccanica) chapter “FLT-Formatura della lamiera e dei tubi” (Tube and sheet metal forming).

He is a registered expert and regular reviewer of research projects for the Italian Ministry of Research (MIUR), for the Latvian Council of Science and for the European commission Research & Innovation portal.

## DISTINCTIONS

At the ESAFORM 2006 conference, the paper titled “A technique for FEM optimization under uncertainty of time-dependent process variables in sheet metal forming” has been judged as the best paper of the.

He supervised the Master thesis “Studio numerico e sperimentale dei limiti tecnologici di un'operazione di tranciatura fine, winner of the UCIMU prize in year 2013 for theses in cooperation with the industry..

## LIST OF UNIVERSITY COURSES TAUGHT

Years	University	Course title	Level	no. of credits	average no. of students
since 2013	Politecnico	<i>Advanced manufacturing processes</i>	Graduate.	10	20
since 2011	Politecnico	<i>FEM Simulation of Forming Processes</i>	Graduate	6	4
since 2009	Politecnico	<i>Manufacturing Technology I For Energy Engineers</i>	Underg.	5	120
2011 and 2013	Politecnico	<i>Materials and Manufacturing Processes For Energy</i>	Graduate	4	25
2009 to 2013	Politecnico	<i>Manufacturing Technology II</i>	Graduate.	10	15
2006 to 2008	Cassino	<i>Statistical Design of Experiments</i>	Ph.D.	2	5
2004 to 2008	Cassino	<i>Flexible Manufacturing</i>	Graduate	5	3
2003 to 2008	Cassino	<i>Planning and control of Mechanical Production</i>	Underg.	4	7
2005 and 2007	Cassino	<i>Planning of manufacturing processes</i>	Post-Master	2	25
2006	Cassino	<i>Transfer of research and Intellectual property</i>	Ph.D.	2	5
2006	Cassino	<i>Computer Aided Manufacturing</i>	Graduate	5	8
2001 to 2003	Cassino	<i>Unconventional Technologies</i>	Graduate	9	12
2002	Cassino	<i>CAD/CAM systems and techniques</i>	Underg.	4	8

## LIST OF PUBLICATIONS

## Refereed scientific journal articles

- [1] Iorio, L., Maspero, E., Strano, M., 2014. *Hydroforming of locally heat treated tubes*. J. Manuf. Process. 16, 157–165.
- [2] Chiappini, E., Tirelli, S., Albertelli, P., Strano, M., Monno, M., 2014. *On the mechanics of chip formation in Ti-6Al-4V turning with spindle speed variation*. Int. J. Mach. Tools Manuf. 77, 16–26.
- [3] Strano, M., Pourhassan, R., Mussi, V., 2013. *The effect of cold rolling on the foaming efficiency of aluminium precursors*. J. Manuf. Process. 15, 227–235.
- [4] Strano, M., Chiappini, E., Tirelli, S., Albertelli, P., Monno, M., 2013. *Comparison of Ti6Al4V machining forces and tool life for cryogenic versus conventional cooling*. Proc. Inst. Mech. Eng. Part B J. Eng. Manuf. 227, 1403–1408.
- [5] Strano, M., Monno, M., Rossi, A., 2013. *Optimized design of press frames with respect to energy efficiency*. J. Clean. Prod. 41, 140–149.
- [6] Strano, M., Villa, A., Mussi, V., 2013. *Design and manufacturing of anti-intrusion bars made of aluminium foam filled tubes*. Int. J. Mater. Form. 6, 153–164.
- [7] Mentella, A., Strano, M., 2012. *Rotary draw bending of small diameter copper tubes: predicting the quality of the cross-section*. Proc. Inst. Mech. Eng. Part B J. Eng. Manuf. 226(2), 267–278.
- [8] M. Strano, 2011, *A New FEM Approach for Simulation of Metal Foam Filled Tubes*, Journal of Manufacturing Science and Engineering, 133, 061003, 1-11.
- [9] Del Prete, A., Primo, T., Strano, M., 2010. *The use of FEA packages in the simulation of a drawing operation with springback, in the presence of random uncertainty*. Finite Elem. Anal. Des. 46, 527–534.
- [10] Strano, M., 2010. *Reliability Based Economical Optimization of Sheet Metal Forming Processes*. Int. J. Mater. Form. 3, 41–44.
- [11] Mentella, A., Strano, M., Skrikerud, M., 2010. *Multi-material Fem Approach for the Prediction of the Behavior of Draw-bended Tubular Profiles*. Int. J. Mater. Form. 3, 93–96.
- [12] Strano, M., Mussi, V., Monno, M., 2010. *Non-conventional technologies for the manufacturing of anti-intrusion bars*. Int. J. Mater. Form. 3, 1111–1114.
- [13] M. Strano, *A technique for FEM optimization under reliability constraint of process variables in sheet metal forming*, International Journal of Material Forming Vol 1, N. 1 March 2008. DOI: 10.1007/s12289-008-0001-8.
- [14] M. Strano, *Optimization under uncertainty of sheet metal forming processes by the FEM*, Proc. IMechE Vol. 220 Part B: J. Engineering Manufacture, 2006, pp. 1305-1315. [http://dx.doi.org/10.1243/09544054JEM480]
- [15] M. Strano, *Technological representation of forming limits for negative incremental forming of thin aluminium sheets*, Journal of Manufacturing Processes, vol. 7 n. 2, 2005, SME.

