

Jaroslav Tokarczyk

AREA OF INTEREST: Virtual prototyping, Structural Engineering, Finite Element Method, Topology Optimization

INSTITUTE ADDRESS:

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OBJECTIVE: Mechanical Engineer. He is a specialist in virtual prototyping of mechanical systems. These systems are assessed as regards technical and anthropotechnical criteria, such as strength criterion, functionality criterion, safety criterion etc., using the numerical methods. Due to KOMAG's scope of activity, the majority of virtual prototypes he analyzes concern the machines used in underground mining industry like machines of longwall systems, roadheaders as well transportation machines such as suspended monorails. The method of virtual prototyping can be successfully used in other areas like medicine (see project experience).

EDUCATION:

- M.Sc. Eng. degree at the Faculty of Mechanical Engineering at the Silesian University of Technology in Automation and Robotics, specialization of Biomechanics and Medical Equipment (2001),
- Ph.D. degree at the Faculty of Mechanical Engineering at the Silesian University of Technology in Construction and Operation of Machines (2007).

PROJECT

EXPERIENCE (SELECTED):

The projects were financed by European Commission (FP6, FP7 and RFCS):

- OSTEOFORM (Lifelong Learning programme Leonardo da Vinci)- ES/09/LLP-LdV/TOI/149029 E-learning pilot project about surgical management of fractures for orthopedic surgeons and biomedical engineers. Project Period: 10.2009 – 09.2011 Project manager (within the KOMAG Institute),
- LAPFORM (Lifelong Learning programme Leonardo da Vinci) – Online Vocational Training course on laparoscopy's ergonomics for surgeons and laparoscopic instruments' designers. 527985-LLP-1-2012-1-ES-LEONARDO-LMP. Project Period: 10.2012 – 09.2014. Project Manager (within the KOMAG Institute)
- MINTOS (RFCS) – Contract no. RFCR-CT-2007-00003 „Improving Mining Transport Reliability”. Project Period: 07.2007 – 06.2010. Contractor.
- EHHIP (6 Framework ProgrammeEU) – Contract no. COOP-CT-2005-017806. Ergonomic Instruments Development for Hip Surgery. An Innovative Approach on Orthopaedic Implants Design. Project Period: 09.2005 – 09.2007. Contractor.

- EMIMSAR (RFCS) - Grant Agreement RFCR-CT-2009-00002 „Enhanced Miner-Information Interaction to Improve Maintenance and Safety with Augmented Reality Technologies”. Project Period: 07.2009 – 06.2012. Contractor.
- INREQ (RFCS) - Grant Agreement RFCR-CT-2012-00002 “Enhanced effectiveness and safety of rescuers involved in high risk activities by designing innovative rescue equipment systems”. Project Period: 07.2012-06.2015. Contractor.

He collaborates with scientific centres in Poland, Europe and USA such as: NIOSH (USA), GIG (Poland), IBV (Spain), and others. He also initiates and carries out research work and commercial projects in collaboration with industry, e.g. Jastrzebska Coal Company JSC. At present he is a leader of Group for Virtual Prototyping in KOMAG Institute.

EMPLOYMENT: KOMAG Institute of Mining Technology 2001-present

COMPUTER SKILLS: MSC.PATRAN, MSC.NASTRAN, MSC. ADAMS, MSC.MARC, MSC. DYTRAN, AUTODESK INVENTOR, AUTOCAD, MS Office,

PUBLICATIONS (SELECTED):

I AM AN AUTHOR AND CO-AUTHOR OF OVER 65 PAPERS.

- WINKLER T., GAŹDZIK T.S., TOKARCZYK J., JAWORSKI J.: *Method of cooperation between orthopedists and engineers during designing surgical tools for hip surgery*. J. Orthop. Trauma Surg. Relat. Res. 2007 nr 4 s. 17-27.
- WINKLER T., TOKARCZYK J., BOJARA S.: *Use of reverse engineering method in verification of virtual prototypes*. CAMES - Computer Assisted Mechanics and Engineering Science Journal. Vol. 15, No. 1 2008, s. 53-66.
- TOKARCZYK J., TUREWICZ K., SMOLNIK G., ROTKEGEL M.: *Numerical analysis of impact load of arch yielding support*. Journal of KONES Powertrain and Transport, Vol. 17, No. 1 2010, s. 455 – 464.
- WINKLER T., CHUCHNOWSKI W., DUDEK M., MICHALAK D., TOKARCZYK J.: *Contribution of engineering methods to the sustainable development of mining systems*. Glückauf Mining Reporter 2011 nr 2 s. 44-49.
- WINKLER T., DUDEK M., CHUCHNOWSKI W., TOKARCZYK J.: *Internet tools supporting planning of underground mining transport*. Coal International 2012 nr 1 s. 44-48.
- WINKLER T., DUDEK M., MICHALAK D., TOKARCZYK J., JASZCZYK Ł.: *Knowledge based creation of safe work environment in the mining industry*. Materiały na konferencję: 21st World Mining Congress & Expo 2008, New Challenges and Visions for Mining, Kraków - Katowice - Sosnowiec, 7-12 September 2008 s. 229-237. ISBN 978-0-415-48667-5.
- WINKLER T., TOKARCZYK J.: *Assessment scenarios of virtual prototypes of mining machines*. Intelligent Automation and Systems Engineering, Editors: Sio-long Ao, Mahyar Amouzegar, Burghard B. Rieger, Springer, New York 2011 s. 175-187.
- TOKARCZYK J.: *Verification of Virtual Prototypes of Mining Machines for Technical Criterion*. IAENG Transactions on Engineering Technologies Special Edition of the World Congress on Engineering and Computer Science 2011. Series: Lecture Notes in Electrical Engineering, Vol. 170. Editors: Kim, HaengKon; Ao, Sio-long; Rieger, Burghard B., s. 359-373. Springer.

