



Professor Jan Blachut

Department of Mechanical Engineering
The University of Liverpool, UK

1.1 Personal details, education & awards

Name	Jan Blachut
1971	MSc in Physics; The Jagiellonian University.
1980	PhD, Cracow University of Technology.
1996	Habilitation
2008	The title of Professor dr hab.

1.2 Membership of Professional Bodies

Chartered Engineer, Fellow of the Institution of Mechanical Engineers, London.
International Society of Structural and Multidisciplinary Optimization (ISSMO) – one of the Founding Members, Gossler, 1995.

1.3 Professional Experience

1971-1982	Member of staff at Cracow University of Technology (adiunkt).
1982 → to date	The University of Liverpool, School of Engineering, currently as Reader.

Editorial (Journal/Special res. meetings)

Editorial Board for: *Engineering Optimization Journal* - since 2000.
Proposer, co-chairmen and organiser of Euromech Colloquium 345 on "*The Future of Structural Optimisation*" held in Liverpool in April 1996 (awarded by European Mechanics Society) with A.B. Templeman.
Proposer, Co-ordinator, and Lecturer on "*Emerging Methods for Treating Multidisciplinary Optimization Problems*" course at CISM - Udine, 5-9 June, 2000, Udine, Italy (approved by the Scientific Council of International Centre for Mechanical Sciences in Udine - under the aegis of European Academies of Sciences) with H.A. Eschenauer.

2.2 Refereed Journal Papers

1. J. Błachut, A. Kubisz, "The measurement of dynamic E modulus of plastics by the method of forced beam flexural oscillations", *Czas. Techn.*, Z.4-M, 1974, 24-28, in Polish.
2. J. Błachut, "Example of a discrete variant of dynamic programming", *Czas. Techn.*, Z.2-M, 1977, 31-34, in Polish.
3. J. Błachut, "Optimum design of a flexible bar by means of dynamic programming", *Mech. Teor. i Stos.*, Vol. 15, 1977, 125-130, in Polish.
4. J. Błachut, "Optimal design of a compressed rod with large deflections by means of dynamic programming", *Mech. Teor. Stos.*, Vol. 15, 1977, 375-385, in Polish.
5. J. Błachut, "Optimal design of a bar under axial force and own weight by means of dynamic programming", *Mech. Teor. Stos.*, Vol. 16, 1978, 343-351, in Polish.

