

## **PUBLICATIONS OF PROF. TOM VERSTRAETE 2013-2005**

### **Archival Journals**

Joly, M.; Verstraete, T.; Paniagua, G.: Multidisciplinary design optimization of a compact highly-loaded fan. *Structural and Multidisciplinary Optimization*, Published online 25 August 2013 (JCR Impact Factor 1,488)

Verstraete, T.; Coletti, F.; Vanderwielen, T.; Bulle, J.; Arts, T.: Optimization of a U-Bend for Minimal Pressure Loss in Internal Cooling Channels – Part I: Numerical Method. In *ASME Journal of Turbomachinery*, 2013, Vol. 135, Issue 5, pp 051015 (JCR Impact Factor 0,542)

Coletti, F.; Verstraete, T.; Vanderwielen, T.; Bulle, J.; Arts, T.: Optimization of a U-Bend for Minimal Pressure Loss in Internal Cooling Channels – Part II: Experimental Validation. In *ASME Journal of Turbomachinery*, 2013, Vol. 135, Issue 5, pp 051016 (JCR Impact Factor 0,542)

Joly, M.; Verstraete, T.; Paniagua, G.: Differential evolution based soft optimization to attenuate vane-rotor shock interaction in high-pressure turbines, In *Applied Soft Computing*, April 2013, Vol. 13, Issue 4, pp 1882-1891 (JCR Impact Factor 2.612)

Paniagua, G. ; Lavagnoli, S. ; Verstraete, T. ; Mahmoudi, W. ; Benamara, T. : Aero design of a Transonic Contra-rotating turbine to drive the LOX and LH2 turbopumps in an expander cycle. *International Journal of Numerical Methods for Heat and Fluid Flow* Vol. 23, Issue 4, pp 553 (JCR Impact Factor 0.752)

Mueller, L.; Alsalihi Z.; Verstraete, T. : Multidisciplinary Optimization of a Turbocharger Radial Turbine. In *ASME Journal of Turbomachinery*, 135, 021022 (2013) (9 pages) (JCR Impact Factor 0,542)

Okui, H.; Verstraete, T.; Van Den Braembussche, R.A.; Alsalihi Z.: Three Dimensional Design and Optimization of a Transonic Rotor in Axial Flow Compressors. In *ASME Journal of Turbomachinery*, 2013, Vol. 135, Issue 3, pp 031009 (JCR Impact Factor 0,542)

Verstraete, T.; Alsalihi, Z.; Van Den Braembussche, R.A.: Multi-disciplinary Optimization of a Radial Compressor for Micro Gas Turbine Applications, In *ASME Journal of Turbomachinery*, July 2010, Vol. 132, Issue 3, paper 0321004 (JCR Impact Factor 0,542)

Amaral, S.; Verstraete T.; Van Den Braembussche, R.A.; Arts, T.: Design and Optimization of the Internal Cooling Channels of a HP Turbine Blade — Part I, Methodology, In *ASME Journal of Turbomachinery*, April 2010, vol. 132, Issue 2, 021013 (JCR Impact Factor 0,542)

Verstraete T.; Amaral, S.; Van Den Braembussche, R.A.; Arts, T.: Design and Optimization of the Internal Cooling Channels of a HP Turbine Blade — Part II, Optimization, In *ASME Journal of Turbomachinery*, April 2010, vol. 132, Issue 2, 021014 (JCR Impact Factor 0,542)

Verleysen, P.; Degrieck, J.; Verstraete, T.; Van Slycken, J.: Influence of Specimen Geometry on Split Hopkinson Tensile Bar Tests on Sheet Material, In *Experimental Mechanics*, Vol.48, Issue 5, pp. 587-598, 2008.  
(JCR Impact Factor 1,522)

Verstraete T.; Alsalihi, Z.; Van Den Braembussche, R.A.: A comparison of conjugate heat transfer methods applied to an axial helium turbine, In *IMECH E Part A Journal of Power and Energy*, Vol. 221, Issue A7, pp. 981–989, Nov. 2007.  
(JCR Impact Factor 0,7)

Verstraete, T.; Alsalihi, Z.; Van Den Braembussche, R.A.: A comparison of conjugate heat transfer methods applied to an axial helium turbine  
*IMechE Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy*, Vol. 221, Issue 7, November 2007, pp.981-989  
VKI RP 2008-01