- [16] M. Strano and B.M. Colosimo, Logistic regression analysis for experimental determination of forming limit diagrams, *International Journal of Machine Tools and Manufacture*, vol. 46, 6, 575-698, 2006, Elsevier. [<http://dx.doi.org/10.1016/j.ijmachtools.2005.07.005>]
- [17] M. Strano, Automatic tooling design for rotary draw bending of tubes, *The International Journal of Advanced Manufacturing Technology*, vol. 26, m. 7-8, 2005, pp. 733-740. Springer.
- [18] M. Strano and T. Altan, An inverse energy approach to determine the flow stress of tubular materials for hydroforming applications, *Journal of Materials Processing Technology*, Volume 146, Issue 1, 15 February 2004, Pages 92-96, Elsevier.
- [19] Matteo Strano, S. Jiratharanat, Shiuan-Guang Shr and Taylan Altan, Virtual process development in tube hydroforming, *Journal of Materials Processing Technology*, Volume 146, Issue 1, 15 February 2004, Pages 130-136, Elsevier.
- [20] M. Strano, L. Gao, S. Motsch, Classification and analysis of tube hydroforming processes with respect to adaptive FEM simulations, *Journal of Materials Processing Technology*, Vol. 129, no. 1, ottobre 2002, pp. 261-267, Elsevier.
- [21] Gao, L.; Strano, M. FEM analysis of tube pre-bending and hydroforming, *Journal of Materials Processing Technology* Volume: 151, Issue: 1-3, September 1, 2004, pp. 294-297, Elsevier.
- [22] M. Strano, T. Altan, S. Jiratharanat, *Adaptive FEM Simulation for Tube Hydroforming: a Geometry-Based Approach for Wrinkle Detection*, *Cirp Annals-Manufacturing Technology* Volume: 50 Issue: 1 Pages: 185-190, 2001.

