Professor Robertt A. F. Valente

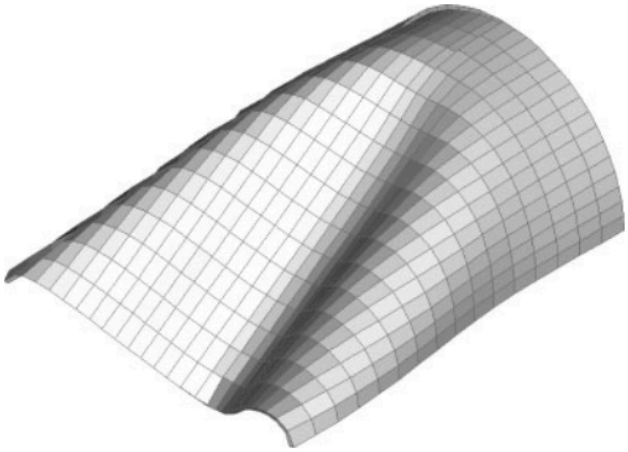

Figure 6. Clamped cylinder—deformed configuration at maximum load level.

From: R.J. Alves de Sousa, R.P.R. Cardoso, R.A.F. Valente, J.W. Yoon, R.M. Natal Jorge, J.J. Grácio, A new one-point quadrature enhanced assumed strain (EAS) solid-shell element with multiple integration points along thickness. Part II – Nonlinear applications, International Journal for Numerical Methods in Engineering 67(2):160-188, 2006

See:
https://www.ua.pt/dem/pageperson.aspx?id=1933
https://www.researchgate.net/profile/Robertt_Valente
https://scholar.google.com/citations?user=IpVeKP4AAAAJ&hl=en

Department of Mechanical Engineering
University of Aveiro, Portugal

Autobiography:
Since 1997, and after obtained my Mechanical Engineering degree, I have been involved in the field of numerical simulation, directly dealing and programming within the Finite Element Method (FEM).
I have completed my PhD studies in University of Porto in 2004, in the subject of finite element design, formulation and implementation for general structural applications and metal forming simulations. My MSc degree, from University of Porto, Portugal, was obtained in 1999 in the field of numerical simulation of shell structures, including dynamic effects and instabilities.
After that, in 2000, I started my career at University of Aveiro, Department of Mechanical Engineering, where I am integrated as a faculty member of TEMA Research Unity.
Following my specialization in plate and shell structures, my main core of research is the study and improvement of the simulation aspects related to plastic forming processes, namely sheet, bulk and hydro-driven forming processes. Developments in these areas focus on the formulation and implementation of innovative membrane, shell, solid and solid-shell finite elements, integrated into in-house finite element programs in FORTRAN language as well as into commercial FEM packages, such as Abaqus, MSC-Marc and, more recently, LS-Dyna.
Additionally, my work is intimately related to the study and implementation of anisotropic constitutive models for metallic alloys, as well as the development and implementation of contact algorithms strategies suitable for general forming applications.

Currently I am responsible for a research project related to the prediction, by means of numerical simulation, of the springback and wrinkles onset in metallic alloys products obtained by stamping and tubular hydroforming, and including optimization procedures. I am also involved in two research projects in the domain of hydroforming of tailor-welded tubes and metal cutting processes.
More recently my research fields have broadened, now encompassing structural instability advanced problems (aeronautic integrally stiffened structural panels design and simulation) as well as studies in the field of impact, ballistics and light-weight armour development and simulation for defense applications.
Related to my teaching activity at the University of Aveiro, and counting the last decade, I have been involved in the following chairs (in chronological order): "Industrial Production", "Technical Drawing", "Mechanical Engineering Drawing", "Solid Mechanics", "Structural Mechanics", "Applied Mechanics I", "Applied Mechanics II", "Computational Mechanics", "Simulation of Numerical Processes" and "Plates and Shells".
Since 2008 I am a member of the research group GRIDS, integrated in the Department of Mechanical Engineering (University of Aveiro), where I am currently the responsible for the DiPFORM division (Division of Plastic Forming). Specifically dealing with this subject, I have the honour to intensively collaborate with a team of about 15 people, including full time doctorates, PhD and MSc scholars and under-graduate students.
Additionally, since 2006 I am the Director of the Integrated Master Course in Mechanical Engineering of the University of Aveiro.

Selected Publications:

