TECHNICKÁ UNIVERZITA V KOŠICIACH
Strojnícka fakulta

Zoznam pôvodných publikovaných vedeckých prác, odborných prác, učebníc a učebných textov

Ing. Marek Vrabeľ, PhD.

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Prehľad publikačnej činnosti
Autor: VRABEĽ, Marek
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Skupina A1 - Knižné publikácie charakteru vedeckej monografie (AAA, AAB, ABA, ABB, ABC, ABD)
Počet záznamov: 2
AAA - Vedecké monografie vydané v zahraničných vydavateľstvách (2)

Skupina A2 - Ostatné knižné publikácie (ACA, ACB, BAA, BAB, BCB, BCI, EAI, CAA, CAB, EAJ, FAI)
Počet záznamov: 3
BCI - Skriptá a učebné texty (3)

Skupina B - Publikácie v karentovaných vedeckých časopisoch a autorské osvedčenia, patenty a objavy (ADC, ADD, AEG, AEH, BDC, BDD, CDC, CDD, AGJ)
Počet záznamov: 5
ADC - Vedecké práce v zahraničných karentovaných časopisoch (5)

Skupina C - Ostatné recenzované publikácie (ACC, ACD, ADE, ADF, AEC, AED, AFA, AFB, AFC, AFD, AFE, AFF, AFG, AFH, BBA, BBB, BCK, BDA, BDB, BDE, BDF, BEC, BED, BFA, BFB, BGH, CDE, CDF)
Počet záznamov: 55
ADE - Vedecké práce v zahraničných nekarentovaných časopisoch (7)
ADF - Vedecké práce v domácich nekarentovaných časopisoch (4)
AEC - Vedecké práce v zahraničných recenzovaných vedeckých zborníkoch, monografiách (26)
AFC - Publikované príspevky na zahraničných vedeckých konferenciách (13)
AFD - Publikované príspevky na domácich vedeckých konferenciách (3)
BDF - Odborné práce v domácich nekarentovaných časopisoch (1)
BFA - Abstrakty odborných prác zo zahraničných podujatí (konferencie...) (1)

Skupina N - Nové kategórie EPC v zmysle Vyhlášky č. 456/2012 (ADM, ADN, AEM, AEN, BDM, BDN, CBA, CBB)

Počet záznamov: 5
ADM - Vedecké práce v zahraničných časopisoch registrovaných v databázach Web of Science alebo SCOPUS (5)

Skupina D - Ostatné - mimo kategórií MŠSR
Počet záznamov: 8
GAI - Výskumné štúdie a priebežné správy (8)

Počet záznamov spolu: 78

AAA - Vedecké monografie vydané v zahraničných vydavateľstvách (2)

AAA001 BREZINOVÁ, Janette - VIŇÁŠ, Ján - GUZANOVÁ, Anna - DRAGANOVSKÁ, Dagmar - VRABEĽ, Marek: **Renovačné technológie v hutníckom a strojárskom priemysle** / - 1. vyd - Praha : MM Publishing - 2016. - 173 p. [CD-ROM]. - ISBN 978-80-906310-2-1.

AAA002 BREZINOVÁ, Janette - VIŇÁŠ, Ján - MARUSCHAK, Pavlo O. - GUZANOVÁ, Anna - DRAGANOVSKÁ, Dagmar - VRABEĽ, Marek: **Sustainable renovation within metallurgical production** / - 1. vyd - Lüdenscheid : RAM - Verlag - 2017. - 215 p.. - ISBN 978-3-942303-58-3.

ADC - Vedecké práce v zahraničných karentovaných časopisoch (5)

ADC001 BEŇO, Jozef - MAŇKOVÁ, Ildikó - VRABEĽ, Marek - KOTTFER, Daniel: **Roughness measurement methodology for selection of tool inserts** / - 2013. In: Measurement. Vol. 46, no. 1 (2013), p. 582-592. - ISSN 0263-2241

ADC002 BEŇO, Jozef - MAŇKOVÁ, Ildikó - IŽOL, Peter - VRABEĽ, Marek: **An approach to the evaluation of multivariate data during ball end milling free-form surface fragments** / - 2016. In: Measurement. Vol. 84 (2016), p. 7-20. - ISSN 0263-2241

ADC003 VIŇÁŠ, Ján - VRABEĽ, Marek - GREŠ, Miroslav - BREZINA, Jakub - SABADKA, Dušan - FEDORKO, Gabriel - MOLNÁR, Vieroslav: **Restoration of worn movable bridge props with use of bronze claddings** / - 2018. In: Materials. Vol. 11, no. 4 (2018), p. 1-13. - ISSN 1996-1944

ADC004 VRABEĽ, Marek - ECKSTEIN, Martin - MAŇKOVÁ, Ildikó: **Analysis of the metallography parameters and residual stress induced when producing bolt holes in Inconel 718 alloy** / - 2018. In: The International Journal of Advanced Manufacturing Technology. - Berlin (Nemecko) : Springer Roč. 96, č. 9-12 (2018), s. 4353-4366 [print]. - ISSN 0268-3768

ADC005 HORŇÁK, Peter - KOTTFER, Daniel - KACZMAREK, Lukasz - KYZIOL, Karol - VAVRO, Ján - KLICH, Marek - TREBUŇA, Jozef - VRABEĽ, Marek - SEMANOVÁ, Mária: **Microstructure and Mechanical Properties of Annealed WCC Coatings Deposited with Different Gas Mixtures in an RFMS Process** / - 2019. In: Ceramics - Silikáty = Silikáty = Ceramics. - Praha (Česko) : Ústav struktury a mechaniky hornin AV ČR Roč. 63, č. 2 (2019), s. 213-222 [print]. - ISSN 0862-5468.

ADE - Vedecké práce v zahraničných nekarentovaných časopisoch (7)

ADE001 STAHOVEC, Jozef - BEŇO, Jozef - VRABEĽ, Marek: **Investigation of the cusp height when ball-end milling form shaped surfaces** / - 2013. In: Zeszyty Naukowe Politechniki Rzeszowskiej 288: Mechanika. Vol. 30, no. 85 (2) (2013), p. 187-196. - ISSN 0209-2689

ADE002 KANDRÁČ, Ladislav - MAŇKOVÁ, Ildikó - VRABEĽ, Marek: **Cutting edge preparation in machining processes** / - 2013. In: Zeszyty Naukowe Politechniki Rzeszowskiej 288: Mechanika. Vol. 30, no. 85 (2) (2013), p. 149-159. - ISSN 0209-2689

ADE003 VARGA, Ján - STAHOVEC, Jozef - BEŇO, Jozef - VRABEĽ, Marek: **Assessment of surface quality for chosen milling strategies when producing relief surfaces** / - 2014. In: Advances in Science and Technology : Research Journal. Vol. 8, no. 22 (2014), p. 37-41. - ISSN 2299-8624

ADE004 VRABEĽ, Marek - MAŇKOVÁ, Ildikó - KOVAČ, Pavel - BEŇO, Jozef - SEMANOVÁ, Mária - PAĽO, Miroslav: **Analysis and optimization of hard turning process usin Al2O3TiCN ceramic TiN coated insert with regard to surface roughness and cutting force components** / - 2016. In: Journal of Production Engineering. Vol. 19, no. 1 (2016), p. 22-26. - ISSN 1821-4932

ADE005 VRABEĽ, Marek - VIŇÁŠ, Ján - MAŇKOVÁ, Ildikó - BREZINOVÁ, Janette - SAVKOVIČ, Boris - KOVAČ, Pavel: **Analysis of tool wear paterns in rough turning of chromium hardfacing materials** / - 2017. In: Journal of Production Engineering. Vol. 20, no. 1 (2017), p. 35-39. - ISSN 1821-4932

ADE006 MULIDRÁN, Peter - SPIŠÁK, Emil - TOMÁŠ, Miroslav - VRABEĽ, Marek - GREŠ, Miroslav: **The influence of Yield criterion on springback prediction in V-bending process** / - 2019. In: The International Journal of Engineering and Science. Roč. 8, č. 3 (2019), s. 66-69 . - ISSN 2319-1813

