

Abel Dias dos Santos

Department of Mechanical Engineering and Industrial Management
Faculty of Engineering, University of Porto (FEUP)
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Current position

Associate Professor, Faculty of Engineering, University of Porto (FEUP).
Researcher, Institute of Science and Innovation in Mechanical and Industrial Engineering (INEGI).

Former positions

Assistant Professor (FEUP), 1994-2014.
Assistant (FEUP), 1987-1994.

Academic degrees

Ph.D., Tokyo University, Japan, 1993.
Mechanical Engineering Degree, Faculty of Engineering, University of Porto (FEUP), 1980.

Research interests/Areas of scientific activity

Numerical modeling of forming processes and experimental validation, Material characterization, Experimental testing and constitutive modeling, Damage and Fracture Modeling

R&D activity and participation in research projects

Participation in 19 research projects with external funding in the following institutions: FEUP-Faculty of Engineering of the University of Porto and INEGI, Institute of Science and Innovation in Mechanical and Industrial Engineering.
Scientific supervision of 5 concluded Ph.D. theses, 2 MSc theses and 25 Integrated MSc theses, Scientific supervision of 3 PhD theses in course and 4 MSc theses in course

Publications

Author and co-author of 4 books, 38 papers in international refereed scientific journals and over 140 publications in proceedings of refereed international scientific conferences.
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Selection of Publications:

Shenghua Wu, NanNan Song, Francisco M. Andrade Pires, Abel D. Santos, Prediction of Forming Limit Diagrams for Materials with HCP Structure, *Acta Metallurgica Sinica (English Letters)*, pp.1-10, 2015.
L.C. Reis, M.C. Oliveira, A.D. Santos and J.V. Fernandes, On The Determination Of The Work Hardening Curve Using The Bulge Test, *International Journal of Mechanical Sciences*, Vol. 105, pp. 158–181, 2016.
Marco Parente, R. Safdarian, Abel D. Santos, Altino Loureiro, Pedro Vilaca, R. M. Natal Jorge, A study on the formability of aluminum tailor welded blanks

- produced by friction stir welding, IJAMT - Int. J. Adv. Manuf. Technol., DOI 10.1007/s00170-015-7950-0, pp.1-13, 2015.
- R. Safdarian, H. Moslemi Naeini, R.M. Natal Jorge, Abel D. Santos, M.P.L Parente, A comparative study of forming limit diagram prediction of tailor welded blanks, International Journal of Material Forming, DOI 10.1007/s12289-014-1168-9, 2014.
- Abel D. Santos, F. Gomes Almeida, Joaquim Mendes, Pedro Teixeira, J. Bessa Pacheco, Desenvolvimento de um Sistema de Medição Experimental a Utilizar no Ensaio 'Bulge' para a Caracterização de Materiais em Chapa Metálica, RIBIM - Revista Iberoamericana de Ingeniería, Vol. 18, N.º 1, pp. 107-117, 2014.
- Helder Mata, Renato Natal Jorge, A. D. Santos, Marco P. Lage Parente, Robert A. Fontes Valente, Antonio Augusto Fernandes, Caracterização Mecânica dos Materiais que Constituem Estruturas Sandwich com Núcleo de Espuma Metálica, RIBIM - Revista Iberoamericana de Ingeniería Mecánica. Vol. 17, N.º 2, pp. 125-137, 2013.
- H. Mata, A. D. Santos, M. P. L. Parente, R. A. F. Valente, A. A. Fernandes, R. Natal Jorge, Study on the forming of sandwich shells with closed-cell foam cores, International Journal of Material Forming, pp. 1-12, DOI 10.1007/s12289-013-1136-9, Vol. 7, Issue 4, pp 413-424, 2014.
- Bruno Martins, Abel D. Santos, Pedro Teixeira, K. Ito, N. Mori, "Determination of flow curve using bulge test and calibration of damage for Ito-Goya models", Trans Tech Publications, Switzerland, DOI: 10.4028/www.scientific.net/KEM.554-557.1432, Key Engineering Materials, Vols. 554-557, pp 182-189, 2013.
- H. Mata, R. Natal Jorge, A. D. Santos, M. P. L. Parente, R. A. F. Valente, A. A. Fernandes, "Study of Formability of Sandwich Shells with Metal Foam Cores", Trans Tech Publications, Switzerland, DOI: 10.4028/www.scientific.net/KEM.554-557.2252, Key Engineering Materials Vols. 554-557, pp 2252-2255, 2013.
- J. Bessa Pacheco, Abel D. Santos, "A study on the Nose Radius influence in Press Brake Bending Operations by Finite Element Analysis", Trans Tech Publications, Switzerland, doi:10.4028/www.scientific.net/KEM.554-557.1432, Key Engineering Materials, Vols. 554-557, pp 1432-1442, 2013.
- Bruno Martins, Abel D. Santos, Pedro Teixeira, A study on the influence of different variables for determination of flow stress using hydraulic bulge test, Int. J. Materials Engineering Innovation, Vol. 4, No. 2, pp.132-148, 2013.
- H. Mata, R. Natal Jorge, A. D. Santos, M.P.L. Parente, R. A. F. Valente, A.A. Fernandes, "Numerical Modelling and Experimental Study of Sandwich Shells with Metal Foam Cores", Trans Tech Publications, Switzerland, doi: 10.4028/www.scientific.net/KEM.504-506.449, Key Engineering Materials, Vols. 504-506, pp 449-454, 2012.
- S.H.Wu, Ana Reis, F.M. Andrade Pires, Abel D. Santos, A. Barata da Rocha, "Study of tool trajectory in incremental forming", Advanced Materials Research, Advanced Manufacturing Technology, Trans Tech Publications, <http://www.scientific.net/AMR.472-475.1586>, Vols. 472-475, pp. 1586-1591, 2012.
- H. Mata, A. Santos, A. A. Fernandes, R. A. F. Valente, M. P. L. Parente, R. Natal Jorge, Analysis of Sandwich Shells with Metallic Foam Cores based on the Uniaxial Tensile Test, American Institute of Physics, doi: 10.1063/1.3589685, AIP Conf. Proc. 1353, 1232, 2011.
- H. Mata, R. Natal Jorge, A. Santos, A.A. Fernandes, R.A.F. Valente, M.P.L. Parente, Modeling of Sandwich Sheets with Metallic Foam, American Institute of Physics, doi: 10.1063/1.3623678, AIP Conf. Proc. 1383, 725, 2011.