#### Refereed conference reports published in proceedings

- [C1] Colosimo, B.M., Pagani, L., Strano, M., 2013. Metamodeling based on the fusion of FEM simulations results and experimental data. *Key Eng. Mater.* 554-557, 2487–2498.
- [C2] Strano, M., Albertelli, P., Chiappini, E., Tirelli, S., 2013a. Experimental evaluation of innovative tools for Ti-6Al-4V turning. *Key Eng. Mater.* 554-557, 1941–1952.
- [C3] Strano, M., Chiappini, E., Tirelli, S., Albertelli, P., Monno, M., 2013b. FEM simulation of Ti6Al4V turning with SSSV, in: Aitem Conference. San Benedetto del Tronto.
- [C4] Villa, A., Strano, M., Mussi, V., 2011. *Optimization of Design and Manufacturing Process of Metal Foam Filled Anti-Intrusion Bars*, in: AIP Conference Proceedings 1353. pp. 1656–1661.
- [C5] Monno M., Mussi, V., Negri, D., Strano, M., Monno, M., Musp, L., 2011. *Microstructural characterisation of Al foam/ steel interface formed during foaming process in argon flow*, in: Proceedings of the 10<sup>th</sup> AITeM Conference. Naples.
- [C6] Strano, M., Colosimo, B.M., Castillo, E. Del, 2011. *Improved design of a three roll tube bending process under geometrical uncertainties*, in: AIP Conference Proceedings 1353. pp. 35–40.
- [C7] Strano, M., 2010. Metal Foam Filled Hydroformed Tubes: Production And FEM Simulation, in: ASME MSEC 2010. Erie, PA (USA).
- [C8] A. Mentella, M. Strano, M. Skrikerud (2010). New potential applications for tube and sheet hydroforming in furnishing and household hardware. In: M. Liewald. *Hydroforming of tubes, extrusions and sheet metals*, Vol. 6. p. 183-198, Stuttgart, Germany:MAT INFO, ISBN: 9783883553818
- [C9] Farina, S., Gemignani, R., Mentella, A., Strano, M., 2009. *Tube free bending: a new index for the control of the cross section quality*, in: Proceedings of the 9th AITeM Conference. Turin.
- [C10] Matteo Strano, Antonio Del Prete, Teresa Primo, Alessia Mentella, *Localized Warming of Sheet Metal Parts for the Reduction of Springback*. Numisheet 2008, Interlaken.
- [C11] Antonio Del Prete, Barbara Manisi, Matteo Strano, *Sheet Metal Hydromechanical Deep Drawing Process Optimization*. Numisheet 2008, Interlaken.
- [C12] A. Mentella, M. Monno, V. Mussi, M. Strano, *Production of metallic foam-filled hydroformed tubes as structural parts*. 2<sup>nd</sup> International Symposium on Cellular Metals for Structural and Functional Applications, Dresden 2008.
- [C13] Carrino, L., Durante, M., Franchitti, S., Strano, M., 2008. *On the Optimization of the Properties of Foam Filled Tubular Structure Using FEM*, in: 2<sup>nd</sup> International Symposium on Cellular Metals for Structural and Functional Applications, Dresden 2008.
- [C14] M. Strano, A. Burdi, *Classification of Problems Under Uncertainty, in FEM-Based Analysis and Design of Sheet Metal Forming Operations*, *Key Engineering Materials*, Volume 344, 2007, pp. 817-824