ADE007 MAŇKOVÁ, Ildikó - VRABEĽ, Marek - KANDRÁČ, Ladislav: **Evaluation of chip morphology when drilling titanium alloy** / - 2019. In: Cutting and Tools in Technological System : Rizannija ta instrumenti v technologičnich sistemach. - Charkov (Ukrajina) : Charkivskij nacionaľnij universitet im. V. N. Karazina č. 91 (2019), s. 134-142 . - ISSN 2078-7405

ADF - Vedecké práce v domácich nekarentovaných časopisoch (4)

ADF001 VRABEĽ, Marek - MAŇKOVÁ, Ildikó - IŽOL, Peter - SEMANOVÁ, Mária - PAĽO, Miroslav: **RSM optimization of hard turning** / - 2015. In: Transfer inovácií. Č. 32 (2015), s. 212-2015. - ISSN 1337-7094

ADF002 VRABEĽ, Marek - ECKSTEIN, Martin: **Hole making of Inconel 718 aerospace alloy** / - 2016. In: Acta Mechanica Slovaca. Roč. 20, č. 1 (2016), s. 10-13. - ISSN 1335-2393

ADF003 KOTTFER, Daniel - HORŇÁK, Peter - KACZMAREK, Lukasz - VRABEĽ, Marek - BALKO, Ján - REHÁK, František: **The influence of N2 and Si on properties of WCC coatings deposited by DC magnetron sputering techique** / - 2017. In: Acta Avionica. Roč. 19, č. 1 (2017), s. 1-6. - ISSN 1335-9479

ADF004 VRABEĽ, Marek - DURAKBASA, Numan - KOVAČ, Pavel - MAŇKOVÁ, Ildikó: **Contribution to the FEM simulation of Ti6Al4V machining** / - 2017. In: Acta Mechanica Slovaca. Roč. 21, č. 1 (2017), s. 54-61. - ISSN 1335-2393

ADM - Vedecké práce v zahraničných časopisoch registrovaných v databázach Web of Science alebo SCOPUS (5)

ADM001 MAŇKOVÁ, Ildikó - VRABEĽ, Marek - KOVAČ, Pavel: **Artificial neural network application for surface roughness prediction when drilling nickel based alloy** / - 2013. In: Manufacturing Technology. Vol. 13, no. 2 (2013), p. 193-199. - ISSN 1213-2489

ADM002 MAŇKOVÁ, Ildikó - VRABEĽ, Marek - BEŇO, Jozef - KOVAČ, Pavel - GOSTIMIROVIC, Marin: **Application of Taguchi method and surface response methodology to evaluate of mathematical models for chip deformation when drilling with coated and uncoated twist drills** / - 2013. In: Manufacturing Technology. Vol. 13, no. 4 (2013), p. 492-499. - ISSN 1213-2489

ADM003 BEŇO, Jozef - STAHOVEC, Jozef - MAŇKOVÁ, Ildikó - VRABEĽ, Marek - KANDRÁČ, Ladislav: **The combined approach to the evaluation of the cutting force data when ball end milling** / - 2014. In:

Applied Mechanics and Materials : Novel trends in production devices and systems 2 volume 693. - Cham : TTP Ltd., 2014 P. 352-357. - ISBN 978-3-03835-313-3

ADM004 LATTNER, Radek - HOLEŠOVSKÝ, František - NOVÁK, Martin - VRABEĽ, Marek: **Grinding of Titanium Alloy Ti6Al4V with Silicon Carbide Grinding Wheel** / - 2016. In: Manufacturing Technology. Vol. 16, no. 1 (2016), p. 159-162. - ISSN 1213-2489

ADM005 VRABEĽ, Marek - MAŇKOVÁ, Ildikó - PAĽO, Miroslav - LATTNER, Radek: **The effect of artificial neural network architecture on surface roughness parameter prediction capability when turning inconel 718** / - 2016. In: Manufacturing Technology. Vol. 16, no. 4 (2016), p. 834-839. - ISSN 1213-2489

AEC - Vedecké práce v zahraničných recenzovaných vedeckých zborníkoch, monografiách (26)

AEC001 STAHOVEC, Jozef - VRABEĽ, Marek - KANDRÁČ, Ladislav - BEŇO, Jozef - MAŇKOVÁ, Ildikó: **Study of cusp height in the ball-end milling process** / - 2013. In: Development in Machining Technology : Scientific Research Reports : vol. 3. - Cracow : Cracow University of Technology, 2013 P. 51-61. - ISBN 978-83-7242-697-0

AEC002 VRABEĽ, Marek - KANDRÁČ, Ladislav - MAŇKOVÁ, Ildikó - BEŇO, Jozef - STAHOVEC, Jozef: **Evaluation methodology and suitability of mathematical models for assesment of twist drills preformance** / - 2013. In: Development in Machining Technology : Scientific Research Reports : vol. 3. - Cracow : Cracow University of Technology, 2013 P. 35-50. - ISBN 978-83-7242-697-0

AEC003 KANDRÁČ, Ladislav - MAŇKOVÁ, Ildikó - VRABEĽ, Marek - BEŇO, Jozef - STAHOVEC, Jozef - DURAKBASA, N.M. - BAS, G.: **Outline of cutting edge preparation and model proposal for nanometrological process management** / - 2013. In: Development in Machining Technology : Scientific Research Reports : Vol. 3. - Krakow : Poligrafia Politechniki Krakowskiej, 2013 P. 62-81. - ISBN 978-83-7242-697-0

AEC004 VRABEĽ, Marek - MAŇKOVÁ, Ildikó - BEŇO, Jozef - KANDRÁČ, Ladislav - STAHOVEC, Jozef: **Adaptive control system to assist the surface workpiece quality when drilling** / - 2014. In: Applied Mechanics and Materials : Novel Trends in Production Devices and Systems. - Zürich : TTP, 2014 Vol. 474 (2014), p. 212-217. - ISBN 978-3-03785-944-5 - ISSN 1660-9336 .

AEC005 KANDRÁČ, Ladislav - MAŇKOVÁ, Ildikó - VRABEĽ, Marek - BEŇO, Jozef: **Finite element simulation of cutting forces in orthogonal machining of Titanium alloy Ti-6Al-4V** / - 2014. In: Applied Mechanics and Materials : Novel Trends in Production Devices and Systems. - Zürich : TTP, 2014 Vol. 474 (2014), p. 192-199. - ISBN 978-3-03785-944-5 - ISSN 1660-9336 .

AEC006 BEŇO, Jozef - STAHOVEC, Jozef - VRABEĽ, Marek: **Investigation of the surface quality when end–ball–milling form surfaces with sequence of the radii ratio** / - 2014. In: Applied Mechanics and Materials : Novel Trends in Production Devices and Systems. - Zürich : TTP, 2014 Vol. 474 (2014), p. 224-229. - ISBN 978-3-03785-944-5 - ISSN 1660-9336

AEC007 KANDRÁČ, Ladislav - MAŇKOVÁ, Ildikó - VRABEĽ, Marek - BEŇO, Jozef - STAHOVEC, J. - DURAKBASA, N. M. - BAS, G.: **Application of FEM analysis to predict the effect of cutting conditions and tool geometry on temperature and cutting forces during orthogonal cutting of Ti-6Al-4V** / - 2014. In: Development in Machining Technology : Scientific Research Reports. - Cracow : Cracow University of Technology, 2014 Vol. 4 (2014), p. 52-74. - ISBN 978-83-7242-765-6

AEC008 KANDRÁČ, Ladislav - MAŇKOVÁ, Ildikó - VRABEĽ, Marek - BEŇO, Jozef - STAHOVEC, Jozef: **State of the art in hole making process of titanium alloys** / - 2014. In: Development in Machining Technology : Scientific Research Reports. - Cracow : Cracow University of Technology, 2014 P. 90-117. - ISBN 978-83-7242-765-6

AEC009 STAHOVEC, Jozef - BEŇO, Jozef - VRABEĽ, Marek - MAŇKOVÁ, Ildikó - KANDRÁČ, Ladislav: **Cutting force prediction in ball-end milling process** / - 2014. In: Development in Machining Technology: Scientific Research Reports. - Cracow : Cracow University of Technology, 2014 Vol. 4 (2014), p. 32-45. - ISBN 978-83-7242-765-6

AEC010 KANDRÁČ, Ladislav - MAŇKOVÁ, Ildikó - VRABEĽ, Marek - BEŇO, Jozef - STAHOVEC, Jozef - DURAKBASA, Numan - BAS, Gokcen: **Statistical analysis of cutting force, temperature and power of FEM modeling when machining titanium alloy** / - 2014. In: Applied Mechanics and Materials : Novel trends in production devices and systems 2 volume 693. - Switzerland : TTP, 2014 P. 358-363. - ISBN 978-3-03835-313-3 .