6. J. Błachut, A. Gajewski, "A unified approach to optimal design of columns", Solid Mech. Archives, Vol. 5, 1980, 363-413.
7. J. Błachut, A. Gajewski, "On unimodal and bimodal optimal design of funicular arches", Intl J. Solids Structures, Vol. 17, 1981, 653-667.
8. J. Błachut, A. Gajewski, "Unimodal and bimodal optimal design of extensible arches with respect to buckling and vibrations", Optimal Control Appl. and Methods, Vol. 2, 1981, 383-402.
9. J. Błachut, "Analysis of the stability of prismatic arches with a deformable axis", Mech. Teor. Stos., Vol. 20, 1982, 141-157.
10. J. Błachut, "Unimodal optimal design of extensible arches with respect to buckling and vibrations", Engineering Transactions, Vol. 30, 1982, 37-55.
11. J. Błachut, "A note on optimal design of a beam with a mass at its end", J. of Sound and Vibr., Vol. 80, 1982, 203-208.
12. J. Błachut, "Parametrical optimal design of funicular arches against buckling and vibration", Intl J. Mech. Sci., Vol. 26, 1984, 305-310.
13. J. Błachut, M. Życzkowski, "Bimodal optimal design of clamped-clamped columns in creep conditions", Intl J. Solids Struct., Vol. 20, 1984, 571-577.
14. G.D. Galletly, J. Błachut, "Plastic buckling of short vertical cylindrical shells subjected to horizontal edge shear loads", J. Pressure Vessel Technology, Transactions of the ASME, Vol. 107, 1985, 101-106.
15. G.D. Galletly, J. Błachut, "Torispherical shells under internal pressure - Failure due to asymmetric plastic buckling or axisymmetric yielding", Proc. Instn Mech. Engrs, Part C, Vol. 199, 1985, 225-238.
16. G.D. Galletly, J. Błachut, J. Krużelecki, "Plastic buckling of imperfect hemispherical shells subjected to external pressure", Proc. Instn Mech. Engrs, Part C, Vol. 201, 1987, 153-170.
17. J. Błachut, "Optimal barrel-shaped shells under buckling constraints", AIAA J., Vol. 25, 1987, 186-188.
18. G.D. Galletly, J. Błachut, "Elastic buckling of internally-pressurised cylinder/bulkhead combinations", Proc. Instn Mech. Engrs, Part C, Vol. 201, 1987, 259-262.
19. J. Błachut, "Combined axial and pressure buckling of shells having optimal positive Gaussian curvature", Computers and Struct., Vol. 26, 1987, 513-519.
20. J. Błachut, G.D. Galletly, "Clamped torispherical shells under external pressure - Some new results", J. Strain Analysis, Vol. 23, 1988, 9-24.
21. J. Błachut, "Optimally shaped torispheres with respect to buckling and their sensitivity to axisymmetric imperfections", Computers and Struct., Vol. 29, 1988, 975-981.
22. J. Błachut, G.D. Galletly, "Externally pressurised torispheres - Plastic buckling and collapse" in '*Buckling of Structures - Theory and Experiment*', (eds), I. Elishakoff, J. Arbocz, C.D. Babcock and A. Libai, Elsevier Sci. Publ. Amsterdam, 1988, 29-45.
23. J. Błachut, "Search for optimal torispherical end closures under buckling constraints", Intl J. Mech. Sci., Vol. 31, 1989, 623-633.
24. G.D. Galletly, J. Błachut, "Axially-compressed cylindrical shells - A comparison of experiment and theory", in '*Inelastic Solids and Structures*', (eds), M. Kleiber and J.A. Konig, Pineridge Press Ltd., 1990, pp. 257-276.
25. J. Błachut, G.D. Galletly, "Buckling strength of imperfect spherical caps - some remarks", AIAA J., Vol. 28, 1990, 1317-1319.
26. J. Błachut, G.D. Galletly, A.G. Gibson, "CFRP domes subjected to external pressure", Marine Struct. J., Vol. 3, 1990, 149-173.

