

ANNUAL REPORT 2018

David Paloušek

INSTITUTE OF MACHINE AND INDUSTRIAL DESIGN
Faculty of Mechanical Engineering
Brno University of Technology

Brno, 9.1.2019



ÚSTAV
KONSTRUOVÁNÍ

CONTENT

- Human resources
- Funding
- Projects & Contracts
- Scientific articles
- Internship
- PR & Events
- Year 2019



HUMAN RESOURCES

People 2018

David Paloušek



Josef Nevrlý



Jan Brandejs



Daniel Koutný



Tomáš Koutecký



Aneta Zatočilová



David Škaroupka



Radek Vrána



Jakub Hurník



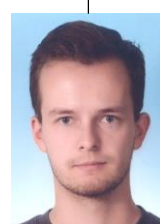
Martin Krčma



Arnošt Vespalec



Jan Suchý



Malý Martin



Ondřej Vaverka



Ondřej Červinek



Petr Krejčířík



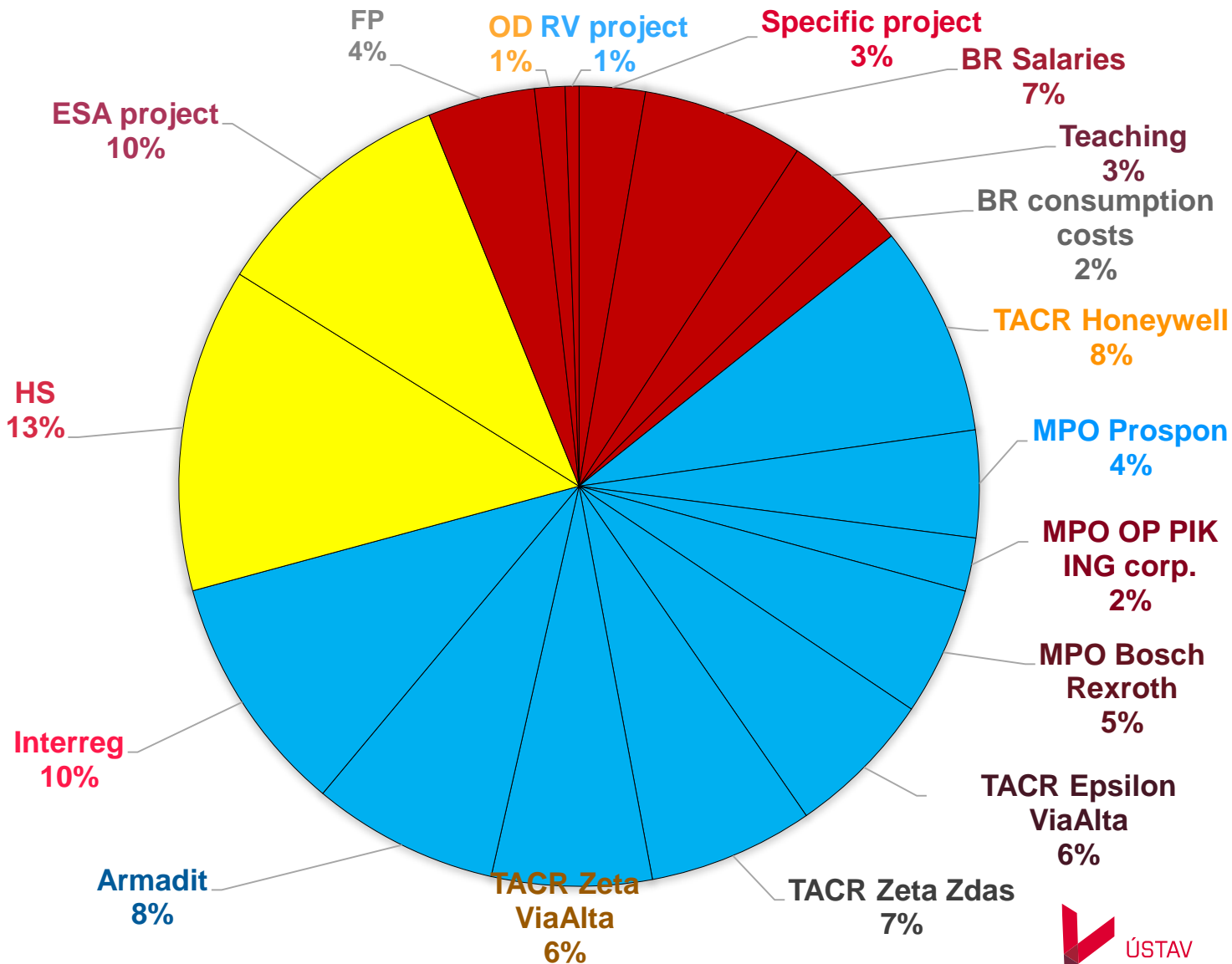
Vít Šreibr

FUNDING OF DEPARTMENT

Budget

Projects

1. TACR, MPO
2. MPO OP PIK
3. BR, BD, OD, RV, FP, Teaching
4. Interreg CE - FABLABNET
5. HS



PROJECTS

ARMADIT

OP VVV: CZ.02.1.01/0.0/0.0/16_025/0007304

Architected materials designed for additive manufacturing

TACR Epsilon TH03010172

Research and development of 3D printers for use in construction industry

TAČR Zeta TJ01000354

Vývoj procesních parametrů aditivní výroby vysoce plněných odpadních termoplastů

TACR Epsilon TH02010514

Development of 3D printing for selected materials and topology optimization of components for aerospace industry

TAČR Zeta TJ01000268

Vývoj optického systému pro automatizované měření rotačních výkloků

MPO OPPIK Aplikace III

CZ.01.1.02/0.0/0.0/ 16_084/0010268

Ministry of Industry and Trade

Development of transtibial prosthesis manufactured via 3D printing

ESA Contract

Design of Spacecraft Components for Additive Manufacturing

ESA Czech Industry Incentive Scheme AO /1-7397/13/NL/EL

MPO TRIO FV20232

Ministry of Industry and Trade

Biodegradable structured implants fabricated by metal 3D printing method

MPO TRIO FV10411

Výzkum a vývoj elektrického pohonu mini-exkavátoru do 2 tun, spoluřešitel



EVROPSKÁ UNIE
Evropské strukturální a investiční fondy
Operační program Výzkum, vývoj a vzdělávání