AEC011 VARGA, Ján - VRABEĽ, Marek - BEŇO, Jozef: **Assessment of surface quality for chosen milling strategies to produce free-form surfaces** / - 2015. In: Development in Machining Technology : Scientific - Research Reports Vol. 5. - Krakow : Politechnika Krakowska, 2015 P. 42-49. - ISBN 978-83-7242-844-8

AEC012 MAŇKOVÁ, Ildikó - VRABEĽ, Marek - KOVAČ, Pavel - GOSTIMÍROVIC, Marin: **Artificial neural network aplication to predict of tool wear when drilling Udimet 720** Chapter 8/ - 2015. In: Development in Machining Technology : Scientific Research Reports : vol. 5. - Kraków : University of Technology, 2015 P. 84-97. - ISBN 978-83-7242-844-8 .

AEC013 VRABEĽ, Marek - MAŇKOVÁ, Ildikó - IŽOL, Peter - SEMANOVÁ, Mária - PAĽO, Miroslav: **Influence of cutting parameters and tool geometry on thrust force behavior in drilling Ti6Al4V** / - 2016. In: Materials Science Forum volume 862 : Novel Trends in Production Devices and Systems 3. - Switzerland : TTP, 2016 P. 3-10. - ISBN 978-3-03835-728-5 - ISSN 0255-5476

AEC014 ECKSTEIN, Martin - VRABEĽ, Marek - MAŇKOVÁ, Ildikó: **Tool wear and surface roughness evolution in hole making process of Inconel 718** / - 2016. In: Materials Science Forum volume 862 : Novel Trends in Production Devices and Systems 3. - Switzerland : TTP, 2016 P. 11-17. - ISBN 978-3-03835-728-5 - ISSN 0255-5476

AEC015 IŽOL, Peter - VRABEĽ, Marek - MAŇKOVÁ, Ildikó: **Comparison of Milling Strategies when Machining Freeform Surfaces** / - 2016. In: Materials Science Forum volume 862 : Novel Trends in Production Devices and Systems 3. - Switzerland : TTP, 2016 P. 18-25. - ISBN 978-3-03835-728-5 - ISSN 0255-5476

AEC016 VRABEĽ, Marek - MAŇKOVÁ, Ildikó - IŽOL, Peter - SEMANOVÁ, Mária - PAĽO, Miroslav: **A study of cutting edge parameters evaluation in end milling** Chapter 5/ - 2016. In: Development in Machining Technology : Scientific Research Reports vol. 6. - Cracow : University of Technology, 2016 P. 54-65. - ISBN 978-80-553-2576-7

AEC017 KOTTFER, Daniel - MAŇKOVÁ, Ildikó - KIANICOVÁ, Marta - VRABEĽ, Marek - REHÁK, František - SEMANOVÁ, Mária: **The wear evaluation of Al based coating after machining of weld overaly** / - 2017. In: Development in machining technology : Scientific Research Reports : volume 7. - Krakov : Cracow University of Technology, 2017 P. 28-37. - ISBN 978-80-553-3193-5

AEC018 KOTTFER, Daniel - MAŇKOVÁ, Ildikó - KIANICOVÁ, Marta - KLICH, Marek - VRABEĽ, Marek - SEMANOVÁ, Mária: **The study of mechanical, tribological and structural properties of Ti based coatings deposited onto cutting tools** / - 2017. In: Development in machining technology : Scientific Research Reports : volume 7. - Krakov : Cracow University of Technology, 2017 P. 38-46. - ISBN 978-80-553-3193-5

AEC019 VRABEĽ, Marek - MAŇKOVÁ, Ildikó - KOTTFER, Daniel - KANDRÁČ, Ladislav - SEMANOVÁ, Mária - PAĽO, Miroslav: **Evaluation of chip formation process in hole making in titanium alloy** / - 2017. In: Development in machining technology : Scientific Research Reports : volume 7. - Krakov : Cracow University of Technology, 2017 P. 57-65. - ISBN 978-80-553-3193-5

AEC020 MAŇKOVÁ, Ildikó - VRABEĽ, Marek - SALANCI, Slavomír - KOTTFER, Daniel - SEMANOVÁ, Mária - PAĽO, Miroslav: **Application of frequency analysis of cutting force signals for tool wear identification in hard turning** / - 2017. In: Development in machining technology : Scientific-Research Reports : volume 7. - Krakov : Cracow University of Technology, 2017 S. 87-101. - ISBN 978-80-553-3193-5

AEC021 SEMANOVÁ, Mária - MAŇKOVÁ, Ildikó - VRABEĽ, Marek - KOTTFER, Daniel - PAĽO, Miroslav: **Study of size effect in micromilling** / - 2017. In: Development in machining technology : Scientific-Research Reports : volume 7. - Krakov : Cracow university of technology of technology, 2017 P. 102-114. - ISBN 978-80-553-3193-5

AEC022 SEMANOVÁ, Mária - MAŇKOVÁ, Ildikó - PATA, Vladimír - VRABEĽ, Marek: **Statistical evaluation of he cutting edge quality after micromilling** / - 2018. In: Development in machining technology. Vol. 8 : scientific research reports. - Krakow (Poľsko) : Politechnika Krakowska im. Tadeusza Kościuszki s. 93-104 [print]. - ISBN 978-80-553-2718-1

AEC023 VRABEĽ, Marek - MAŇKOVÁ, Ildikó - IŽOL, Peter - SEMANOVÁ, Mária - PAĽO, Miroslav: **Competency based education within CNC programming** / - 2018. In: Development in machining technology. Vol. 8 : scientific research reports. - Krakow (Poľsko) : Politechnika Krakowska im. Tadeusza Kościuszki s. 195-201 [print]. - ISBN 978-80-553-2718-1

AEC024 KOVAČ, Pavel - SAVKOVIČ, Borislav - POKUSOVÁ, Marcela - KULUNDŽIČ, Nenad - VRABEĽ, Marek: **Machinability study of surface grinding af hard high alloyed cast iron** / - 2018. In: Development in machining technology. Vol. 8 : scientific research reports. - Krakow (Poľsko) : Politechnika Krakowska im. Tadeusza Kościuszki s. 105-122 [print]. - ISBN 978-80-553-2718-1

AEC025 GREŠOVÁ, Zuzana - IŽOL, Peter - VRABEĽ, Marek - MAŇKOVÁ, Ildikó: **Division and evaluation of milling strategies** / - 2019. In: Development in Machining Technology : Scientific Research Report vol. 9. - Krakow (Poľsko) : Politechnika Krakowska im. Tadeusza Kościuszki s. 7-16 . - ISBN 978-80-553-3344-1

AEC026 MAŇKOVÁ, Ildikó - VRABEĽ, Marek - IŽOL, Peter - GREŠOVÁ, Zuzana - SALANCI, Slavomír: **Overview of relationship between force components and tool wear when hard turning** / - 2019. In: Development in Machining Technology : Scientific Research Report vol. 9. - Krakow (Poľsko) : Politechnika Krakowska im. Tadeusza Kościuszki s. 17-34 . - ISBN 978-80-553-3344-1

AFC - Publikované príspevky na zahraničných vedeckých konferenciách (13)

AFC001 MAŇKOVÁ, Ildikó - BEŇO, Jozef - VRABEĽ, Marek: **Effect of Workpiece Hardness on Surface Microgeometry when Hard Turning with Ceramic Inserts** / - 2014. In: Key Engineering Materials : ICPM 2013 : 7th International Congress of Precision Machining : 3-5 October 2013, Miskolc, Hungary.