27. G.D. Galletly, J. Błachut, D.N. Moreton, "Internally-pressurised machined dome ends - A comparison of the plastic buckling of deformation and flow theories", Proc. Instn Mech. Engrs, Part C, Vol. 204, 1990, 169-186.
28. J. Błachut, G.D. Galletly, D.N. Moreton, "Buckling of near-perfect steel torispherical and hemispherical shells subjected to external pressure", AIAA J., Vol. 28, 1990, 1971-1975.
29. G.D. Galletly, J. Błachut, "Buckling design of imperfect welded hemispherical shells subjected to external pressure", Proc. Instn Mech. Engrs, Part C, Vol. 205, 1991, 175-188.
30. J. Błachut, F. Levy-Neto, G.D. Galletly, "Towards optimum CFRP domes", Proc. Instn Mech. Engrs, Part C, Vol. 205, 1991, 329-342.
31. J. Błachut, "Influence of meridional shaping on the collapse strength of FRP domes", Eng. Optimization, Vol. 19, 1992, 65-80.
32. J. Błachut, G.D. Galletly, "Externally-pressurised hemispherical fibre-reinforced plastic shells", Proc. Instn Mech. Engrs, Part C, Vol. 206, 1992, 179-191.
33. J. Błachut, "Externally pressurized filament wound domes - scope for optimization", Computers and Struct., Vol. 48, 1993, 153-160.
34. J. Błachut, "Filament wound torispheres under external pressure", J. Composite Struct., Vol. 26, 1993, 47-54.
35. J. Błachut, G.D. Galletly, "Influence of local imperfections on the collapse strength of domed end closures", Proc. Instn Mech. Engrs, Part C, Vol. 207, 1993, 197-207.
36. J. Błachut, G.D. Galletly, "Buckling of imperfect steel hemispheres", J. Thin-Walled Struct., Vol. 23, 1995, 1-20.
37. J. Błachut, "Plastic loads for internally pressurised torispheres", J. Press. Vessel Piping, Vol. 64, 1995, 91-100.
38. G.D. Galletly, J. Błachut, "Stability of complete circular and non-circular toroidal shells", Proc. Instn Mech. Engrs, Part C, Vol. 209, 1995, 245-255.
39. J. Błachut, G.D. Galletly, S. James, "On the plastic buckling paradox", Proc. Instn Mech. Engrs, Part C, Vol. 210, 1996, 477-488.
40. D.G. Moffat, J. Krużelecki, J. Błachut, "The effect of chord length and boundary conditions on the static strengths of a tubular T joint under brace compression loading", Marine Struct. J., Vol. 9, 1996, 935-947.
41. J. Błachut, "Minimum weight of internally pressurised domes subject to plastic load failure", J. Thin-Walled Struct., Vol. 27, 1997, 127-146.
42. J. Błachut, L.S. Ramachandra, "Optimization of internally pressurised torispheres subject to shakedown via GAs", Eng. Optimization, Vol. 29, 1997, 113-129.
43. J. Błachut, L. Dong, "Use of woven CFRP for externally pressurised domes", J. Composite Struct., Vol. 38, 1997, 553-563.
44. J. Błachut, "Buckling of sharp knuckle torispheres under external pressure", J. Thin-Walled Struct., Vol. 30, 1998, 55-77.
45. J. Błachut, "Some recent developments in strength and buckling of pressure vessel components", Progress in Struct. Eng and Materials, Vol. 1, 1998, 415-421.
46. L. Dong, J. Błachut, "Analysis and collapse of thick composite torispheres", Proc. Instn Mech. Engrs, Part E, Vol. 212, 1998, 103-117.
47. J. Błachut, O.R. Jaiswal, "On the choice of initial geometric imperfections in externally pressurised shells", J. Pressure Vessel Technology, Transactions of the ASME, Vol. 121, 1999, 71-76.
48. J. Błachut, O.R. Jaiswal, "Instabilities in torispheres and toroids under suddenly applied external pressure", J. Impact Engineering, Vol. 22, 1999, 511-530.

49. J. Błachut, "Modelling and analysis of multi-ply torispheres from draped carbon fabric", Computers and Struct., Vol. 76, 2000, 1-9.
50. J. Błachut, O.R. Jaiswal, "On buckling of toroidal shells under external pressure", Computers and Struct., Vol. 77, 2000, 233-251.
51. J. Błachut, "Optimal design of steel barrelled shells", ZAMM, Zeitschrift fuer Angewandte Mathematik und Mechanik, Vol. 81-3, 2001, S657-S658.
52. J. Błachut, P. Wang, "Buckling of bareled shells subjected to external hydrostatic pressure", J. Pressure Vessel Technology, Transactions of the ASME, Vol. 123, 2001, 232-239.
53. J. Błachut, "Buckling of externally pressurised barrelled shells - a comparison of experiment and theory", Intl J. Pressure Vessels Piping, Vol. 79, 2002, 507-517.
54. J. Błachut, "Collapse tests on externally pressurised toroids", J. Pressure Vessel Technology, Transactions of the ASME, Vol. 125, 2003, 91-96.
55. J. Błachut, "Optimal barreling of steel shells via simulated annealing algorithm", Computers and Struct., Vol. 81, 2003, 1941-1956.
56. J. Błachut, "Imperfection sensitivity of externally pressurised shells - static and pulse loading", Revue Europeenne des Elements Finis, Vol. 13, 2004, 787-810.
57. J. Błachut, "Buckling and first ply failure of composite toroidal pressure hull", Computers and Struct., Vol. 82, 2004, 1981-1992.
58. Sh.U. Galiev, J. Błachut, E.D. Skurlatov, O.P. Panova, G. Moltschaniwskyj, Z. Cui, "Experimental and theoretical design methodology of spherical shells under extreme static loading", Strength of Materials, N5, Vol. 371, 2004, 98-108 (ISSN 0556-171X).
59. J. Błachut, "Plastic loads for internally pressurised toroidal shells", J. Pressure Vessel Technology, Transactions of the ASME, Vol. 127, 2005, 151-156.
60. J. Błachut, "Buckling of shallow spherical caps subjected to external pressure", J. of Applied Mechanics, Transactions of the ASME, Vol. 72, 2005, 803-806.
61. J. Błachut, V.T.Vu, "Burst pressures for torispheres and shallow spherical caps", Intl J. for Experimental Mechanics – Strain, Vol. 43, 2007, 26-36.
62. J. Błachut, P. Smith "Tabu Search optimization of externally pressurised barrels and domes", Eng. Optimization, Vol. 39, 2007, 899-918.
63. J. Błachut, I.B. Iflefel, "Collapse of pipes with plane or gouged dents by bending moment", Intl J. of Pressure Vessels Piping, Vol. 84, 2007, 560-571.
64. J. Błachut, P. Smith, "Buckling of multi-segment underwater pressure hull", Ocean Engineering, Vol. 35, 2008, 247-260.
65. P. Smith, J. Błachut, "Buckling of externally pressurised prolate ellipsoidal domes", J. Pressure Vessel Technology, Transactions of the ASME, Vol. 130(1), 2008, 011210-1 - 011210-9.
66. J. Błachut, I.B. Iflefel, "Analysis of plain and gouged dents in steel pipes subjected to pressure and moment loading", J. Pressure Vessel Technology, Transactions of the ASME, Vol. 130(2), 2008, 021203-1 – 021203-9.
67. J. Błachut, "Elastic buckling of vertical cantilevered cylinders", Jnl Applied and Theoretical Mechanics, Vol. 46(4), 2008, 1-21.
68. J. Błachut, "Failure criteria used in structural optimisation", Czas. Techn., Vol. 105, Z4-M(5), 2008, 5-18 (ISSN 1897-6328).
69. J. Błachut, K. Magnucki, "Strength, stability and optimization of pressure vessels: review of selected problems", Applied Mechanics Reviews, Transactions of the ASME, Vol. 61(6), 2008, 060801-1 – 060801-33.