- P. Teixeira, A.D. Santos, J.M.A. César de Sá, F.M. Andrade Pires and A. Barata da Rocha, "Sheet metal formability evaluation using continuous damage mechanics", *International Journal of Material Forming*, Volume 2, Supplement 1, pp. 463-466, 2009.
- A. Barata da Rocha, Abel D. Santos, P. Teixeira, M.C. Butuc, "Analysis of plastic flow localization under strain paths changes and its coupling with finite element simulation in sheet metal forming", *Journal of Materials Processing Technology*, Vol.209, Issue 11, pp. 5097-5109, 2009.
- Pedro Teixeira, Abel D. Santos, J.M.A. César de Sá, F.M.A. Pires, "Evaluation of Ductile Fracture in Sheet Metal Forming using a Damage Model", *Steel Research International* 79, Special Edition, Volume 2, pp. 397-400, 2008.
- Pedro Teixeira, Abel D. Santos, J. César de Sá, A. Barata da Rocha, "Failure Analysis of Metallic Materials in Sheet Metal Forming Using Finite Element Method", *Materials Science Forum*, Trans Tech Publications, Switzerland, doi:10.4028/www.scientific.net/MSF.587-588.736, Vols. 587-588, pp 736-740, 2008.
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- A. Reis, Y. Houbaert, Zhian Xu, Rob Van Tol, A. D. Santos, J. F. Duarte, A. B. Magalhaes, "Modeling of shrinkage defects during solidification of long and short freezing materials", *Journal of Materials Processing Technology*, Vol. 202, Issue: 1-3, pp. 428-434, 2008.
- Abel D. Santos, Pedro Teixeira, "A study on experimental benchmarks and simulation results in sheet metal forming", *Journal of Materials Processing Technology*, Vol.199, Issues 1-3, pp.327-336, 2008.
- A. Barata da Rocha, Abel D. Santos, Pedro Teixeira, M.C. Butuc, "Plastic Instability in Complex Strain Paths and Finite Element Simulation for Localized Necking Prediction in Sheet Metal Forming Technology", *International Journal of Materials & Product Technology*, Volume 32, Issue 4, pp. 434-446, [<http://dx.doi.org/10.1504/IJMPT.2008.022145>], 2008.
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- Ana Reis, Pedro Teixeira, J. Ferreira Duarte, Abel Santos, A. Barata da Rocha, A.A. Fernandes, “Tailored Welded Blanks’ – an experimental and numerical study in Sheet Metal Forming on the effect of welding”, Int. Journ. Computers & Structures, Volume 82, Issues 17-19 , pp. 1435-1442, July 2004.
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Participation in Scientific or Industrial Associations

Vice-president of International Deep Drawing Research Group (IDDRG).

Member of Technical-Scientific Council of TecnoMetal journal, from Mechanical and Metallurgical Association of Portugal (AIMMAP).