Vol. 581 (2014), p. 176-181. - ISBN 978-303785840-0 - ISSN 1013-9826

AFC002 VRABEĽ, Marek - MAŇKOVÁ, Ildikó - BEŇO, Jozef: **Surface Roughness Modeling and Prediction by ANN when Drilling Udimet 720** / - 2014. In: Key Engineering Materials : ICPM 2013 : 7th International Congress of Precision Machining : 3-5 October 2013, Miskolc, Hungary. Vol. 581 (2014), p. 366-371. - ISBN 978-303785840-0 - ISSN 1013-9826

AFC003 BEŇO, Jozef - MIKÓ, Balázs - MAŇKOVÁ, Ildikó - VRABEĽ, Marek: **Influence of tool path orientation on the surface roughness when end ball milling rounded surfaces** / - 2014. In: Key Engineering Materials : ICPM 2013 : 7th International Congress of Precision Machining : 3-5 October 2013, Miskolc, Hungary. Vol. 581 (2014), p. 329-334. - ISBN 978-303785840-0 - ISSN 1013-9826

AFC004 ECKSTEIN, Martin - MAŇKOVÁ, Ildikó - VRABEĽ, Marek - BEŇO, Jozef: **Comparison of Sensors Signal Quality when Drilling Inconel 718** / - 2015. In: CIRP International Conference on Intelligent Computation in Manufacturing Engineering, CIRP ICME 2014. Vol. 33 (2015), p. 227-232. - ISSN 2212-8271

AFC005 VRABEĽ, Marek - MAŇKOVÁ, Ildikó - BEŇO, Jozef: **Monitoring and Control of Manufacturing Process to Assist the Surface Workpiece Quality When Drilling** / - 2016. In: Procedia CIRP. - London : Elsevier, 2016 Vol. 41 (2016), p. 735-739. - ISSN 2212-8271

AFC006 MAŇKOVÁ, Ildikó - VRABEĽ, Marek - BEŇO, Jozef - SEMANOVÁ, Mária: **Modelling and analysis of relationship between cutting parameters surface roughness and cutting forces using response surface methodology when hard turning with coated ceramic inserts** / - 2016. In: Key Engineering Materials : ICPM2015. - Switzerland : TransTech Publications, 2016 Vol. 686 (2016), p. 19-26. - ISBN 978-303835625-7 - ISSN 1013-9826

AFC007 BAS, Gokcen - DURAKBASA, Numan - MAŇKOVÁ, Ildikó - VRABEĽ, Marek: **An innovative approach of metrology for high precision and quality machining tool assessment in the integrated production engineering** / - 2016. In: DAAAM international symposium on Intelligent Manufacturing and Automation. - Vienna : DAAAM, 2016 P. 0787-0794. - ISBN 978-3-902734-07-5 - ISSN 1726-9679

AFC008 MAŇKOVÁ, Ildikó - VRABEĽ, Marek - DURAKBASA, Numan M.: **Evaulation of cutting edge microgeomety for uncoated and coated end miling cutter** / - 2016. In: IESB 2016. - Budapest : Óbuda University, 2016 P. 1-8. - ISBN 978-615-5460-95-1

AFC009 ECKSTEIN, Martin - VRABEĽ, Marek - MAŇKOVÁ, Ildikó: **Application of discrete wavelet decomposition in monitoring of holemaking** / - 2017. In: Procedia CIRP : CIRP ICME 2016. - Amsterdam : Elsevier B.V., 2017 Vol. 62 (2017), p. 250-255. - ISBN 2212-8271

AFC010 KOTTFER, Daniel - MAŇKOVÁ, Ildikó - VRABEĽ, Marek - KIANICOVÁ, Marta - REHÁK, František - SEMANOVÁ, Mária: **Types of tool wear of AlTiN coated cutting insert after machining of weld overlay** / - 2017. In: Solid State Phenomena : Precision Machining 9 : ICPM 2017. - Zurich : TTP, 2017 Vol. 261 (2017), p. 237-242. - ISBN 978-3-0357-1199-8

AFC011 MAŇKOVÁ, Ildikó - VRABEĽ, Marek - KOTTFER, Daniel - SEMANOVÁ, Mária - PAĽO, Miroslav: **Evaluation of relationship between cutting parameters and torque in hole making of titanium alloy** / - 2017. In: Solid State Phenomena : Precision Machining 9 : ICPM 2017. - Zurich : TTP, 2017 Vol. 261 (2017), p. 17-21. - ISBN 978-3-0357-1199-8

AFC012 VRABEĽ, Marek - MAŇKOVÁ, Ildikó - DURAKBASA, Numan: **Effect of honing parameters on generated surface quality of cylinder liner within automotive engine production** / - 2017. In: Solid

State Phenomena : Precision Machining 9 : ICPM 2017. - Zurich : TTP, 2017 Vol. 261 (2017), p. 189-194. - ISBN 978-3-0357-1199-8

AFC013 MAŇKOVÁ, Ildikó - VRABEĽ, Marek - VARGOVČÍK, Ladislav - ECKSTEIN, Martin: **Intelligent Monitoring System for Zero-Defect Production of Irreplaceable Parts** / - 2020. In: Proceedings of the International Symposium for Production Research 2019. - Cham (Švajčiarsko) : Springer Nature s. 147-156 [online, print]. - ISBN 978-3-030-31342-5

AFD - Publikované príspevky na domácich vedeckých konferenciách (3)

AFD001 VÉGH, Alexander - DOVICA, Miroslav - VRABEĽ, Marek - MAŇKOVÁ, Ildikó: **Využitie neurónových sietí pre modelovanie a predikciu integrity povrchu** / - 2014. In: Automatizácia a riadenie v teórii a praxi : ARTEP 2014 : workshop odborníkov z univerzít, vysokých škôl a praxe v oblasti automatizácie a riadenia : 5. - 7. február 2014, Stará Lesná. - Košice : TU, 2014 S. 48-1-48-5. - ISBN 978-80-553-1580-5

AFD002 SEMANOVÁ, Mária - MAŇKOVÁ, Ildikó - KOTTFER, Daniel - VRABEĽ, Marek: **Štatistická analýza kvality reznej hrany po mikrofrézovaní** / - 2018. In: Povrchové inžinierstvo 2018. - Košice : TU, 2018 S. 52-55. - ISBN 978-80-553-3405-9

AFD003 SEMANOVÁ, Mária - MAŇKOVÁ, Ildikó - VRABEĽ, Marek - KOTTFER, Daniel: **Hodnotenie kvakity reznej hrany po mikrofrézovaní** / - 2018. In: Povrchové inžinierstvo 2018. - Košice : TU, 2018 S. 99-104. - ISBN 978-80-553-3405-9

BCI - Skriptá a učebné texty (3)

BCI001 IŽOL, Peter - VRABEĽ, Marek: **Programovanie CNC frézovacích strojov systémom Heidenhain iTNC 530** / - 1. vyd. - Košice : Technická univerzita v Košiciach - 2019. - 126 s. [print]. - ISBN 9788055333328.

BCI002 IŽOL, Peter - VRABEĽ, Marek: **Základy programovania CNC strojov systémom Heidenhain TNC 640** / - 1. vyd. - Košice : Technická univerzita v Košiciach - 2019. - 129 s. [CD-ROM]. - ISBN 9788055333922.

