Ing. Marek PAGÁČ, Ph.D.

VŠB TECHNICKÁ UNIVERZITA OSTRAVA | FAKULTA STROJNÍ | KATEDRA OBRÁBĚNÍ, MONTÁŽE A STROJÍRENSKÉ METROLOGIE

✉ VŠB-TU Ostrava, Faculty of Mechanical Engineering

Department of Machining, Assembly and Engineering Metrology

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Activity Area

I am dealing with machining with computer aided manufacturing (CAM) and additive manufacturing technology - 3D printing. Follows current trends in engineering (CAD/CAM/CAE/PLM) and transfers knowledge from scientific conferences to students through lectures and seminars. He is creator of many professional and research posts, utility models and patents. Guides and prepares students for bachelor's and master's program to defend the state final examinations. During doctoral studies he participated in the creation of 3D visualizations and animations in engineering in collaboration with secondary schools in the Moravian-Silesian Region (school projects Internet II. and Virtual Laboratory) and is a multiple winner of the best programmer of CNC machine tools. In 2012-2014, he worked on the project Promoting technical and science education in the MSR as a senior lecturer. Author of textbook Textbook SOLIDWORKS for new users of professional CAD SOLIDWORKS.

Beyond the position of assistant professor at the Technical University of Ostrava is preparing professionally-training posts for New Media Publishing (magazine designer, websites Konstrukter.cz, 3D-tisk.cz, MujSolidWorks.cz - administrator editor in chief of the website).

- Additive manufacturing (3D printing)
- Processing and optimization of production processes
- The design and product design (CAD)
- Programming CNC machine tools (NC)
- Experimental testing of highly-efficient milling strategies (CAM)
- Creation of technological processes with regard to PLM

Additional Information

h-index according to WoS	*3*
h-index according to Scopus	*4*

Education

2011-2015	**VŠB-TU Ostrava, Faculty of Mechanical Engineering** *Ph.D. Study in Mechanical Technology – **Ph.D.***
2009-2011	**VŠB-TU Ostrava, Faculty of Mechanical Engineering** *Master Study in Mechanical Technology– **MSc.***

EMPLOYMENT AND WORK EXPERIENCES

2017-present	**The Center of 3D printing Protolab, VŠB-TU Ostrava, Faculty of mechanical engineering** Designer, application engineer, programmer and operator of 3D printer EOS396 and Renishaw AM400 for the production of prototypes made of polyamide and metal alloys by SLM and SLS
9/2015-dosud	**VŠB-TU Ostrava, Department of Machining, Assembly and Engineering Metrology** **Academic Staff Member** Development of technical education, creation of scholarly articles, technical literature textbook, co-project management dissertations and theses
9/2012-dosud	**New Media Publishing, s. r. o.** **Editor of the magazine Konstruktér** **Editor in chief of the website Konstrukter.cz** **Administrator and editor in chief of the website MujSolidWorks.cz** *Specialization in the fields of study engineering, engineering technology, machining, automation, CAD / CAM / CAE / PLM systems*
3/2015-9/2015	**Secondary Technical School and Business Academy, Bruntál** **Animator** *Name of Project: Laboratory of Virtual Reality* *no.: CZ.1.10 / 01.02.00 / 33.01679* *Creating 3D models, animations and visualization in engineering and transportation*
1/2014-6/2015	**Secondary Technical School and Business Academy, Bruntál** **Professional trainer** *Name of Project: Promoting technical and science education in the MSR* *no.: CZ.1.07 / 1.1.00 / 44.0008* *Lectures for high school students (engineering, 3D modeling, machining)*
7/2014-12/2014	**Secondary Technical School and Business Academy, Bruntál** **Animator** *Name of Project: Internet school II.* *č. p.: CZ.1.07/1.1.07/02.0053* *Creating 3D models, animations and visualization in engineering and transportation*
1/2011-12/2011	**Technology-support, s. r. o., Praha** *Editor - preparation of original contributions to professional journals* *Specialization in the fields of study engineering, engineering technology, machining, automation, CAD / CAM / CAE / PLM systems*
1/2005-9/2005	**Alfa Plastik, a. s., Bruntál** *Designer molds, dies and electrodes for EDM* *Designer molds for plastics*
01-05/2004	**Linaset, a. s**., Budišov nad Budišovkou *Designer molds, dies and electrodes for EDM, Designer molds for plastics*

PROFESSIONAL COURSES AND TRAININGS

2019	**Operator training for 3D Printer Renishaw AM500E, Operator training for 3D Printer EOS Formiga**
2018	**Operator training for 3D Printer EOS P396, SW´s Courses: Materials Magics, Autodesk Netfabb, MSC Simufact Additive, 3DExperience, SolidWorks, QuantAM**
2017	**Operator training for 3D Printer Renishaw AM400**