Peirs, J.; Waumans, T.; Vleugels, P.; Al-bender, F.; Stevens, T.; Verstraete, T.; Stevens, S.; Hulst, R.; Verstraete, D.; Fiorini, P.; Van Den Braembussche, R.A.; Driesen, J.; Puers, R.; Hendrick, P.; Baelmans, M.; Reynaerts, D.: Micropower generation with microgasturbines: a challenge  
*Proc. IMechE, Part C: J. Mechanical Engineering Science*, Vol. 221, Issue 4, April 2007, pp. 489-500  
VKI RP 2007-39

Verstraete, T.; Alsalihi, Z.; Van Den Braembussche, R.A.: Numerical study of the heat transfer in Micro Gas Turbines  
Proceedings of the ASME Turbo Expo 2006, May 8-11, 2006, Barcelona, Spain, GT2006-90161  
*Journal of Turbomachinery*, Vol. 129, Issue 4, October 2007, pp. 835-841  
VKI RP 2006-11

Van Den Braembussche, R.A.; Alsalihi, Z.; Verstraete, T.: Fast - multidisciplinary - multipoint optimization of turbomachines  
*ERCFTAC Bulletin*, Vol. 66, September 2005, pp 25-28  
VKI RP 2005-53

Peirs, J.; Verplaetsen, F.; Driesen, J.; Belmans, R.; Puers, R.; Verstraete, P.; Hendrick, P.; Baelmans, M.; Van Den Braembussche, R.A.; Reynaerts, D.: Micro power generation based on micro gas turbines: a challenge  
*VDI/VDE-IT, MSTnews Magazine*, N°4/5, June 2005, pp 37-39  
VKI RP 2005-51

### **Other journal papers**

VAN DEN BRAEMBUSSCHE R.A., ALSALIHI Z., VERSTRAETE. T.  
Fast - Multi-disciplinary -Multipoint Optimization of Turbomachines, ERCOFTAC Bulletin, Vol. 66, pp. 25–28, Sept. 2005.

### **Meeting Papers**

VERSTRAETE, T. & LI, J.: Multi-objective optimization of a U-bend for minimal pressure loss and maximal heat transfer performance in internal cooling channels  
ASME Turbo Expo 2013, Turbine Technical Conference and Exposition, June 3-7, 2013, San Antonio, USA, ASME GT2013-95423

SOZIO, E.; VERSTRAETE, T.; PANIAGUA, G.: Design-optimization approach to multistage axial contra-rotating turbines  
ASME Turbo Expo 2013, Turbine Technical Conference and Exposition, June 3-7, 2013, San Antonio, USA, ASME GT2013-94762

JOLY, M.; VERSTRAETE, T.; PANIAGUA, G.: Full design of a highly loaded and compact contra-rotating fan using multidisciplinary evolutionary optimization  
ASME Turbo Expo 2013, Turbine Technical Conference and Exposition, June 3-7, 2013, San Antonio, USA, ASME GT2013-94433

JOLY, M.; VERSTRAETE, T.; PANIAGUA, G.: Full Design of a Highly Loaded Fan by Multi-Objective Optimization of Through-Flow and High-Fidelity Aero-Mechanical Performances  
Proceedings of ASME Turbo Expo 2012: Power for Land, Sea and Air, Copenhagen, Denmark, June 11-15, 2012, GT2012-69686

CHAHINE, C.; SEUME, J.R.; VERSTRAETE, T.: The Influence of Metamodeling Techniques on the Multidisciplinary Design Optimization of a Radial Compressor Impeller  
Proceedings of ASME Turbo Expo 2012: Power for Land, Sea and Air, Copenhagen, Denmark, June 11-15, 2012, GT2012-68358

VERSTRAETE, T.; PRINSIER, J.; DI SANTE, A.; DELLA GATTA, S.; COSI, L.: Design Optimization of a Low Pressure Steam Turbine Radial Diffuser Using an Evolutionary Algorithm and 3D CFD

Proceedings of ASME Turbo Expo 2012: Power for Land, Sea and Air, Copenhagen, Denmark, June 11-15, 2012, GT2012-69515