BCI003 VRABEĽ, Marek - IŽOL, Peter: **Fundamentals of the CNC machine tools programming in Heidenhein TNC 640 system** / - 1. vyd. - Košice : Technická univerzita v Košiciach - 2019. - 129 s. [CD-ROM]. - ISBN 9788055334387.

BDF - Odborné práce v domácich nekarentovaných časopisoch (1)

BDF001 KANDRÁČ, Ladislav - VRABEĽ, Marek - STAHOVEC, Jozef: **Optimalization of cutting parameters and statistical analysis of surface roughness parameters in hard turning by using ceramic cutting tool** / - 2013. In: Transfer inovácií. Č. 25 (2013), s. 169-173. - ISSN 1337-7094

BFA - Abstrakty odborných prác zo zahraničných podujatí (konferencie...)(1)

BFA001 VRABEĽ, Marek - MAŇKOVÁ, Ildikó - IŽOL, Peter - PAĽO, Miroslav - SEMANOVÁ, Mária - FEHLÖ, Csaba: **Optimization of honing process within automotive engine combustion cylinders production** /

- 2016. In: IESB 2016. - Budapest : Óbuda University, 2016 P. 46-46.

GAI - Výskumné štúdie a priebežné správy (8)

GAI001 VIŇÁŠ, Ján - VRABEĽ, Marek: **Analýza hrúbok povlakov** / - Košice : TU - 2015. - 8 s..

GAI002 VIŇÁŠ, Ján - VRABEĽ, Marek: **Analýza lomovej plochy** Záverečná správa: 022015/ - Košice : TU - 2015. - 7 s..

GAI003 VIŇÁŠ, Ján - VRABEĽ, Marek: **Analýza chemického zloženia povlakov** Záverečná správa: 032015/ - Košice : TU - 2015. - 12 s..

GAI004 VIŇÁŠ, Ján - VRABEĽ, Marek: **Chemical composition analysis** Research report/ - Košice : TU - 2015. - 11 s..

GAI005 MAŇKOVÁ, Ildikó - VRABEĽ, Marek - HAJDUK, Mikuláš - SEMJON, Ján - VARGA, Jozef - VAGAŠ, Marek: **Automation of adhesive spraying process for automotive interior components** Research report no. 441032042015/ - Košice : TU - 2015. - 49 s..

GAI006 VRABEĽ, Marek - VIŇÁŠ, Ján: **Lever** Surface treatment analysis - Nickel plating thickness/ - Košice : TU - 2016. - 12 s..

GAI007 MAŇKOVÁ, Ildikó - VRABEĽ, Marek - VIŇÁŠ, Ján - KOTTFER, Daniel: **Verification of Deformation Marks on GDI Pump Components** Research Report/ - Košice : TU - 2017. - 19 s..

GAI008 MAŇKOVÁ, Ildikó - VRABEĽ, Marek - KOTTFER, Daniel: **40GTE4P Rework proposal** / - Košice : TU - 2017. - 12 s..

Record 1 of 17

Title: Analysis of the metallography parameters and residual stress induced when producing bolt holes in Inconel 718 alloy

Author(s): Vrabel, M (Vrabel, Marek); Eckstein, M (Eckstein, Martin); Mankova, I (Mankova, Ildiko)

Source: INTERNATIONAL JOURNAL OF ADVANCED MANUFACTURING TECHNOLOGY **Volume:** 96 **Issue:** 9-12 **Pages:** 4353-4366 **DOI:** 10.1007/s00170-018-1902-4 **Published:** JUN 2018

Abstract: Inconel 718 is a structural material used to produce highly stressed rotating aero-engine components. Such components have to meet the most exacting requirements in terms of reliability and component service life. Bolt holes in rotating turbine and compressor discs are among the most highly stressed geometric features of jet engines. In-flight failure of these bolt holes may, in fact, result in the loss of the aircraft and imperilment of human lives. For this reason, the quality and reliability of hole-making are of utmost importance. The integrity and reliability of the machined engine component are the sole factors for which all efforts are taken for system of design, material selection, manufacturing and inspection of these rotating aero-engine components. This paper aims to contribute towards a safer production of bolt holes in highly stressed turbine discs made from nickel based super-alloy, which acts as a linking sequence between microstructural surface integrity and descriptive residual stress parameters. The magnitude of the residual stress was determined by means of combining two various methods, namely surface stress measurement by X-ray diffraction and hole-drilling, to achieve residual stress in the profile depth.

Accession Number: WOS:000432974100106

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378
Vrabel, Marek	B-7873-2018	

ISSN: 0268-3768

eISSN: 1433-3015

Record 2 of 17

Title: Restoration of Worn Movable Bridge Props with Use of Bronze Claddings

Author(s): Vinas, J (Vinas, Jan); Vrabel', M (Vrabel', Marek); Gres, M (Gres, Miroslav); Brezina, J (Brezina, Jakub); Sabadka, D (Sabadka, Dusan); Fedorko, G (Fedorko, Gabriel); Molnar, V (Molnar, Vieroslav)

Source: MATERIALS **Volume:** 11 **Issue:** 4 **Article Number:** 459 **DOI:** 10.3390/ma11040459 **Published:** APR 2018

Abstract: This article examined the possibility of using CuSn6P claddings in sliding bearing renovation of movable pontoon bridge props. The bronze layer was welded on cylinders of the high-strength steel S355J0WP EN 10155-93, in an inert atmosphere using an automated welding method (gas tungsten arc welding). Pulsed arc welding was used to minimize the effects of heat on the cladding area, while also accounting for the differences in the physical properties of the joined metals. The sliding bearing was created in two layers. The quality of the cladding layer was evaluated by nondestructive and/or destructive tests. The quality of the surface was assessed by visual inspection (visual testing) in accordance with the EN ISO 17637 standard. The quality of the claddings was evaluated by metallographic analysis, performed using light microscopy. The microhardness values of a few weld areas were determined by Vickers tests, performed according to the EN ISO 9015-2 standard. The analyses confirmed that the welding parameters and filler material used resulted in high-quality weld joints with no internal (subsurface) or metallurgical defects.

Accession Number: WOS:000434710200001

PubMed ID: 29561762

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Vrabel, Marek	B-7873-2018	
Vinas, Jan	AAA-6170-2020	
Fedorko, Gabriel	B-7337-2011	0000-0002-5187-5283
Gres, Miroslav	AAA-8884-2020	
Molnar, Vieroslav	J-4278-2012	0000-0003-4182-4033
Sabadka, Dusan	AAA-8147-2020	
Brezina, Jakub	AAB-1501-2020	

ISSN: 1996-1944

Record 3 of 17

Title: Application of discrete wavelet decomposition in monitoring of hole-making Inconel 718

Author(s): Eckstein, M (Eckstein, Martin); Vrabel, M (Vrabel, Marek); Mankova, I (Mankova, Ildiko)

Edited by: Teti R

Source: 10TH CIRP CONFERENCE ON INTELLIGENT COMPUTATION IN MANUFACTURING ENGINEERING - CIRP ICME '16 **Book Series:** Procedia CIRP **Volume:** 62 **Pages:** 244-249 **DOI:** 10.1016/j.procir.2016.06.023 **Published:** 2017

Abstract: The paper describes an application of discrete wavelet decomposition of monitored signals from Profibus data originating from spindle and from the feed drive of machine tool. Discrete wavelet decomposition is a most efficient method to separate uniform signal pattern from disordered signal. It was demonstrated that - compared to the evolution of average spindle torque over the tool path - extracted signal variance from the spindle torque through application of wavelet transformation has a significantly higher correlation with maximum flank wear on the tool. Within the framework of tools and cutting conditions chosen in this work, this is true both for drilling with spiral drills and for finishing with face-cutting finishers. (C) 2017 The Authors. Published by Elsevier B.V.