- [C15] M. Strano, *A Simplified Methodology for Estimating the Variance of Material Properties, in FE Analysis under Uncertainty of Sheet and Tube Metal Forming Processes*, Proceedings of the 9<sup>th</sup> International Conference on Numerical Methods in Industrial Forming Processes, Porto, June 2007, pp. 499-504.
- [C16] Strano Matteo, Carrino Luigi, Gemignani Roberto, *CNC Tube Bending with variable radius*, Proceedings of the 8<sup>th</sup> AITEM Conference, Montecatini, 10-12 settembre 2007
- [C17] L. Carrino, N. Di Meo, G. Giuliano and M. Strano, *The Effect of the Punch Radius in Incremental Forming Processes*, 2<sup>nd</sup> I\*PROMS Virtual International Conference on Intelligent Production Machines and Systems, July, 2006.
- [C18] M. Strano, *A technique for FEM optimization under uncertainty of time-dependent process variables in sheet metal forming*, 9<sup>th</sup> International ESAFORM Conference on Material Forming, Glasgow (UK), April 2006
- [C19] M. Strano, B. M. Colosimo, *Ordinal Logistic Regression Analysis for Statistical Determination of Forming Limit Diagrams*, 9<sup>th</sup> International ESAFORM Conference on Material Forming, Glasgow (UK), April 2006.
- [C20] L. Carrino, N. Di Meo, L. Sorrentino, M. Strano, *The influence of friction in the negative dieless incremental forming process*, 9<sup>th</sup> International ESAFORM Conference on Material Forming, Glasgow (UK), April 2006.
- [C21] M. Strano, *Robustness Evaluation And Tolerance Prediction For A Stamping Process With Springback Calculation By The FEM*, Numisheet 2005, edited by L. M. Smith, F. Pourboghrat, J.-W. Yoon, and T. B. Stoughton, agosto 2005, pp. 266-271.
- [C22] M. Strano, *Negative dieless incremental forming process of thin aluminum sheets*, Innovations in Metal Forming, Brescia, Settembre 2004.
- [C23] M. Strano, L. Sorrentino, L. Carrino, *Some issues about tools and friction in the negative dieless incremental forming process*, Proc. of the 10<sup>th</sup> Metal Forming, Cracovia, Settembre 2004, pp. 345-350.
- [C24] M. Strano, L. Carrino, *Adaptive Selection of Loads During FEM Simulation of Sheet Forming Processes*, NUMIFORM, Columbus (OH), Giugno 2004, pp.802-807.
- [C25] M. Strano, M. Ruggiero, L. Carrino, *Representation of forming limits for negative incremental forming of thin sheet metals*, Proc. of IDDRG, Siendelfingen, Germany, Maggio 2004, pp. 198-207.
- [C26] L. Carrino, M. Strano, L. Sorrentino, *Influence of the Winding Tension on the Mechanical Properties of Composite Parts Manufactured by a Robotic Filament Winding Cell*, Advancing with Composites, Milano, maggio 2003, pp. 11-19.
- [C27] M. Strano, L. Carrino, *A Comprehensive Process Design Methodology for Rotary Draw Bending of Tubes*, 6<sup>th</sup> International ESAFORM Conference on Material Forming, Salerno, Vol. 6, aprile 2003, pp. 239-242.
- [C28] L. Carrino, M. Strano, D. Paglia, *E-learning as a support tool for traditional class teaching*, VI AITEM Conference, Gaeta, Vol. 6, 2003.
- [C29] M. Strano, *Incremental forming processes: current and potential applications*, SME Technical Paper no. MF03-114, 2003.
- [C30] L. Carrino, M. Strano, G. Klinger , P. Zambelli Tunder, *Development of a Process Design Tool for Rotary Draw Bending of Tubes*, VI Aitem Conference, Gaeta, Vol. 6, settembre 2003.
- [C31] Altan Taylan, Gao Lin, Strano Matteo, *FEM Analysis of Tube Prebending And Hydroforming*. ChinaPAM 2002, Beijing.
- [C32] M. Strano, L. Carrino, *Towards a General Quality Indicator For Adaptive Fem Simulation of Sheet Forming Processes*, 6<sup>th</sup> AMST, Udine, Vol. 6, giugno 2002.
- [C33] M. Strano, T. Altan, S. Jirathearanat, S. G. Shr, *Adaptive FEM Process Simulation for Hydroforming Tubes, Hydroforming of Tubes*, Extrusions and Sheet Metals, Ed. by K. Siegert, Vol. 2, novembre 2001, pp. 363-384.
- [C34] M. Strano, T Altan, *FEA Simulation Strategies for Tube Hydroforming*, V AITEM, Bari, Vol. II, 2001, pp. 453-462.
- [C35] Altan T, Jirathearanat S, Shr S. G, Strano M (2001). Adaptive Fem Process Simulation For Hydroforming Tubes. In: Siegert K.. Hydroforming Of Tubes, Extrusions And Sheet Metals. P. 363-384, Siegert K., Isbn: 3-88355-301-8
- [C36] Altan Taylan, Jirathearanat Suwat, Strano Matteo, *Virtual Product And Process Development In Tube Hydroforming: State Of The Technology And New Developments*, Wirkmedienbasierte Umformung von Rohren und Blechen, Essen (Germany), 2001.
- [C37] Altan T., Jirathearanat S., Strano Matteo, *Tube Hydroforming: Process Variables And Recent Developments*, PMA Metalform, Detroit (USA), 2001.