Honeywell

ZDAS

iNG



GE Aviation



Rexroth
Bosch Group

PUBLICATION

1. PALOUŠEK, D.; KOCICA, M.; PANTELEJEV, L.; KLAJKURKOVA, L.; CELKO, L.; KOUTNY, D.; KAISER, J. SLM process parameters development of Cu-alloy Cu7.2Ni1.8Si1Cr. *RAPID PROTOTYPING JOURNAL*, 2018, vol. 24, no. 9, p. 1-11. ISSN: 1355-2546.
2. KOUTNÝ, D.; PALOUŠEK, D.; PANTĚLEJEV, L.; TĚŠICKÝ, L.; KAISER, J. Influence of Scanning Strategies on Processing of Aluminum Alloy EN AW 2618 Using Selective Laser Melting. *Materials*, 2018, vol. 11, no. 2, p. 1-18. ISSN: 1996-1944.
3. DVORAK, K.; DOLAK, D.; PALOUŠEK, D.; ČELKO, L.; JECH, D. The Effect of the Wear of Rotor Pins on Grinding Efficiency in a High-speed Disintegrator. *Materials Science*, 2018, vol. 24, no. 1, p. 29-34. ISSN: 1392-1320.
4. VRÁNA, R.; KOUTNÝ, D.; PALOUŠEK, D.; PANTĚLEJEV, L.; JAROŠ, J.; ZIKMUND, T.; KAISER, J. Selective Laser Melting Strategy for Fabrication of Thin Struts Usable in Lattice Structures. *Materials*, 2018, vol. 11, no. 9, p. 1-20. ISSN: 1996-1944.
5. VRÁNA, R.; ČERVINEK, O.; MAŇAS, P.; KOUTNÝ, D.; PALOUŠEK, D. Dynamic Loading of Lattice Structure Made by Selective Laser Melting- Numerical Model with Substitution of Geometrical Imperfections. *Materials*, 2018, vol. 11, no. 11, p. 1-21. ISSN: 1996-1944.
6. HRUBOŠ, KOUTECKÝ, PALOUŠEK. An experimental study for determination of an application method and TiO₂ powder to ensure the thinnest matte coating layer for 3D optical scanning. *Measurement*.
7. PANTĚLEJEV, L.; ŠTĚPÁNEK, R.; KOUTNÝ, D.; PALOUŠEK, D. Mechanical properties of AlSi10Mg alloy processed by SLM. *Materials Engineering - Materiálové inženýrstvo (online version)*, 2018, vol. 24, no. 4, p. 108-114. ISSN: 1338-6174.
8. VAVERKA, O.; KOUTNÝ, D.; VRÁNA, R.; PANTĚLEJEV, L.; PALOUŠEK, D. Effect of heat treatment on mechanical properties and residual stresses in additively manufactured parts. In *ENGINEERING MECHANICS 2018. Engineering Mechanics 2018*. Praha: Institute of Theoretical and Applied Mechanics of the Czech Academy of Sciences, 2018. p. 897-900. ISBN: 978-80-86246-88-8. ISSN: 1805-8256.
9. VRÁBEL, J.; POCHAZKA, P.; KLUS, J.; PROCHAZKA, D.; NOVOTNÝ, J.; KOUTNÝ, D.; PALOUŠEK, D.; KAISER, J. Classification of materials for selective laser melting by laser-induced breakdown spectroscopy. *Chemical Papers*, 2018, ISSN: 1336-9075.
10. ZVONÍČEK, J.; KOUTNÝ, D.; PANTĚLEJEV, L.; PALOUŠEK, D. Development of Process Parameters for SLM Processing of AlSi7Mg Aluminum Alloy.
11. SUKAL, Jan, David PALOUSEK a Daniel KOUTNY : The effect of recycling powder steel on porosity and surface roughness of SLM parts. *MM Science Journal [online]*. 2018, 12(2018), 2643-2647 [cit. 2019-01-05]. DOI: 10.17973/MMSJ.2018_12_2018110. ISSN 18031269.

INTERNSHIP

Graz University of Technology

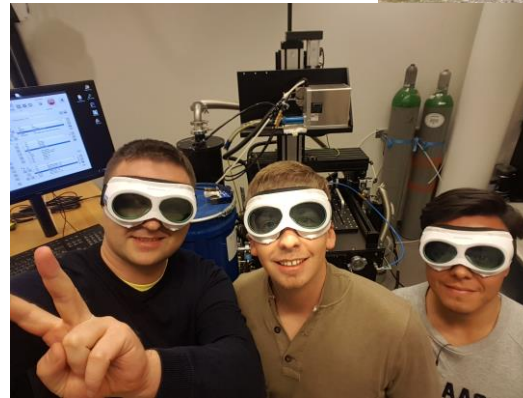
- 6 months internship
- Institute of Materials Science , Joining and Forming
- Prof. Christof Sommitsch
- Effect of high temperature preheating on processing Ti6Al4V alloy by Selective Laser Melting Technology



INTERNSHIP

Rheinisch-Westfälische Technische Hochschule Aachen

- 6 month internship, Two articles was finished there
- the institution where the Selective Laser Technology was developed
- And also lot of fun 😊



PR & Events

1. 3D Trends Liberec
2. MAMC 2018 - Metal Additive Manufacturing Conference, Viena
3. Formnext 2018, Frankfurt am Main
4. FABfest I, Brno
5. FABfest II, Brno
6. Vzhůru k aditivní výrobě, Brno
7. LANE 2018, Fürth
8. Strojírenské fórum - MM spektrum, Brno
9. MSV 2018
10. Prototyp 2018
11. RobArch a Digital Concrete, Curych
12. 3D-Printed Architecture, München
13. 3DV 2018 - International Conference on 3D Vision, Verona, Itálie
14. Fab 14+ (Fabcity Summit, Fab distributed) Paris