5 THE MOST IMPORTANT RESULTS IN THE FIELD OF OBTAINING GRANTS IN RELATION TO THE RESEARCH AGENDA OF THE PROJECT FOR PERIOD 2016-2020

11/2018-12/2022	**Innovative and additive manufacturing technology—new technological solutions for 3D printing of metals and composite materials** **Grant provider: MŠMT** **R. n.:** CZ.02.1.01/0.0/0.0/17_049/0008407 **Job position:** Executive Director and Junior Researcher. **Budget:** 82 mil. CZK (3,1 mil. EUR)
01/2019-4/2022	**National Competence Center for Mechatronics and Smart Technologies for Mechanical Engineering.** **Grant provider: TAČR** **R. n.:** TN01000071 **Job position:** Senior Researcher. **Budget:** 135 mil. CZK (5 mil. EUR)
3/2019-3/2022	**Influence of complex and cyclic loading modes on the service life of machine parts produced by 3D printing** **Grant provider: GAČR** **R. n.:** 19-03282S **Job position:** Senior Researcher **Budget:** 9,1 mil. CZK (0,3 mil. EUR)
5/2020-8/2022	**Adaptable half mask with bactericidal and virucidal nanofilters with permanent regeneration by daylight** **Grant provider: TAČR** **R. n.:** TP01010036 **Job position:** General Manager, Senior researcher **Budget:** 6 mil. CZK (0,25 mil. EUR)
1/2019-12/2021	**ERDF Industrial design** **Grant provider: MŠMT** **R. n.:** CZ.02.2.67/0.0/0.0/18_059/0009936 **Job position:** Co-researcher. **Budget:** 18 mil. CZK (0,66 mil. EUR)

10 THE MOST IMPORTANT RESULTS IN R&D PUBLICATIONS IN RELATION TO THE RESEARCH AGENDA OF THE PROJECT FOR 2016-2020

Articles in journals indexed in databases Web of Science a SCOPUS

[1]	**Pagáč, M. (40 %)**; Schwarz, D. (10 %); Petrů, J. (10 %); Polzer, S. (40 %) 3D printed polyurethane exhibits isotropic elastic behavior despite its anisotropic surface. ***Rapid Prototyping Journal***. 2020. doi: 10.1108/RPJ-02-2019-0027. (IF = 3,099, Q1). (Scopus a WoS)
[2]	Król, M., Snopiński, P., Hajnyš, J., **Pagáč, M. (20 %)**. Selective Laser melting of 18Ni-300 Maraging Steel. ***Materials***. 2020. DOI: 10.3390/ma13194268. (IF 3.057, Q2). (Scopus a WoS).
[3]	Čegan, T., **Pagáč, M. (10 %)**, Juřica, J., Skotnicová, K., Hajnyš, J., Horsák, L., Souček, K., Krpec, P. Effect of hot isostatic pressing on porosity and properties of 316 L stainless steel prepared by selective laser melting method. ***Materials***. 2020 (IF 3.057, Q2).
[4]	Mohyla, P., Hajnyš, J., Sternadelová, K., Krejčí, L., **Pagáč, M. (10 %)**, Konečná, K., Krpec, P. Analysis of welded joint properties on an AISI316L 3 stainless steel tube manufactured by SLM technology. ***Materials***. 2020. (IF 3.057, Q2). (Scopus a WoS).
[5]	Hlinka, J.; Kraus, M.; Hajnys, J.; **Pagac, M. (20 %)**; Petrů, J.; Brytan, Z.; Tański, T. Complex Corrosion Properties of AISI 316L Steel Prepared by 3D Printing Technology for Possible Implant Applications. ***Materials***. 2020, 13, 1527. DOI: 10.3390/ma13071527. (IF = 3,057, Q2). (Scopus a WoS).
[6]	Hajnyš, J.; **Pagáč, M. (30 %)**, Mesicek, J., Petrů, J., Krol, M. Influence of scanning strategies parameters on residual stress in SLM process according to bridge curvature method for stainless steel AISI 316L. Materials. 2020, 13, 1527. DOI: 10.3390/ma13071659. (IF = 3,057, Q2). (Scopus a WoS).
[7]	Jančar, J.; **Pagáč, M. (30 %)**, Mesicek, J., Stefek, P. Design procedure of a topologically optimizedzed scooter frame part. ***Symmetry-Basel***. 2020, 13, 1527. DOI: 10.3390/sym12050755. (IF = 2,645, Q2). (Scopus a WoS).
[8]	Król, M., Snopiński, P., Pagáč, M. (20 %), Hajnyš, J., Petrů, J. Hot Deformation Treatment of Grain-Modified Mg–Li Alloy. ***Materials***. 2020. DOI: 10.3390/ma13204557. (IF 3.057, Q2). (Scopus a WoS).
[9]	**Pagáč, M. (40 %)**, Hajnyš, J., Štefek, P., Jančar, L., Jansa, J., Brezina, J., Měsíček, J. Review of 3D Printing Photopolymers: Additive Manufacturing, Materials, Modern Design Trends, Technological Challenges and the Future of 3D Printing. ***Polymers***. 2020. (IF 3.426, Q1). (Scopus a WoS). (under review)
[10]	**Pagáč, M. (25 %)**, Halama, R., Hajnyš, J., Aldabash, T., Měsíček, J., Štefek, P., Jančar, L., Jansa, J. Prediction of Residual Stresses using FEM before 3D printing by Selective Laser Melting of Stainless Steel AISI 316L. ***Materials***. 2020. (IF 3.057, Q2). (Scopus a WoS). (under review)