Accession Number: WOS:000414525400043

Conference Title: 10th CIRP International Conference on Intelligent Computation in Manufacturing Engineering (CIRP ICME)

Conference Date: JUL 20-22, 2016

Conference Location: Ischia, ITALY

Conference Sponsors: Int Acad Prod Engn, Fraunhofer Joint Lab Excellence Adv Prod Technol

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number

Vrabel, Marek	B-7873-2018	
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378

ISSN: 2212-8271

Record 4 of 17

Title: An approach to the evaluation of multivariate data during ball end milling free-form surface fragments

Author(s): Beno, J (Beno, Jozef); Mankova, I (Mankova, Ildiko); Izol, P (Izol, Peter); Vrabel', M (Vrabel', Marek)

Source: MEASUREMENT **Volume:** 84 **Pages:** 7-20 **DOI:** 10.1016/j.measurement.2016.01.043 **Published:** APR 2016

Abstract: We present a method for investigating the process of ball end milling, a technology widely used in tool making and moulding. We analyse the main features of free-form surfaces used in this technology, and propose a sequence of steps to identify the most suitable milling strategy. The basic idea of such a sequence lies in the definition of the tangible fragments of free-form surfaces applicable to tool making. Tangible fragments represent the parts of tooling and signed radii that can distinguish both the active and transitional surfaces of tooling. Free-form surface fragments were selected since they are capable of securing definiteness in measurement of roughness parameters and surface errors. We investigated the operation capability of solid ball end milling cutters in terms of cutting tool edge microgeometry. Cutting edge radius (r(n)) and roughness parameters of the tool edge were measured to determine the relationship between new and worn tool edges. Roughness parameters were measured at different parts of the machined surfaces, which take on typical features of dies and moulds, such as inclined wall, ridge lines, valley lines, as well as, the active surfaces defined by signed radii. Surface error such as scallop height, gouging, tolerances and actual signed radii were measured at transitive surfaces. The traditional approach of evaluating roughness parameters was used to determine the suitability of factors such as milling operation, milling strategy and direction of milling. In addition, traditional approaches such as relationships, distributions and histograms were also used. We applied Khattree-Naik's plot, which proves its suitability to visualise all the data being measured in the same units: microns and millimetres. Characteristic features of the ball end milling process, such as tool edge micro-geometry, geometry of the machined surface, and unit length of the transitive surface were applied in Khattree-Naik's plots. We found that this plot was capable of processing multivariate data to distinguish specific markers of the quality of machined surfaces, which are produced in ball end milling. (C) 2016 Elsevier Ltd. All rights reserved.

Accession Number: WOS:000371010600002

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Izol, Peter	AAA-7411-2020	
Vrabel, Marek	B-7873-2018	
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378

ISSN: 0263-2241

eISSN: 1873-412X

Record 5 of 17

Title: Monitoring and control of manufacturing process to assist the surface workpiece quality when drilling

Author(s): Vrabel, M (Vrabel, Marek); Mankova, I (Mankova, Ildiko); Beno, J (Beno, Jozef)

Edited by: Teti R

Source: RESEARCH AND INNOVATION IN MANUFACTURING: KEY ENABLING TECHNOLOGIES FOR THE FACTORIES OF THE FUTURE - PROCEEDINGS OF THE 48TH CIRP CONFERENCE ON MANUFACTURING SYSTEMS **Book Series:** Procedia CIRP **Volume:** 41 **Pages:** 735-739 **DOI:** 10.1016/j.procir.2015.12.092 **Published:** 2016

Abstract: There is a variety of reasons for the installation of a monitoring system in a manufacturing process. Hole-making mainly drilling is one of the must common operation used and usually is carried out as one of the last steps in the production process. Holes in rotating turbine and compressor disks are among the most highly-stressed geometric features of jet-engines. For manufacturers of jet-engine components it is important to assess the quality of these at an early stage in the manufacturing of the product. The use of commercially available monitoring systems in hole-making has been successful in individual cases so far. Major reasons for this lack of effectiveness are the large material variations within one production batch, the overall difficult machinability of the materials applied, the small lot size which makes "teach-in" operations ineffective. The paper describes a design of adaptive control system for drilling process of aerospace critical components. The proposed system is directed towards the real time control of selected surface roughness parameter. Proposed model for monitoring and control consists of two subsystems: surface roughness prediction subsystem and decision making subsystem. The artificial neural network was employed to calculate surface roughness parameters throughout process monitoring indices such as torque M-z, force F-z, power P and cutting conditions feed f, cutting speed v(c). Due to ability to predict nonlinear behaviour and quickly calculate future values, artificial neural networks are ideal for both predictive and adaptive controllers. Test samples were nickel based super alloy Udimet 720 used in discs for gas turbine engines. The experimental results show that predicted values of surface roughness are very close to the values measured experimentally. Advantages of the proposed subsystem for surface roughness prediction are simplicity, computational power and speed, capacity and ability to learn from system changes as they become. (C) 2015 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Accession Number: WOS:000379247600126

Conference Title: 48th CIRP International Conference on Manufacturing Systems (CIRP CMS)

Conference Date: JUN 24-26, 2015

Conference Location: Ischia, ITALY

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378
Vrabel, Marek	B-7873-2018	

ISSN: 2212-8271

Record 6 of 17

Title: Comparison of Sensors Signal Quality when Drilling Inconel 718

Author(s): Eckstein, M (Eckstein, Martin); Mankova, I (Mankova, Ildiko); Vrabel, M (Vrabel, Marek); Beno, J (Beno, Jozef)

Edited by: Teti R

Source: 9TH CIRP CONFERENCE ON INTELLIGENT COMPUTATION IN MANUFACTURING ENGINEERING - CIRP ICME '14 **Book Series:** Procedia CIRP **Volume:** 33 **Pages:** 227-232 **DOI:** 10.1016/j.procir.2015.06.041 **Published:** 2015

Abstract: Aero engines clearly differ from other propulsion systems used in general mechanical engineering particularly through the materials used and the extreme stresses that occur during operation. Boltholes in rotating turbine and compressor disks are among the most highly-stressed geometric features of jet-engines. For manufacturers of jet-engine components it is important to assess the quality of these at an early stage in the manufacturing of the product.

The use of commercially available monitoring systems in hole-making has been successful in individual cases so far. Major reasons for this lack of effectiveness are the large material variations within one production batch, the overall difficult machinability of the materials applied, the small lot size which makes "teach-in" operations ineffective. Additional challenges occur during the implementation of monitoring systems in production. Here, the monitoring solution is judged predominantly by its robustness, its reliability against false alarms and its level of integration in the machine tool. A high level of integration can be achieved by using internal data, provided by the components of the machine tools themselves. The paper describes a new approach in real-time monitoring for drilling boltholes. In an experimental setup, process data origination from the NC of a Sinumeric 840D, collected by an OPC-Server had been processed. Comparing OPC data logging, DAU data logging and profibus data logging with respect to data quality, sample rate and real-time behaviour, profibus data logging appears to be the favourable choice. Compared to the price of many dedicated external sensors, all three methods to log internal data provide data access with small investments on a high level of integration. The experimental results indicate that OPC-data are suitable for tool wear monitoring and surface quality evaluation after drilling with solid carbide drills and face cutting reamers in Inconel718 workpieces.

Accession Number: WOS:000360312600039

Conference Title: 9th CIRP International Conference on Intelligent Computation in Manufacturing Engineering (CIRP ICME)

Conference Date: JUL 23-25, 2014

Conference Location: Capri, ITALY

Conference Sponsors: Int Acad Prod Engn, Fraunhofer Joint Lab Excellence Adv Prod Technol

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378
Vrabel, Marek	B-7873-2018	

ISSN: 2212-8271

Record 7 of 17

Title: ASSESSMENT OF SURFACE QUALITY FOR CHOSEN MILLING STRATEGIES WHEN PRODUCING RELIEF SURFACES

Author(s): Varga, J (Varga, Jan); Stahovec, J (Stahovec, Jozef); Beno, J (Beno, Jozef); Vrabel, M (Vrabel, Marek)

Source: ADVANCES IN SCIENCE AND TECHNOLOGY-RESEARCH JOURNAL **Volume:** 8 **Issue:** 22 **Pages:** 37-41 **DOI:** 10.12913/22998624.1105163 **Published:** JUN 2014

Abstract: The paper deals with design and modeling of the relief surfaces that are produced in milling. Modeled and real surface quality is presented for the chosen fragments of the relief surfaces. Fragmentation of the relief surfaces has been made by the surface sampling. Milling strategies are compared with regard to surface formation. Surface quality was checked with regard to applied cutting conditions.