MUELLER, L.; ALSALIHI, Z.; VERSTRAETE, T.: Multidisciplinary optimization of a turbocharger radial turbine

Proceedings of ASME Turbo Expo 2012: Power for Land, Sea and Air, Copenhagen, Denmark, June 11-15, 2012, GT2012-68403

VAN DEN BRAEMBUSSCHE, R.A.; ALSALIHI, Z.; VERSTRAETE, T.; MATSUO, A.; IBARAKI, S.; SUGIMOTO, K.; TOMITA, I.: Multidisciplinary multipoint optimization of a transonic turbocharger compressor

ASME Turbo Expo 2012: Power for Land, Sea and Air, Copenhagen, Norway, June 2012, ASME GT2012-69645

VERSTRAETE, T.; HILDEBRANDT, A.; VAN DEN BRAEMBUSSCHE, R.A.: Multidisciplinary design and off-design optimization of a radial compressor for industrial applications

10th International Symposium on Experimental Computational Aerothermodynamics of Internal Flows, ISAIF10, Brussels, Belgium, July 4-7, 2011

JOLY, M.; MAFFULLI, R.; FERNANDEZ VILLACE, V.; PANIAGUA, G.; VERSTRAETE, T.: Air turbo rocket turbomachinery design

ISABE 2011, XX International Symposium on Air Breathing Engines, Gothenburg, Sweden, September 12-16, 2011

JOLY, M.; VERSTRAETE, T.; PANIAGUA, G.: Design-optimization for compactness of highly-loaded fan rotor

10th International Symposium on Experimental Computational Aerothermodynamics of Internal Flows, ISAIF10, Brussels, Belgium, July 4-7, 2011

PUENTE, R.; PANIAGUA, G.; VERSTRAETE, T.: Aerodynamic characterization of transonic turbine vanes optimized to attenuate rotor forcing

ASME Turbo Expo 2011: Power for Land, Sea and Air, June 6-10, 2011, Vancouver, Canada ASME GT2011-46553

TAKAHASHI, T.; ARTS, T.; VERSTRAETE, T.; PRINSIER, J.: Benchmark simulation of RANS CFD for heat transfer evaluation on the VKI LS89 blade

International Gas Turbine Congress, Osaka, Japan, Novembre 13-18, 2011, IGTC2011-ABS-0198

VERSTRAETE, T.: CADO: a computer aided design and optimization tool for turbomachinery applications EngOpt2010, 2nd International Conference on Engineering Optimization, Lisbon, Portugal, September 6-9, 2010

JOLY, M.; PANIAGUA, G.; VERSTRAETE, T.: Attenuation of vane distortion in a transonic turbine using optimization strategies, Part II – Optimization

ASME Turbo Expo 2010: Power for Land, Sea and Air, June 14-18, 2010, Glasgow, United Kingdom, ASME GT2010-22371

JOLY, M.; VERSTRAETE, T.; PANIAGUA, G.: Attenuation of vane distortion in a transonic turbine using optimization strategies, Part I – methodology  
ASME Turbo Expo 2010: Power for Land, Sea and Air, June 14-18, 2010, Glasgow, United Kingdom, ASME GT2010-22370

Peirs, J.; Waumans, T.; Liu, K.; Ferraris, E.; Verstraete, T.;  
Van Den Braembussche, R.A.; Reynaerts, D.: Experimental verification of compressor performance for an ultra-microgasturbine  
PowerMEMS, December 1-4, 2009, Washington, USA  
VKI RP 2010-13

Paniagua, G.; Lavagnoli, S.; Verstraete, T.; Mahmoudi, W.; Benamara, T.: Aerodesign of a Transonic Contrarotating Turbine for a Rocket Engine  
45<sup>th</sup> AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Denver, USA, August 2-5, 2009, AIAA Paper 2009-5105.  
VKI RP 2009-77

Verstraete, T.; Alsalihi, Z.; Van Den Braembussche, R.A.: Multidisciplinary Optimization of Micro-gasturbines taking into account Internal Heat Transfer  
IGTC 2007, 9th International Gas Turbine Congress 2007, Tokyo, Japan, December 2-7, 2007, TS-029  
VKI RP 2008-06