10 THE MOST IMPORTANT PATENTS AND COOPERATION WITH INDUSTRY IN RELATION TO THE RESEARCH AGENDA OF THE PROJECT FOR 2016-2020

Patents, Utility models, Function samples

[1]	**Pagáč Marek (50 %)**; Jančar Lukáš; Měsíček Jakub; Hajnyš Jiří; Fojtík František; Čep Robert. Hydraulic components for machine tools. *Function sample*. 2020. Project: TN01000071 – National Competence Center for Mechatronics and Smart Technologies for Mechanical Engineering. TAČR.
[2]	Jančar Lukáš; Měsíček Jakub; **Pagáč Marek (10 %)**; Hajnyš Jiří; Jansa Jan; Fojtík František. Bionic construction using a lattice structures. *Function sample*. 2020. Project: TN01000071 – National Competence Center for Mechatronics and Smart Technologies for Mechanical Engineering. TAČR.

[3] Hajnyš Jiří; Jančar Lukáš; **Pagáč Marek (5 %)**; Kovalčuk Martin; Alois Vaněk. Lattice structure with high surface quality. *Function sample*. 2020. Project: TN01000071 – National Competence Center for Mechatronics and Smart Technologies for Mechanical Engineering. TAČR.

[4] Měsíček Jakub; **Pagáč Marek (5 %)**; Petrů Jana; Kotajny Gustav; Jan Pavelčák. Topologically optimized aerodynamic air damper for the aerospace industry. *Function sample*. 2020. Project: TN01000071 – National Competence Center for Mechatronics and Smart Technologies for Mechanical Engineering. TAČR.

[5] **Pagáč Marek (50 %)**; Jansa Jan; Hajnyš Jiří; Jančar Lukáš; Štefek Petr; Petrů Jana. Internally structured silencer. *Function sample*. 2020. Project: TN01000071 – National Competence Center for Mechatronics and Smart Technologies for Mechanical Engineering. TAČR.

[6] Jakub Měsíček, Lukáš Jančar, **Marek Pagáč (10 %)**, Jana Petrů, Jiří Hajnyš, Jan Jansa. Cellular microbar system. *Utility model*. 2020. Project: TN01000071 – National Competence Center for Mechatronics and Smart Technologies for Mechanical Engineering. TAČR.

[7] **Pagáč, M. (25 %)**, Jančar, L., Měsíček, J., Štefek, P., Petrů, J. Topologically optimized steel frame with bionic elements and composite tubes, PUV 2018-35660. *Utility model*. 2019.

[8] PETRŮ, Jan, Ivan MRKVICA, Tomáš ZLÁMAL, Robert ČEP and **Marek PAGÁČ (5 %)**. Mobile device for cooling tool tools with oil mist extraction and filtration. *Patent*. Prague: Industrial Property Office, 2019. Commercial potential

[9] MRKVICA, Ivan, Jan PETRŮ, Tomas ZLAMAL, Robert ČEP and **Marek PAGÁČ (5 %)**. Clamping device with process fluid inlet to the drill body. *Patent*. Prague: Industrial Property Office, 2019. Commercial potential.

[10] **PAGÁČ, Marek. (100 %)** Toothbrush with internal filling. *Utility model*. Prague: Industrial Property Office, 2017.

TEXTBOOKS

[1] **Textbook SOLIDWORKS.** 2016. 380 pgs. 978-80-270-0918-3. Publishing: Nová media.

Practical full-color textbook for high school and university students and self-study. Suitable for beginners and advanced users of the professional CAD solution SOLIDWORKS.

Quantity: 2016 (4000 pcs) + 2020 (4000 pcs).