- TOKARCZYK J.: *Migration of computational models in virtual prototyping of complex mechanical systems*. Materiałyna konferencję: WCECS 2012, World Congress on Engineering and Computer Science 2012, Volume II, San Francisco, USA, 24-26 October, 2012. . Lect. Notes Eng. Comput. Sci. 2012 s. 1334-1337. ISSN 2078-0958.
- TOKARCZYK J., DUDEK M., GICALA B.: *Safety oriented Virtual Prototyping of Mining Mechanical Systems. Chapter of Handbook of Loss Prevention Engineering*. Wiley-VCH Verlag GmbH & Co. KGaA. Sent to the publisher.
- WINKLER T., TOKARCZYK J., MICHALAK D.: *Virtual Working Environment. Chapter of Handbook of Loss Prevention Engineering*. Wiley-VCH Verlag GmbH & Co. KGaA. Sent to the publisher.
- TOKARCZYK J., SZEWERDA K.: *Identyfikacja obciążeń dynamicznych działających na elementy nośne tras kolejek podwieszonych*. Masz. Gór. 2011 nr 2 s. 12-17. (In Polish)
- TOKARCZYK J., DUDEK M., TUREWICZ A., PAKURA A.: *System wspomagania obliczeń trakcyjnych dla kolejek podwieszonych z napędem własnym*. Masz. Gór. 2011 nr 3 s. 26-31. (In Polish)
- TOKARCZYK J.: *Zastosowanie rozproszonego środowiska programowego w prototypowaniu maszyny górniczej*. Przegląd Górniczy 10/2012, s. 19-25. (In Polish)
- CHUCHNOWSKI W., TOKARCZYK J.: *Badania symulacyjne rozprzestrzeniania się mgły powietrzno-wodnej systemu zraszania*. Masz. Gór. 2008 nr 1 s. 3-6. (In Polish)
- ROZUMEK D., MAREK P., TOKARCZYK J., KALITA M.: *Ładowarka górnicza ŁBT-1200EH/LS-A wraz z konstrukcją ochronną operatora*. Transp. Przem. Masz. Robocze 2009 nr 4 s. 64-67. (In Polish)
- WINKLER T., DUDEK M., CHUCHNOWSKI W., MICHALAK D., TOKARCZYK J., ROZMUS M., WRANA A.: *Knowledge management in the process of safety formation in underground mining transport*. Materiałyna konferencję: 33rd Conference of Safety in Mines Research Institutes, Wisła, September 15-18, 2009. Gór. Śr., Pr. Nauk. GIG 2009 nr 3/1 s. 278-287. (In Polish)
- CHUCHNOWSKI W., TOKARCZYK J., SZEWERDA K., TUREWICZ A.: *Wirtualne prototypowanie kabiny operatora kolejki spągowej CLS-120 w świetle kryterium bezpieczeństwa*. Masz. Gór. 2010 nr 1 s. 3-7. (In Polish)
- WINKLER T., DUDEK M., CHUCHNOWSKI W., MICHALAK D., TOKARCZYK J.: *Modelowanie zagrożeń na stanowiskach pracy w górnictwie*. Górnicze Zagrożenia Naturalne 2010: Bezpieczne stanowisko pracy w górnictwie podziemnym węgla kamiennego i rud miedzi. Główny Instytut Górnictwa, Katowice 2010, s. 481–495. (In Polish)
- WINKLER T., TOKARCZYK J., CHUCHNOWSKI W., DUDEK M.: *Kształtowanie bezpiecznych warunków pracy w transporcie kopalnianym z użyciem kolejek podwieszonych i spągowych*. Masz. Gór. 2010 nr 3-4 s. 67-74. (In Polish)

PROFESSIONAL MEMBERSHIPS:

- MEMBER OF INTERNATIONAL ASSOCIATION OF ENGINEERS,
- MEMBER OF COMMISSION OF THE POLISH ACADEMY OF SCIENCES (SECTION OF MECHATRONICS AND ELECTRICAL POWER IN MINING).

HONORS AND AWARDS:

- Bronze Cross of Merit,
- Certificate of Merit for International Conference on Systems Engineering and Engineering Management 2010 to T. Winkler and J. Tokarczyk for the paper entitled Multi-Criteria Assessment of Virtual Prototypes of Mining Machines.
- Certificate of Merit for International Conference on Systems Engineering and Engineering Management 2011 (San Francisco, USA, 19-21 October, 2011) to Jarosław

Tokarczyk for the paper entitled Methods for Verification of Virtual Prototypes of Mining Machines for Strength Criterion. International Association of Engineers IAENG, 30.11.2011.

- Certificate of Merit for International Conference on Systems Engineering and Engineering Management 2012: Dr. Jaroslaw Tokarczyk for the paper entitled Migration of Computational Models in Virtual Prototyping of Complex Mechanical Systems. International Association of Engineers IAENG.