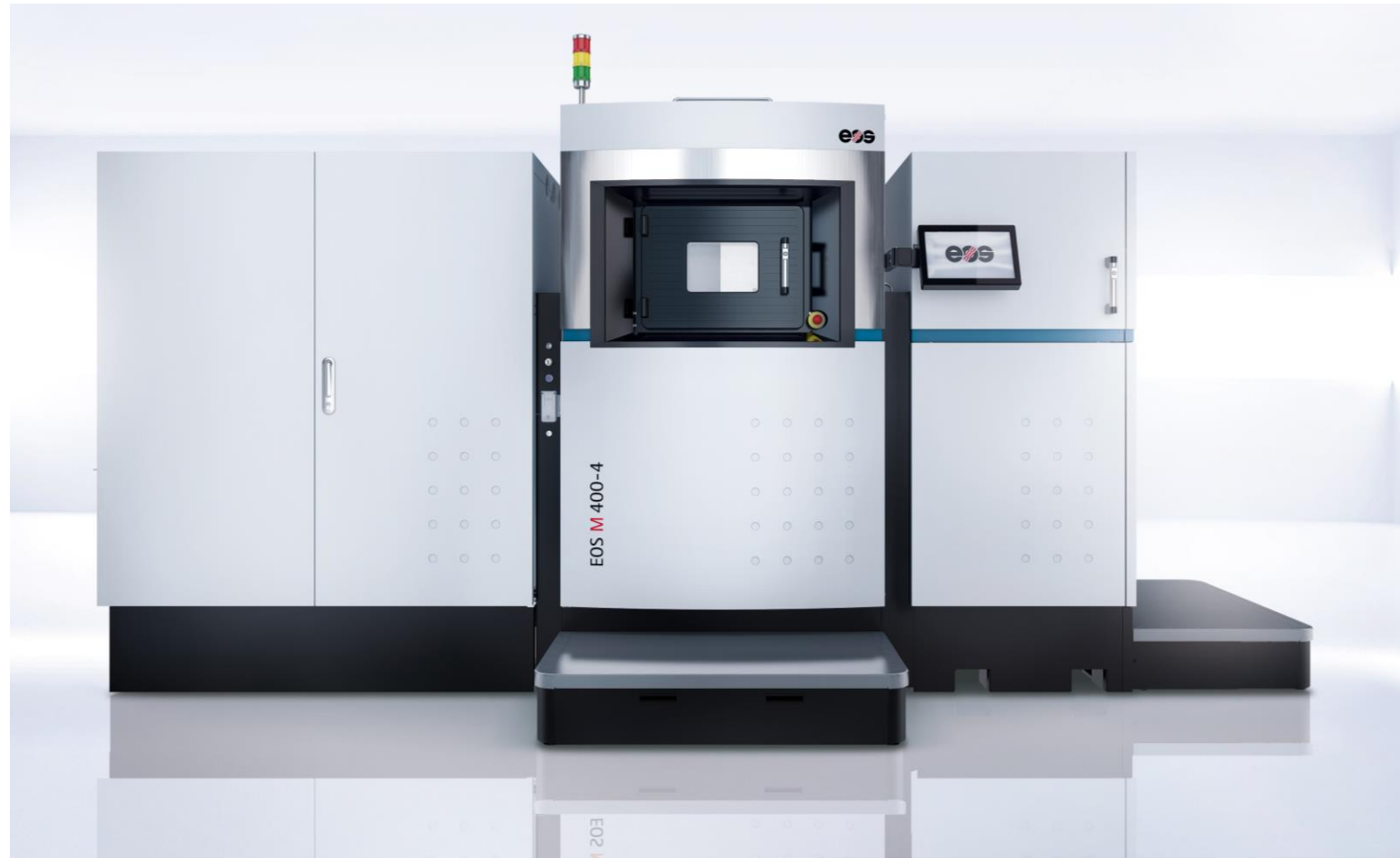


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YEAR 2019



Thanks for your attention

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