24) Diogo Cardoso, Robertt Valente, R.M.F Paulo, "Numerical simulation and design of extruded integrally stiffened panels (ISP) for aeronautic applications subjected to blast loading: Sensitivity analyses to different stiffener configurations", 2nd ECCOMAS Young Investigators Conference (YIC 2013), Sep 2013, Bordeaux, France.
23) Paulo, R.M.F., Teixeira-Dias, F., Valente, R.A.F.: Numerical simulation of aluminium stiffened panels subjected to axial compression: Sensitivity analyses to initial geometrical imperfections and material properties. Thin-Walled Struct. **62**, 65–74 (2013)
22) J.F. Caseiro, R.J. Alves de Sousa, R.A.F. Valente, (2013), A systematic development of EAS three-dimensional finite elements for the alleviation of locking phenomena, Finite Elements in Analysis and Design, vol.73, pp. 30-41
21) R.A.S. Moreira, R.J. Alves de Sousa, R.A.F. Valente, A solid-shell layerwise finite element for non-linear geometric and material analysis, Composite Structures 92(6):1517-1523, 2010
20) R.A.F. Valente, R.J. Alves de Sousa, R.M. Natal Jorge, Enhanced finite element formulations on the numerical simulation of tailor-welded hydroformed products, International Journal of Material Forming 2(1):927-929, 2009
19) K. Rah, W. van Paepegem, A.M. Habraken, R.J. Alves de Sousa, R.A.F. Valente, Evaluation of different advanced finite element concepts for detailed stress analysis of laminated composite structures, International Journal of Material Forming 2(1):943-947, 2009
18) R.A.S. Moreira, R.J. Alves de Sousa, R.A.F. Valente, An enhanced layerwise finite element using a robust solid-shell formulation approach, International Journal of Material Forming 2(1):881-885, 2009
17) R.A.F. Valente, A. Andrade-Campos, J. Carvalho, P. Cruz, Parameter identification and shape optimization: An integrated methodology in metal forming and structural applications, Optimization and Engineering International Journal (in press), 2010
16) J.W. Yoon, G.H. Bray, R.A.F. Valente, T.E.R. Childs, Buckling analysis of an integrally stiffened panel structure with friction stir welds, Thin-Walled Structures 47(12):1608-1622, 2009

15) R.A.F. Valente, R.M. Natal Jorge, A.P. Roque, M.P.L. Parente, A.A. Fernandes, Simulation of dissimilar tailor-welded tubular hydroforming processes using EAS-based solid finite elements, International Journal of Advanced Manufacturing Technology 37(7-8):670-689, 2008
14) R.P.R. Cardoso, J.W. Yoon, M. Mahardika, S. Choudry, R.J. Alves de Sousa, R.A.F. Valente, Enhanced assumed strain (EAS) and assumed natural strain (ANS) methods for one-point quadrature solid-shell elements, International Journal for Numerical Methods in Engineering 75(2):156-187, 200
13) R.M. Natal Jorge, A.P. Roque, R.A.F. Valente, M.P.L. Parente, A.A. Fernandes, Study of hydroformed tailor-welded tubular parts with dissimilar thickness, Journal of Materials Processing Technology 184(1-3):363-371, 2007
12) R.M. Natal Jorge, R.A.F. Valente, A.P. Roque, M.P.L. Parente, A.A. Fernandes, Numerical simulation of hydroforming processes involving a tubular blanks with dissimilar thickness, Materials and Manufacturing Processes 22(2):286-291, 2007
11) R.J. Alves de Sousa, J.W. Yoon, R.P.R. Cardoso, R.A.F. Valente, J.J. Grácio, On the use of a reduced enhanced solid-shell finite element for sheet metal forming applications, International Journal of Plasticity 23(3):490-515, 2007
10) R.P.R. Cardoso, J.W. Yoon, R.A.F. Valente, Enhanced one-point quadrature shell element for nonlinear applications, International Journal for Numerical Methods in Engineering 69(3):627-663, 2007
9) M.P.L. Parente, R.A.F. Valente, R.M. Natal Jorge, R.P.R. Cardoso, R.J. Alves de Sousa, Sheet metal forming simulation using EAS solid-shell finite elements, Finite Elements in Analysis and Design 42(13):1137-1149, 2006
8) R.J. Alves de Sousa, R.P.R. Cardoso, R.A.F. Valente, J.W. Yoon, R.M. Natal Jorge, J.J. Grácio, A new one-point quadrature enhanced assumed strain (EAS) solid-shell element with multiple integration points along thickness. Part II – Nonlinear applications, International Journal for Numerical Methods in Engineering 67(2):160-188, 2006
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6) R.A.F. Valente, M.P.L. Parente, R.M. Natal Jorge, J.J. Grácio, J.M.A. César de Sá, Enhanced transverse shear strain shell formulation applied to large elasto-plastic deformation problems, International Journal for Numerical Methods in Engineering 62(10):1360-1398, 2005
5) R.J. Alves de Sousa, R.P.R. Cardoso, R.A.F. Valente, J.W. Yoon, R.M. Natal Jorge, J.J. Grácio, A new one-point quadrature EAS solid-shell element accounting for multi-points along thickness - Part I: Geometrically linear problems, International Journal for Numerical Methods in Engineering 62(7):952-977, 2005
4) R.A.F. Valente, R.J. Alves de Sousa, R.M. Natal Jorge, An enhanced strain 3D element for large deformation elastoplastic thin-shell applications, Computational Mechanics 34(1):38-52, 2004
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2) R.A.F. Valente, R.M. Natal Jorge, R.P.R. Cardoso, J.M.A. César de Sá, J.J. Grácio, On the use of an enhanced transverse shear strain shell element for problems involving large rotations, Computational Mechanics 30(4):286-296, 2003
1) J.M.A. César de Sá, R.M. Natal Jorge, R.A.F. Valente, P.M.A. Areias, Development of shear locking-free shell elements using an enhanced assumed strain formulation, International Journal for Numerical Methods in Engineering 53(7):1721-1750, 2002