Dr. Adam Jan Sadowski

Fig. 5: specimen K1: buckling mode

From: Thomas Reinke, Adam J. Sadowski, Thomas Ummenhofer and J. Michael Rotter, "Large scale bending tests of spiral welded steel tubes", EUROSTEEL 2014, Naples, Italy, September 10-12, 2014

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Summary:
Dr Adam Jan Sadowski is a Senior Lecturer in Structural Engineering. His research interests include the theoretical and computational simulation of the strength and stability of complex metal shell structures, for which he employs methods from shell theory, finite element analysis, applied mathematics and solid mechanics.

He is also a Member of and Committee Secretary to Working Groups for CEN / TC250 / SC3 dealing with EN 1993-1-6 on metal shells (WG06), -1-7 on plate assemblies (WG07), -4-1 on silos (WG15), -4-2 on tanks (WG16) and -4-3 on pipelines (WG17), as well as WG05 for CEN / TC250 / SC1 dealing with EN 1991-4 for actions on silos and tanks. He is also a Member of and Secretary to the European Convention for Constructional Steelwork (ECCS) Technical Working Group 8.4 on shell buckling.

He is a member of SC3 PT5 working on the evolution of EN 1993-1-6 on metal shells and EN 1993-1-7 on plate assemblies, SC1 PT10 working on the evolution of EN 1991-4 on silo and tank loading, and SC3 PT12 working on the evolution of EN 1993-4-1 on metal silos and EN 1993-4-2 on metal tanks. He is also a member of the SC3 Ad-Hoc Group on FE working on the creation of a new EN 1993-1-14 on the design of metal structures assisted by finite elements.

Qualifications:

- PhD in Structural Engineering (The University of Edinburgh, 2010) - Thesis title "Modelling of Failures in Thin-Walled Metal Silos under Eccentric Discharge"
- MEng in Structural and Fire Safety Engineering (The University of Edinburgh, 2007; 1st class Honours)
- MSc in Mathematics (The University of Edinburgh, 2012; with Distinction)
- MEd in University Learning and Teaching (Imperial College London, 2018; with Distinction)
- Member of the Institute of Mathematics and its Applications (IMA)
- Chartered Mathematician (CMath) and Charctered Scientist (CSci) with the IMA since 2015

Selected Journal Publications:

Fajuyitan O.K. & Sadowski A.J. (2018) "Imperfection sensitivity in cylindrical shells under uniform bending" *Advances in Structural Engineering*, accepted for publication.

Qing L., Sadowski A.J. & Rotter J.M. (2018) "Ovalisation restraint in four-point bending tests of tubes" *ASCE Journal of Engineering Mechanics*, accepted for publication.
http://dx.doi.org/10.1061/(ASCE)EM.1943-7889.0001571

Sadowski A.J., Pototschnig L. & Constantinou P. (2018) "The 'panel analysis' technique in the computational study of axisymmetric thin-walled shell systems" *Finite Elements in Analysis and Design*, accepted for publication.
http://dx.doi.org/10.1016/j.finel.2018.07.004

Wang J., Sadowski A.J. & Rotter J.M. (2018) "Influence of ovalisation on the plastic collapse of cylindrical tubes under uniform bending" *International Journal of Pressure Vessels and Piping*, accepted for publication.
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Boyez A., Sadowski A.J. & Izzuddin B.A. (2018) "A 'boundary layer' finite element for thin multi-strake conical shells" *Thin-Walled Structures*, 130C, 535-549.
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http://dx.doi.org/10.1016/j.ijmecsci.2017.05.022

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Sadowski A.J., Rotter J.M., Stafford P.J., Reinke T. & Ummenhofer T. (2017) “On the gradient of the yield plateau in structural carbon steels” *Journal of Constructional Steel Research*, 130C, 120-130. http://dx.doi.org/10.1016/j.jcsr.2016.11.024

Rotter J.M. & Sadowski A.J. (2016) ”Full plastic resistance of tubes under bending and axial force: exact treatment and approximations” *Structures*, 10C, 30-38. http://dx.doi.org/10.1016/j.istruc.2016.11.004

