Professor Esben Lindgaard

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About Esben Lindgaard and his research, Carsten Nielsen writes:
"Esben Lindgaard is nominated as NoACMs candidate [NoACM = Nordic Association for Computational Mechanics} for the European ECCOMAS PhD Prize 2011 (European Community on Computational Methods in Applied Sciences). Design of the composite structures as wind turbine blades is a complex task. Taking advantage of advanced materials as possible, it is necessary to tailor them to the specific requirements for stiffness, strength, cost and weight, so material utilization will be as good as possible. This is difficult to achieve with a conventional design process, so Esben Lindegaards PhD project ("Buckling Optimization of Composite Structures") has developed rational methodologies for optimal design of composite structures. The methods are based on mathematical techniques and computer simulation, and they make it possible to design lighter and yet stronger and stiffer structures. Esben Lindgaard grew up in Viborg and student from Viborg Gymnasium in 2001. He graduated as a civil engineer (mechanical engineer) from Aalborg University in 2007. He was awarded a PhD in 2011, and is now employed as an assistant professor at the Department of Mechanical and Manufacturing Engineering at Aalborg University."

Selected Publications:

Erik Lund, Leon Stenholt Johansen, Christian Gram Hvejsel and Esben Lindgaard Olesen, "Multi-material topology optimization of geometrically nonlinear multi-layered composite shell structures", 8th World Congress on Computational Mechanics (WCCM8), etc., 2008

Esben Lindgaard Olesen, Erik Lund and Lars C.T. Overgaard, "Optimization formulations for composite structures subjected to compression loads", 8th World Congress on Computational Mechanics (WCCM8), etc., 2008

Esben Lindgaard and Erik Lund, "A general type nonlinear buckling optimization procedure of composite structures", Proceedings of the Twenty Second Nordic Seminar on Computational Mechanics, edited by Lars Damklide, et al., Dept. Civil Engineering, Aalborg University, 2009

Esben Lindgaard and Erik Lund, "Optimization formulations for the maximum nonlinear buckling load of composite structures", Structural and Multidisciplinary Optimization, Vol. 43, No. 5, 2010, pp. 631-646

Esben Lindgaard and Erik Lund, "Nonlinear buckling optimization of composite structures", Computer Methods in Applied Mechanics and Engineering, Vol. 199, Nos. 37-40, 1 August 2010

Lindgaard E, Lund E (2010) Nonlinear buckling optimization of composite structures. Compt Methods Appl Mech Eng 199(37–40):2319–2330.

E. Lindgaard and E. Lund. Optimization of composite structures considering local buckling. IV European Conference on Computational mechanics ECCM, Palais des Congrès, Paris, May 16-21, 2010

Esben Lindgaard, Erik Lund and Kim Rasmussen, "Nonlinear buckling optimization of composite structures considering 'worst' shape imperfections", International Journal of Solids and Structures, Vol. 47, Nos. 22-23, November 2010, pp. 3186-3202

Esben Lindgaard and Erik Lund "A unified approach to nonlinear buckling optimization of composite structures", Computers & Structures, Vol. 89, Nos. 3-4, February 2011, pp. 357-370

Esben Lindgaard and Erik Lund, "A novel rational design method for laminated composite structures exhibiting complex geometrically nonlinear buckling behaviour" Proceedings 15th European Conference on Composite Materials (ECCM15), Venice, Italy, 24-28 June 1012

Esben Lindgaard and Jonas Dahl, "On compliance and buckling objective functions in topology optimization of snap-through problems", Structural and Multidisciplinary Optimization, Vol. 47, No. 3, pp 409-421, March 2013

Esben Lindgaard, "An optimization formulation for improved post-buckling stability of laminated composite structures", Proceedings of the 10th World Congress on Structural and Multidisiplinary Optimization, Orlando, Florida, USA, 2013

Søren Randrup Henrichsen, Esben Lindgaard and Erik Lund, "Buckling optimization of composite structures using a discrete material parametrization considering worst shape imperfections", Proceedings of the 11th World Congress on Computational Mechanics (WCCM XI), etc., edited by E. Onate, X. Oliver and A. Huerta, 2014