



Professor Robin Olsson

Failure of composite laminates

See:

- <https://se.linkedin.com/pub/robin-olsson/16/323/385>
- http://www.researchgate.net/profile/Robin_Olsson/publications
- http://www.researchgate.net/profile/Robin_Olsson/info
- <http://www.linknovate.com/expert/olsson-r-6336811/>
- <http://www.lnca.ita.br/?q=node/14>

Education: KTH Royal Institute of Technology: PhD in Aeronautics

Career:

- 2011 – present: Technology Platform Leader, Swerea SICOMP
- 2008 – present: Senior Scientist, Swerea SICOMP AB
- 2003 – 2008: Senior Lecturer, Imperial College London
- 2001 – 2003: Senior Researcher, FOI, Test/theory composite materials for aircraft structures
- 1988 – 2000: FFA – The Aeronautical Research Institute of Sweden, Test/theory composites
- 1993 – 1994: Research Assistant, MIT, Completing research work for MSc thesis.

2013 project: Modeling crash behavior in future lightweight composite vehicles

The purpose of the project is to lay the foundation for establishing confidence in crash predictions of composite vehicles to a level comparable with current state of the art for conventional metallic structures. It is of utmost importance that the Swedish automotive industry properly takes on this issue with respect to future competitiveness in lightweight design. To accomplish a robust and cost efficient simulation of crash in a composite structure, the project proposes four main work packages comprising research issues ranging from damage modeling at the ply-level to homogenization based modelling of the laminate behavior as well as dissemination and valorization of the results obtained.

Selected Publications:

Olsson, R. Impact response of orthotropic composite laminates predicted from a one-parameter

differential equation, *AIAA J*, 1992, 30, (6), pp 1587-1596.

Olsson, R. Impact response of composite laminates — a guide to closed form solutions, FFA TN 1992-33, 1993, The Aeron Res Inst of Sweden, Bromma, Sweden.

Olsson, R. and MCMANUS, H.L. Improved theory for contact indentation of sandwich panels, *AIAA J*, 1996, 34, (6), pp 1238-1244.

Olsson, R. A review of impact experiments at FFA during 1986 to 1998, FFA TN 1999-08, 1999, The Aeron Res Inst of Sweden, Bromma, Sweden.

Robin Olsson, Leif E. Asp, Sören Nilsson and Anders Sjögren, “A review of some key developments in the analysis of the effects of impact upon composite structures”, *Composite Structures: Theory and Practice*, ASTM STP 1383, P. Grant and C.Q. Rousseau, editors, American Society for Testing and Materials, West Conshohocken, Pennsylvania, 2000, pp. 12-28

Olsson, R. Mass criterion for wave controlled impact response of composite plates, *Composites Part A*, 2000, 31, (8), pp 879-887 (Correction in *Composites Part A*, 32, (2) pp 291).

Olsson, R. Analytical prediction of large mass impact damage in composite laminates, *Composites Part A*, 2001, 32, (9), pp 1207-1215.

Olsson, R. Engineering method for prediction of impact response and damage in sandwich panels, *J Sandwich Struct Mater*, 2002, 4, (1), pp 83-95.

Wiggenraad, J.F.M., Greenhalgh, E.S. And Olsson, R. Design and analysis of stiffened composite panels for damage resistance and tolerance, Paper 81208, Fifth World Congr Comput Mech, Vienna, 2002, eds Mang, H.A., Rammerstorfer, F.G. And Eberhardsteiner, J (Eds).

Olsson, R. Closed form prediction of peak load and delamination onset under small mass impact, *Compos Struct*, 2003a, 59, (3), pp 340-348.

Olsson, R. Energy criterion for dent growth in sandwich panels. Proc. 6th Int Conf on Sandwich Structures, CRC Press, Boca Raton, 2003b, pp 309-409.

Olsson, R., Asp, L.E., Nilsson, S. And Sjögren, A. A review of some key developments in the analysis of the effects of impact upon composite structures, *Composite Structures: Theory and Practice*, 2000, ASTM STP 1383. eds. Grant, P. and Rousseau, C. (EdS) ASTM, West Conshohocken, pp 12-28.

Lingfu Zeng and Robin Olsson (FOI Swedish Defence Research Agency, Aeronautics Division, FFA SE-172 90 Stockholm, Sweden), “Buckling-induced delamination analysis of composite laminates with soft-inclusion”, Technical Report FOI-R—412-SE, February 2002, ISSN 1650-1942

Olsson, R., Iwarsson, J., Melin, L.G., Sjögren, A. and Solti, J. Experiments and analysis of laminates with artificial damage, *Compos Sci Techn*, 2003, 63, (2), pp 199-209.

G.A.O. Davies and R. Olsson (Department of Aeronautics, Imperial College, London, UK), “Impact on composite structures”, *The Aeronautical Journal*, November 2004, pp. 541-

R. Craven, P. Sztetek and R. Olsson (Department of Aeronautics, Imperial College London, Prince Consort Road, South Kensington, London SW7 2AZ, UK), “Investigation of impact damage in multi-directional tape laminates and its effect on local tensile stiffness”, *Composites Science and Technology*, Vol. 68, No. 12, September 2008, pp. 2518-2525, Special Issue: Deformation and Fracture of Composites: Analytical, Numerical and Experimental Techniques, with regular papers, doi:10.1016/j.compscitech.2008.05.008

R. Craven, S. Pindoria and R. Olsson (Department of Aeronautics, Imperial College London, South Kensington, London SW7 2AZ, UK), “Finite element study of compressively loaded fibres fractured during impact”, *Composites Science and Technology*, Vol. 69, No. 5, April 2009, pp. 586-593, doi:10.1016/j.compscitech.2008.11.034

R. Craven, L. Iannucci and R. Olsson, “Delamination buckling: A finite element study with realistic delamination shapes, multiple delaminations and fibre fracture cracks”, *Composites Part A: Applied Science and Manufacturing*, Vol. 41, No. 5, May 2010, pp.684-692, doi:10.1016/j.compositesa.2010.01.019