Boyez A., Sadowski A.J. & Izzuddin B.A. (2017) “A novel ‘boundary layer’ finite element for the efficient analysis of thin cylindrical shells” *Computers and Structures*, 182C, 573-587. http://dx.doi.org/10.1016/j.compstruct.2016.10.016

Sadowski A.J., Camara A., Málaga-Chuquitaype C. & Dai K. (2016) “Seismic analysis of a tall metal wind turbine support tower with realistic geometric imperfections” *Earthquake Engineering and Structural Dynamics*, 46, 201-219. http://dx.doi.org/10.1002/eqe.2785

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Sadowski A.J. & Rotter J.M. (2014) "Modelling and behaviour of cylindrical shell structures with helical features". *Computers and Structures*, 133C, 90-102. http://dx.doi.org/10.1016/j.compstruc.2013.11.012

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Sadowski A.J. & Rotter J.M. (2013) "Buckling in eccentrically discharged silos and the assumed pressure distribution." *ASCE Journal of Engineering Mechanics*, 139(7), 858-867. http://dx.doi.org/10.1061/(ASCE)EM.1943-7889.0000525

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Rotter J.M. & Sadowski A.J. (2012). "Cylindrical shell bending theory for orthotropic shells under general axisymmetric pressure distributions". *Engineering Structures*, 42, 258-265. http://dx.doi.org/10.1016/j.engstruct.2012.04.024

Sadowski A.J. & Rotter J.M. (2012). "Slender thin cylindrical shells under unsymmetrical strip loads". *Thin-Walled Structures*, 61,169-179. http://dx.doi.org/10.1016/j.tws.2012.03.021

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Selected Conference Publications:

Boyez A., Sadowski A.J. & Izzuddin B.A. (2018) "A meta-element approach to linear buckling analysis for thin cylindrical shells" *Extended Abstract accepted for the 13th International Conference on Computational Structures Technology 2018*, 4-6 September, Sitges, Barcelona, Spain.

Chatzioannou K., Sadowski A.J. & Rotter J.M. (2017) "An investigation of out-of-roundness in partially constructed silos and tanks" *Proc. 9th Hellenic National Conference on Steel Structures*, 5-7 October, Larisa, Greece.

Peters D.J., Sadowski A.J., Rotter J.M. & Taras A. "Calibration of Eurocode design models of thin-walled cylinder under bending with full scale tests" *Eurosteel 2017*, 13-15 September, Copenhagen, Denmark.

Rotter J.M. & Sadowski A.J. "Development of circular tube slenderness classifications under axial and bending actions" *Eurosteel 2017*, 13-15 September, Copenhagen, Denmark.

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Wang J. & Sadowski A.J. "Buckling of elastic cylindrical shells under symmetric but non-uniform bending moment distributions" *Eurosteel 2017*, 13-15 September, Copenhagen, Denmark.

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Rotter J.M. & Sadowski A.J. (2014). "Thin tubular members design for bending – Uniform bending with small axial loads." *Proc. Eurosteel 2014 Conference,* 10-12 September, Naples, Italy.
http://dx.doi.org/10.13140/2.1.4013.5040

Reinke T., Sadowski A.J., Ummenhofer T. & Rotter J.M. (2014). "Large scale bending tests of spiral welded steel tubes." *Proc. Eurosteel 2014 Conference,* 10-12 September, Naples, Italy.
http://dx.doi.org/10.13140/2.1.5062.0806

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Sadowski A.J. & Rotter J.M. (2009). "Eccentric discharge buckling of a very slender silo." *Proc. IASS 2009 Symposium*, 28 September – 2 October, Valencia, Spain.

Sadowski A.J. & Rotter J.M. (2008). "A study of buckling in steel silos under eccentric discharge flows of stored solids." *Proc. Eurosteel 2008 Conference*, 3-5 September, Graz, Austria, 1509-1514.