Accession Number: WOS:000215274900006

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Varga, Jan	AAA-6822-2020	
Vrabel, Marek	B-7873-2018	

ISSN: 2299-8624

Record 8 of 17

Title: Finite Element Simulation of Cutting Forces in Orthogonal Machining of Titanium Alloy Ti-6Al-4V

Author(s): Kandrac, L (Kandrac, Ladislav); Mankova, I (Mankova, Ildiko); Vrabel', M (Vrabel', Marek); Beno, J (Beno, Jozef)

Edited by: Velisek K; Kostal P; Nad M

Source: NOVEL TRENDS IN PRODUCTION DEVICES AND SYSTEMS **Book Series:** Applied Mechanics and Materials **Volume:** 474 **Pages:** 192-199 **DOI:** 10.4028/www.scientific.net/AMM.474.192 **Published:** 2014

Abstract: In this paper, a Lagrangian finite element-based machining model is applied in the simulation of cutting forces in two-dimensional orthogonal cutting of titanium Ti-6Al-4V alloy. The simulations were conducted using 2D Finite Element Method (FEM) machining simulation software. In addition, the cutting experiments were carried out under the different cutting speed, feed and tool geometry (rake angle, clearance angle and cutting edge radius). The effect of cutting speed, feed and tool geometry on cutting force were investigated. The results obtained from the finite element method (FEM) and experimental studies were compared.

Accession Number: WOS:000336074000031

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Vrabel, Marek	B-7873-2018	
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378

ISSN: 1660-9336

ISBN: 978-3-03785-944-5

Record 9 of 17

Title: Adaptive Control System to Assist the Surface Workpiece Quality When Drilling

Author(s): Vrabel', M (Vrabel', Marek); Mankova, I (Mankova, Ildiko); Beno, J (Beno, Jozef); Kandrac, L (Kandrac, Ladislav); Stahovec, J (Stahovec, Jozef)

Edited by: Velisek K; Kostal P; Nad M

Source: NOVEL TRENDS IN PRODUCTION DEVICES AND SYSTEMS **Book Series:** Applied Mechanics and Materials **Volume:** 474 **Pages:** 212-217 **DOI:** 10.4028/www.scientific.net/AMM.474.212 **Published:** 2014

Abstract: Article deals with design of adaptive control system for drilling process of aerospace critical components. The system proposed in this paper is directed towards real the time control of surface roughness parameter Ra. Proposed model for monitoring and control consists of surface roughness prediction system and decision making subsystem. The artificial neural network was employed to calculate surface roughness parameter Ra through of process monitoring indices such as torque Mz, force Fz, power P and cutting conditions feed f, cutting speed ve. Test samples were nickel based super alloy Udimet 720 used as a basic constructional material of discs for gas turbine engines.

Accession Number: WOS:000336074000034

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Vrabel, Marek	B-7873-2018	
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378

ISSN: 1660-9336

ISBN: 978-3-03785-944-5

Record 10 of 17

Title: Investigation of the Surface Quality when End-Ball-Milling Form Surfaces with Sequence of the Radii Ratio

Author(s): Beno, J (Beno, Jozef); Stahovec, J (Stahovec, Jozef); Vrabel', M (Vrabel', Marek)

Edited by: Velisek K; Kostal P; Nad M

Source: NOVEL TRENDS IN PRODUCTION DEVICES AND SYSTEMS **Book Series:** Applied Mechanics and Materials **Volume:** 474 **Pages:** 224-229 **DOI:** 10.4028/www.scientific.net/AMM.474.224 **Published:** 2014

Abstract: This paper deals with a methodology of identifying surface quality when end ball milling form surfaces which are applied in tool making. This methodology was developed for the 3D milling process and it consists of following parts as design of the samples, surface milling and checking surfaces with different sequence of radii ratio. That sequence was used to model real form surfaces applied in tool making. Based on the defined measurability of the surface roughness, two milling strategies have been applied to produce radii sequence. In order to prevent undesired cusp formation in the 3D milling, the response surface methodology and statistical analysis are used to evaluate surface quality.

Accession Number: WOS:000336074000036

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Vrabel, Marek	B-7873-2018	

ISSN: 1660-9336

ISBN: 978-3-03785-944-5

Record 11 of 17

Title: Effect of Workpiece Hardness on Surface Microgeometry when Hard Turning with Ceramic Inserts

Author(s): Mankova, I (Mankova, Ildiko); Beno, J (Beno, Jozef); Vrabel, M (Vrabel, Marek)

Edited by: Kundrak J; Maros Z

Source: PRECISION MACHINING VII **Book Series:** Key Engineering Materials **Volume:** 581 **Pages:** 176-181 **DOI:** 10.4028/www.scientific.net/KEM.581.176 **Published:** 2014

Abstract: Hard turning provides an alternative to grinding in some finishing operations. This paper deals with analysis of part surface finishing when turning hardened steel heat-treated on hardness of 46, 55 and 60 BRC with mixed oxide ceramic inserts. Average surface roughness Ra has been widely used in industry it is known that the single parameter Ra is inadequate to define the functionality of a surface. Two different surfaces with similar values of Ra can behave differently under loading conditions. The surface profile 2D and 3D parameters are assessed. The influence of workpiece hardness on surface roughness parameters and cutting force components is investigated. Results show that finish hard turning with mixed ceramic tool produces surface profile comparable to those produced by grinding.

Accession Number: WOS:000336695600030

Conference Title: 7th International Congress of Precision Machining (ICPM 2013)

Conference Date: OCT 03-05, 2013

Conference Location: Miskolc, HUNGARY

Conference Sponsors: Int Visegrad Fund, SANDVIK Cromant

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378
Vrabel, Marek	B-7873-2018	

ISSN: 1013-9826

Record 12 of 17

Title: Influence of tool path orientation on the surface roughness when end ball milling rounded surfaces

Author(s): Beno, J (Beno, Jozef); Miko, B (Miko, Balazs); Mankova, I (Mankova, Ildiko); Vrabel', M (Vrabel', Marek)

Edited by: Kundrak J; Maros Z

Source: PRECISION MACHINING VII **Book Series:** Key Engineering Materials **Volume:** 581 **Pages:** 329-+ **DOI:** 10.4028/www.scientific.net/KEM.581.329 **Published:** 2014

Abstract: This paper deals with relationships affecting surface roughness in three dimensional milling. Because of definite curvature of the machined surface, three milling strategies based on single direction have been examined in end ball milling process. Research is based on fragmentation of the definite surface curvature into form of the patches being machined Patches have been set through normal vectors and related axes of motion of the end ball milling cutters. Surface quality has been identified under influence of cutting speed, feed rate and side step of milling cutters. Simple geometrical models of the resultant cusp height are compared with the measured data.

Accession Number: WOS:000336695600054

Conference Title: 7th International Congress of Precision Machining (ICPM 2013)

Conference Date: OCT 03-05, 2013

Conference Location: Miskolc, HUNGARY

Conference Sponsors: Int Visegrad Fund, SANDVIK Cromant

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Vrabel, Marek	B-7873-2018	
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378

ISSN: 1013-9826

Record 13 of 17

Title: Surface Roughness Modeling and Prediction by ANN when Drilling Udimet 720

Author(s): Vraberl', M (Vraberl', Marek); Mankova, I (Mankova, Ildiko); Beno, J (Beno, Jozef)

Edited by: Kundrak J; Maros Z

Source: PRECISION MACHINING VII **Book Series:** Key Engineering Materials **Volume:** 581 **Pages:** 366-371 **DOI:** 10.4028/www.scientific.net/KEM.581.366 **Published:** 2014

Abstract: Article deals with design of artificial neural network (ANN) for prediction of the surface roughness as one of the important indicators of machined surface quality. Back propagation neural network was trained and tested for prediction of the machined surface roughness. Cutting conditions, selected monitoring indices and tool wear parameter were given as inputs to the ANN. Test sample was nickel based super alloy Udimet 720, which is used as material for highly stressed jet engine components. Experimental data collected from tests were used as input into ANN to identify the sensitivity among cutting conditions, monitoring indices and progressive tool wear and machined surface roughness.