70. V.T. Vu, J. Błachut, "Plastic instability pressure of toroidal shells", *J. Pressure Vessel Technology, Transactions of the ASME*, Vol. 131(5), 2009, 051203-1 051203-10.
71. J. Błachut, "Buckling of multilayered metal domes", *Thin-Walled Structures*, Vol. 47(12), 2009, 1429-1438.
72. J. Błachut, "Buckling of axially compressed cylinders with imperfect length", *Computers and Struct.*, Vol. 88(5-6), 2010, 365-374.
73. J. Błachut, O. Ifayefunmi, "Plastic buckling of conical shells", *Journal Offshore Mechanics and Arctic Engineering, Transactions of the ASME*, Vol. 132(4), 2010, 1-12.
74. J. Błachut, "Buckling of externally pressurized shallow spherical caps from composites", *Mechanics of Advanced Materials and Structures*, Vol. 18(2), 2011, 96-105.
75. J. Błachut, "On elastic-plastic buckling of cones", *Thin-Walled Structures*, Vol. 49(1), 2011, 45-52.
76. J. Błachut, I.B. Iflefel, "Analysis of steel pipelines with plain and gouged dents", *Intl J. for Experimental Mechanics - Strain*, Vol. 47(s1), 2011, e34-e51.
77. J. Błachut, O. Ifayefunmi, "Buckling of unstiffened steel cones subjected to axial compression and external pressure", *Journal of Offshore Mechanics and Arctic Engineering, Transactions of the ASME*, Vol. 134, 2012, 031603-1 – 031603-9.
78. O. Ifayefunmi, J. Błachut, "Combined stability of unstiffened cones – theory, experiments and design codes", *Intl Jnl Pressure Vessel Piping*, 2012, Vol. 93-94, 2012, 57-68.
79. J. Błachut, "Interactive plastic buckling of cones subjected to axial compression and external pressure", *Ocean Engineering*, Vol. 48, 2012, 10–16.
80. J. Błachut, A. Muc, J. Rys, "Plastic buckling of cones subjected to axial compression and external pressure", *J. Pressure Vessel Technology, Transactions of the ASME*, 2012, in print.