Peirs, J.; Van Den Braembussche, R.A.; Hendrick, P.; Baelmans, M.; Driesen, J.; Puers, R.; Al-bender, F.; Waumans, T.; Vleugels, P.; Ferraris, E.; Liu, K.; Alsalihi, Z.; Di Sante, A.; Verstraete, J.; Grossen, J.; Beuret, P.; Trilla, J.; Stevens, T.; Rogiers, F.; Stevens, S.; Ceysens, F.; Reynaerts, D.: Development of a gas turbine generator with a 20 mm rotor  
PowerMEMS 2007, 7<sup>th</sup> International Workshop on Micro and Nano Technologies for Power Generation and Energy Conversion systems, Freiburg, Germany, November 28 - 29, 2007, pp. 355 – 358  
VKI RP 2008-03

Verstraete, T.; Garreau, M.; Alsalihi, Z.; Van Den Braembussche, R.A.: Multidisciplinary optimization of a radial turbine for micro gas turbine application  
7<sup>th</sup> European Conference on Turbomachinery Fluid Dynamics and Thermodynamics, Athens, Greece, March 5-9, 2007  
VKI RP 2007-27

Verstraete, T.: Multidisciplinary optimization of a radial turbine for micro gasturbine applications  
ASME Turbo Expo 2007: Power for Land, Sea and Air, Montreal, Canada, May 14-17, 2007

VKI RP 2007-05

Reynaerts, D.; Van Den Braembussche, R.A.; Hendrick, P.; Baelmans, M.; Driesen, J.; Puers, R.; Al-bender, F.; Peirs, J.; Waumans, T.; Vleugels, P.; Liu, K.; Alsalihi, Z.; Di Sante, A.; Verstraete, T.; Verstraete, D.; Trilla, J.; Stevens, T.; Rogiers, F.; Stevens, S.; Ceyskens, F.: Development of a gasturbine with a 20 mm rotor: review and perspectives PowerMEMS 2006, 6th International Workshop on Micro and Nano Technologies for Power Generation and Energy Conversion systems, 29 November – 1 December, 2006, Berkeley, California, USA

VKI RP 2007-04

Verstraete, T.; Alsalihi, Z.; Van Den Braembussche, R.A.: A conjugate Heat transfer Method applied to Turbomachinery  
European Conference on Computational Fluid Dynamics, ECCOMAS CFD 2006, Egmond aan Zee, The Netherlands, September 5-8, 2006  
VKI RP 2006-38

Van Den Braembussche, R.A.; Alsalihi, Z.; Verstraete, T.: Heat and power balance in micro gasturbine rotors  
PowerMEMS 2004, 4th International Workshop on Micro and Nanotechnology for Power Generation and Energy Conversion Applications, November 28-30, 2004, Kyoto, Japan, pp 84-91  
VKI RP 2005-19

### **Contribution to Books / Lecture Series:**

Mueller, L.; Verstraete, T.; Arts, T.: Design of the primary liquid-metal pump of the Myrrha research reactor  
ETC 2013, 10th European Turbomachinery Conference, April 15-19, 2013, Lappeenranta, Finland, ISBN 978-952-265-385-7

Verstraete, T.: Introduction to optimization and multidisciplinary design  
In “Introduction to Optimization and Multidisciplinary Design in Aeronautics and Turbomachinery”, von Karman Institute for Fluid Dynamics Lecture Series 2012, May 7 – 11, 2012. ISBN-978-2-87516-032-4

Verstraete, T.: Multidisciplinary optimization of turbomachinery components using differential evolution  
In “Introduction to Optimization and Multidisciplinary Design in Aeronautics and Turbomachinery”, von Karman Institute for Fluid Dynamics Lecture Series 2012, May 7 – 11, 2012. ISBN-978-2-87516-032-4

Verstraete, T.; Roytta, P.; Henner, M.; Alsalihi, Z.; Brouckaert, J.F.: Design and off-design optimization of a fan for automotive applications  
The 9th European Conference on Turbomachinery Fluid Dynamics and Thermodynamics (ETC 9), Istanbul, Turkey, March 21-25, 2011, ISBN 978-975-561-389-

Marinus, B. G.; Verstraete, T.; Van Den Braembusschen R.A.; Roger M.: Optimization of propeller blades