Accession Number: WOS:000336695600060

Conference Title: 7th International Congress of Precision Machining (ICPM 2013)

Conference Date: OCT 03-05, 2013

Conference Location: Miskolc, HUNGARY

Conference Sponsors: Int Visegrad Fund, SANDVIK Cromant

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Vrabel, Marek	B-7873-2018	
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378

ISSN: 1013-9826

Record 14 of 17

Title: Roughness measurement methodology for selection of tool inserts

Author(s): Beno, J (Beno, Jozef); Mankova, I (Mankova, Ildiko); Vrabel, M (Vrabel, Marek); Kottfer, D (Kottfer, Daniel)

Source: MEASUREMENT **Volume:** 46 **Issue:** 1 **Pages:** 582-592 **DOI:** 10.1016/j.measurement.2012.08.017 **Published:** JAN 2013

Abstract: Contribution introduces practical methodology of roughness measurement when turning by tool inserts with variable tool face. Methodology makes the most of use standardised chip cross sections from ISO 3685:93. Measuring array consists of combination of four feeds per revolution and three depth of cut while use of two cutting speeds denotes such methodology as 4-3-2 roughness measurement. Minimum replication is used when measuring roughness in order to identify its quantities where cutting starts and stops. Data resulting from minimum replications are treated as pivot half-sums and pivot ranges, quantities following from Horn's distribution. Four ways of results' interpretation are expressed which include individual measured values, comparison, relationship as well as multivariate form of measured data. Individual values represent results from just one point in measuring array; comparison covers half-sum results all over measuring area. Relationships among surface roughness parameters show how roughness ranges measuring area throughout. Considerable effect of chip cross section on multivariate form of surface roughness is given by Andrews' plot. Processing and evaluation of data give well founded information to choice proper tool insert as practical contribution related to machining plans. (C) 2012 Elsevier Ltd. All rights reserved.

Accession Number: WOS:000313155700064

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Vrabel, Marek	B-7873-2018	
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378
Kottfer, Daniel	H-6319-2016	

ISSN: 0263-2241

Record 15 of 17

Title: Operation Safety and Performance of Milling Cutters with Shank Style Holders of Tool Inserts

Author(s): Beno, J (Beno, Jozef); Mankova, I (Mankova, Ildiko); Vrabel, M (Vrabel, Marek); Karpuschewski, B (Karpuschewski, Bernhard); Emmer, T (Emmer, Thomas); Schmidt, K (Schmidt, Konrad)

Edited by: Trebuna F

Source: MODELLING OF MECHANICAL AND MECHATRONICS SYSTEMS **Book Series:** Procedia Engineering **Volume:** 48 **Pages:** 15-22 **DOI:** 10.1016/j.proeng.2012.09.479 **Published:** 2012

Abstract: Paper introduces results related to the application of advanced milling cutters provided with shank style of tool insert holder. Design of prototypes of tool bodies is based on calculations of theoretical number of tool edges. Bodies of milling cutter include holes to mount tool insert holder while two types of insert shape as round and octagonal are used in milling cutter design. Based on measuring of cutting forces when milling planar surfaces, critical cutting conditions leading to the tool damage are identified and they are compared with commercial milling cutters. Applying cutting force data, operation safety is being studied concerning outer appearance of tool failure. Application of Finite Element Method is used to assess the critical spots leading to the insert holder failure. Maximum stress which brings about ductile fracture of shank style's insert holder has been found out by FEM modelling. Operation capability of tool inserts is compared with tool performance data. Surface roughness and short term tool wear testing was used as tool performance criteria to asses capability of new cutting tools in face milling operations. Surface quality produced by that kind of milling cutter is referred to as semi finishing and finishing cut. Advantages and limitations of that milling cutter innovation are discussed. (C) 2012 Published by Elsevier Ltd. Selection and/or peer-review under responsibility of the Branch Office of Slovak Metallurgical Society at Faculty of Metallurgy and Faculty of Mechanical Engineering, Technical University of Kosice

Accession Number: WOS:000324813800003

Conference Title: 5th International Conference on Modelling of Mechanical and Mechatronics Systems (MMaMS)

Conference Date: NOV 06-08, 2012

Conference Location: SLOVAKIA

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Vrabel, Marek	B-7873-2018	
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378

ISSN: 1877-7058

Record 16 of 17

Title: Surface roughness prediction using artificial neural networks when drilling Udimet 720

Author(s): Vrabel, M (Vrabel, Marek); Mankova, I (Mankova, Ildiko); Beno, J (Beno, Jozef); Tuharsky, J (Tuharsky, Jaroslav)

Edited by: Trebuna F

Source: MODELLING OF MECHANICAL AND MECHATRONICS SYSTEMS **Book Series:** Procedia Engineering **Volume:** 48 **Pages:** 693-700 **DOI:** 10.1016/j.proeng.2012.09.572 **Published:** 2012

Abstract: Article deals with design of appropriate control strategy for prediction of surface roughness as one of the important indicators of machined surface quality applying artificial intelligence. Test sample was nickel based super alloy UDIMET 720, which is used as material of jet engines components such as discs etc. Experimental data collected from tests were used as input parameters into neural network to identify the sensitivity among cutting conditions, tool wear and monitoring parameters and surface roughness. Selected parameters were used to design a suitable algorithm for control and monitoring of the drilling process. Moreover, the developed software for implementation to machine tool control system for surface roughness on-line identification through monitoring indices is described. (C) 2012 Published by Elsevier Ltd. Selection and/or peer-review under responsibility of the Branch Office of Slovak Metallurgical Society at Faculty of Metallurgy and Faculty of Mechanical Engineering, Technical University of Kosice

Accession Number: WOS:000324813800096

Conference Title: 5th International Conference on Modelling of Mechanical and Mechatronics Systems (MMaMS)

Conference Date: NOV 06-08, 2012

Conference Location: SLOVAKIA

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378
Vrabel, Marek	B-7873-2018	

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Record 17 of 17

Title: CUTTING TOOL WEAR PREDICTION BY NEURAL NETWORK WHEN DRILLING UDIMET 720

Author(s): Vrabel', M (Vrabel', M.); Tuharsky, J (Tuharsky, J.); Mankova, I (Mankova, I); Beno, J (Beno, J.)

Edited by: Kundrak J; Varga G; Deszpoth I

Source: 13TH INTERNATIONAL CONFERENCE ON TOOLS **Pages:** 305-310 **Published:** 2012

Abstract: Article deals with design of appropriate control strategy for prediction of tool-wear as one of the important indicators of machined surface quality applying artificial intelligence. Test sample was nickel based super alloy UDIMET 720, which is used as material of jet engines components such as discs etc. Experimental data collected from tests were used into neural network to identify the sensitivity among cutting conditions, monitoring parameters and progressive tool wear. Selected parameters were used to design a suitable algorithm for control and monitoring of the drilling process.

Accession Number: WOS:000357435300048

Conference Title: 13th International Conference on Tools (ICT 2012)

Conference Date: MAR 27-28, 2012

Conference Location: Miskolc, HUNGARY

Conference Sponsors: SANDVIK COROMANT, ZF Hungary Ltd

Author Identifiers:

Author	Web of Science ResearcherID	ORCID Number
Vrabel, Marek	B-7873-2018	
Mankova, Ildiko	AAA-9613-2020	0000-0002-3771-0378

ISBN: 978-963-9988-35-4

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3) Vrabeľ, M., Eckstein, M., Maňková, I.

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