## Chapters in Books

- [B1] M. Strano, *Design and modelling of parts, process and tooling in tube hydroforming*, chapter in: Hydroforming for advanced manufacturing, edited by Muammer Koç, Woodhead Publishing: Cambridge 2008.
- [B2] M. Strano, M. Monno, *Optimal selection of AWJ process parameters*, chapter in: Water jet, a flexible technology, edited by Monno, Annoni, Ravasio, Polipress, Milano, 2007.
- [B3] M. Strano, *Il processo di idroformatura della lamiera*, chapter in: Manuale di lavorazione della lamiera, Milano, Tecniche Nuove, 2004
- [B4] STRANO M (2009). Il robust design dei processi di formatura tramite simulazione numerica. In: aa.vv.. Manuale di lavorazione della lamiera. p. 120-135, ISBN: 978-88-481-2261-0
- [B5] M. Monno, B. Previtali, M. Strano (2012). Tecnologia meccanica. Le lavorazioni non convenzionali. p. 1-508, ISBN: 9788825173772, Città Studi Edizioni.

## Other scientific and technical publications

- [T1] Strano, M., 2013. *Il taglio laser con sistemi ad assi ridondanti*. Lamiera 54–56.
- [T2] Vitelli, A., Grasso, M., Strano, M., Colosimo, B.M., 2013. *Nuove soluzioni nella foratura di materiali compositi e ibridi di impiego aeronautico*. Macch. Utens. 2003, 40–44.
- [T3] Addante, G., Monno, M., Strano, M., 2012. *Lavorazione criogenica: uno stato dell'arte*. Macch. Utens. 18–22.
- [T4] Pittalà, G., Strano, M., 2011. *Strategie “spline” per la fresatura veloce di tasche*. Macch. Utens. 24–30.
- [T5] Pittalà, G., Strano, M., 2011. *Valutazione delle prestazioni dinamiche di un centro di lavoro*. Macch. Utens. 18–22.
- [T6] Pittalà, G., Malchiodi, R., Strano, M., 2011. *Prove di lavorabilità della lega Ti-6al-4v*. Utens. e attrezzature 28–31.
- [T7] Pittalà, G., Strano, M., 2011. *L'utensile nella fresatura ad alta velocità*. Utens. e attrezzature 75, 20–27.
- [T8] Pittalà, G., Strano, M., 2010. *Sostenibilità nella fresatura del Titanio*. Macch. Utens. 22–26.
- [T9] Strano, M., 2010. *I piatti bipolari delle celle a combustibile*. Lamiera d, 52–55.
- [T10] A. Mentella, Strano M (2009). *Overview of sheet and tube hydroforming processes*. p. 1-16, SME Technical Paper TP09PUB84
- [T11] C. Giardini, E. Ceretti, M. Strano, *Idroformatura e riempimenti collaboranti: una nuova frontiera applicativa*, Lamiera, anno 45, n. 4, aprile 2008, pp. 54-62.
- [T12] L. Carrino, M. Strano, G. Napolitano, *Forming Processes For Thermoplastic Composites*, Macplas International, Milano, 2001, pp. 65-70.
- [T13] Strano, P. Zambelli Tunder, L. Carrino, *Come facilitare la progettazione del processo di curvatura dei tubi per stiramento*, Deformazione, n. 104, 2004, pp.78-83.
- [T14] Carrino, M. Strano, G. Napolitano, *La misura della formabilità dei tubi per idroformatura: il “bulge test” dei materiali tubolari*, Lamiera, no. 3, 2002.
- [T15] Monno M., Strano M., *Il mondo WJ/AWJ*, Lamiera, no. 11, 1998
- [T16] C. Giardini, E. Ceretti, C. Contri, A. Burdi, M. Strano, *Idroformatura di tubi: proposta di un'attrezzatura sperimentale da laboratorio e studio di tecniche innovative di formatura*, Atti del Convegno sulle Lavorazioni non Convenzionali della Lamiera, Assago (MI), 2005
- [T17] M. Strano, *La formabilità dei materiali per idroformatura*, Giornata di studio sull'idroformatura, Milano, 2001.
- [T18] M. Strano. *Tube HydroForming: System Analysis and Process Design*. Ph.D. thesis. Milan, 2002.

## Patents

- [P1] Gemignani, R., Strano, M., 2012. *Method for bending pipes, rods, profiled sections and similar blanks, and corresponding device*. US 8141403 B2.