In "Introduction to Optimization and Multidisciplinary Design in Aeronautics and Turbomachinery", von Karman Institute for Fluid Dynamics Lecture Series 2010, May 31 – June 4

Verstraete, T.: Multidisciplinary optimization of turbomachinery components using differential evolution

In "Introduction to Optimization and Multidisciplinary Design in Aeronautics and Turbomachinery", von Karman Institute for Fluid Dynamics Lecture Series 2010, May 31 – June 4, 2010. ISBN-13 987-2-87516-009-6

Verstraete, T.: Introduction to optimization and multidisciplinary design

In "Introduction to Optimization and Multidisciplinary Design in Aeronautics and Turbomachinery", von Karman Institute for Fluid Dynamics Lecture Series 2010, May 31 – June 4, 2010. ISBN-13 987-2-87516-009-6

Verstraete, T. & Van Den Braembussche, R.A.: Multidisciplinary optimization of turbomachinery components including heat transfer and stress predictions

VKI LS 2008-07, Introduction to Optimization Methods and Tools for Multidisciplinary Design in Aeronautics and Turbomachinery, Rhode-St-Genèse, Belgium, June 2-6, 2008  
VKI RP 2008-59

Amaral, S.; Verstraete, T.; Van Den Braembussche, R.A.; Arts, T.: Design and optimization of the internal cooling channels of a HP turbine blade - Part I: Methodology

In "Proceedings of ASME Turbo Expo 2008: Power for Land, Sea and Air", ASME, 2008, Vol. 4 (Heat Transfer, parts A & B), ISBN 978-0-7918-4314-7, pp 967-976  
VKI RP 2008-14

Verstraete, T.; Amaral, S.; Van Den Braembussche, R.A.; Arts, T.: Design and optimization of the internal cooling channels of a HP turbine blade - Part II: Optimization

In "Proceedings of ASME Turbo Expo 2008: Power for Land, Sea and Air", ASME, 2008, Vol. 4 (Heat Transfer, parts A & B), ISBN 978-0-7918-4314-7, pp 977-987  
VKI RP 2008-15

Verstraete, T.; Alsalihi, Z.; Van Den Braembussche, R.A.: Numerical study of the heat transfer in an axial helium turbine

In "CMFF06, Conference on Modelling Fluid Flow", edited by T. Lajos & J. Vad, September 2006, ISBN 963 06 0382 9, Vol. II, pp. 1055-1062  
VKI RP 2006-17

Van Den Braembussche, R.A.; Alsalihi, Z.; Verstraete, T.: Fast - multidisciplinary - multipoint optimization with application to radial turbomachinery components

In "Evolutionary and Deterministic Methods for Design, Optimization, and Control with Applications to Industrial and Societal Problems EUROGEN 2005", (R. Schilling, W.

Haase, J. Periaux, H. Baier, and G. Bugeđa, eds.), FLM, Munich, 2005, ISBN 3-00-0175534-2  
VKI RP 2005-74

Van Den Braembussche, R.A.; Alsalihi, Z.; Verstraete, T.: Fast multidisciplinary optimization of turbomachinery components  
VKI LS 2004-07 "Optimization methods and tools for multicriteria/multidisciplinary design - Applications to aeronautics and turbomachinery", November 15-19, 2004, von Karman Institute, Rhode Saint Genese, Belgium  
VKI RP 2005-11

### **Editor of books**

Verstraete, T. & Périiaux, J.: Introduction to Optimization and Multidisciplinary Design in Aeronautics and Turbomachinery, von Karman Institute for Fluid Dynamics Lecture Series 2012, May 7-11, 2012. ISBN-978-2-87516-032-4

Verstraete, T. & Périiaux, J.: Introduction to Optimization and Multidisciplinary Design in Aeronautics and Turbomachinery, von Karman Institute for Fluid Dynamics Lecture Series 2010, May 31 – June 4, 2010. ISBN-13 978-2-87516-009-6

### **Ph.D. Thesis :**

Verstraete, T.: Multidisciplinary Turbomachinery Component Optimization Considering Performance, Stress, and Internal Heat Transfer  
Universiteit Gent, Belgium, June 3, 2008, ISBN 978-2-930389-33-8