

Overview of the International Activities in 2018

International Experience 4 You

A further edition of the event, "**International Experience 4 You**", which by now has become traditional, took place in June, in the cafeteria (Mensa). The event was organized by **Prof. Benim** and **Ms. Atalay** and sponsored by the **International Office (Dr. M. Katz)**. The purpose has been to enhance information exchange between the domestic and visiting students of the Department of Mechanical and Process Engineering (FB MV) in an informal and enjoyable atmosphere, with live music, drinks, foods and shows. This time, moderated by **Hakan Karasu** (incoming, Turkey), **incoming students** were **presenting their country** and **their university** with **slide shows** and **games (France: Camille Lebouex, South Africa: Nadine de Lille)**, whereas an **outgoing student, Benjamin Despak** was reporting on his international experience in **Turkey**. Our **regular student** in the Master study program **Mechanical Engineering, Bindu T.M.**, gave a presentation on **India**.



India: Bindu (regular student) Master ME)



France: Camille (incoming)



South Africa: Nadine (incoming)



Turkey: Benjamin (outgoing)



The audience

Student Mobility

In 2018, we had **more than twenty-five incomings (Turkey, France, South Africa)** and more than **ten outgoing (Austria, Finland, Portugal, Spain, Turkey)**. Through the **IGCHE** program, we are continuously receiving enrolments from **India** to our **Bachelor Study** programs "**Product Development**" and "**Production Technology**". To our **English speaking Master Study Program "Mechanical Engineering"**, we continued to receive **regular students** from abroad, the **majority** being, again, from **India**. **Prof. Jahr, Prof. Grote** and **Prof. Haenel** (Dept. Electrical Engng.) supervised totally **six trainees** (each two) from **India**. A **trainee** from **India** and **three trainees** from **France** were supervised by **Prof. Benim**. Two of our students, **Justin Eloo** and **Eike Beyer**, went to the **University of Maryland, USA** for an **internship** through a program supervised by **Prof. Neef**, which has been continuing since 2013, and through which about eight trainees were sent by 2018.

Staff Mobility / International Contacts

In October, **Ms. Zupfer** visited our partner *Seinäjoki University of Applied Sciences* in **Finland**, for a week, teaching courses on International Competences, English and German. In May, Ms. Zupfer also attended the "9th Austrian UAS Language Instructor's Conference" organized by *FH Technikum Wien*, **Austria**.

Our **Vice Dean, Prof. Jahr**, initiated contacts with the *State University of New York* and *St. Thomas University, Florida*, during his attendance at a conference on international engineering education held at the *University of Rhode Island*, **USA**, towards the end of 2018.

In January, **Prof. Niemann, Ms. Fussenecker, Mr. Schlösser** ("**Forschungsstelle Life Cycle Excellence**", **FLIX**) visited our partner university *Cape Peninsula University of Technology* and the *University of Stellenbosch* in **South Africa**, starting a joint project ("Stifterverband NRW") on business plan development with the former and signing an MoU with the latter. A further visit of the team was to the *University of Malaya, Kuala Lumpur, Malaysia*.

Staff members of the "**Zentrum für Innovative Energiesysteme**", **Prof. Adam (ZIES)** and the **International Office (IO)**, supported by the German Academic Exchange Service (DAAD), have made two fact-finding trips to **Africa** to establish partnerships. **Mr. Ille, Mr. Goebel** (both ZIES) and **Dr. Katz** (IO) visited the *University of Fianarantsoa* in **Madagascar** and Mr. Rigebauer, Mrs. Ille (both ZIES) and Dr. Katz visited the *Universities Cape Coast Technical University, University of Cape Coast* and *Koforidua Technical University* in **Ghana**.



Mr. Ille, Dr. Katz, Mr. Goebel
with Malagasy colleagues in Fianarantsoa

International Conferences and Fairs

Prof. Adam and his co-workers at **ZIES (Mr. Backes, Ms. Frank, Mr. Gottschald, Mr. Götzelmann, Mr. Ille, Mr. Reich, Mr. Rödder, Mr. Spiegel, Mr. Wirth)** contributed to a number of international conferences in **New Zealand, Switzerland, Portugal, Spain**, with **Prof Kameier** and co-workers (please see the publication list on the last page).

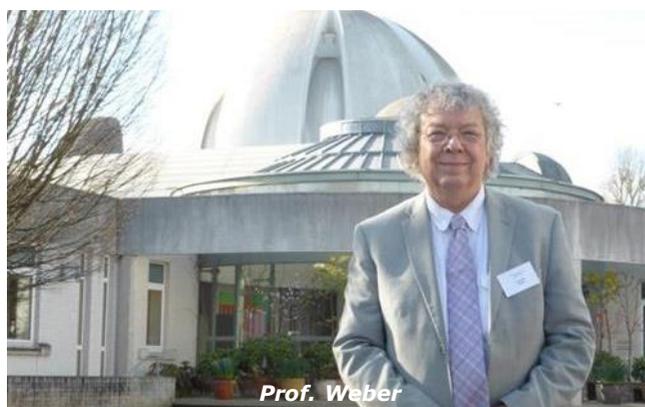
Prof. Köppke organized the international congress "Natech Risk Management" (a conference on natural hazards endangering plants with dangerous substances), which took place between 5-7/9/2018 in Potsdam, with contributors and attendees from different countries including **Columbia, France, Italy, Japan, Kasachstan, UK, USA**, in cooperation with adelphi (consulting institution for climate and environment) upon the inquiry of UN, OECD, Federal Ministry for the Environment, State Ministry of Brandenburg and "Umweltbundesamt". Besides an opening speech, Prof. Köppke gave a talk on windborne projectiles that can cause accidents by hitting chemical containers and presented his simulation code. The "discussion document" of the conference was also prepared by Prof. Köppke.

Prof. Benim co-organized the "XI International Conference on Computational Heat, Mass and Momentum Transfer", May 21-24, 2018, *Cracow, Poland* and was the **European Chair** of the conference. The research group of Prof. Benim (**CFS**) contributed the conference by seven talks, given by **Dr. Cicek, Mr. Diederich, Dr. Iqbal, Mr. Pfeiffelmann** and **Dr. Saeedrashed**. Prof. Benim was **Session Organizer** and **Co-Chair** of the Session on "Combustion Modelling" at the "ASME Turbo Expo 2018", June 11-15, 2018, Lillestrøm, **Norway**.

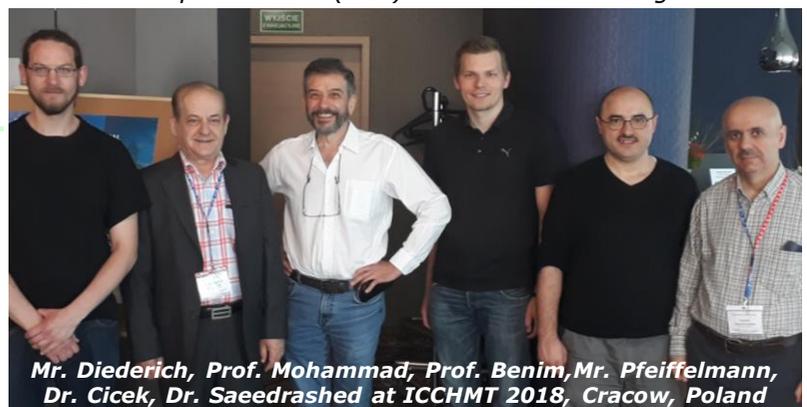
Prof. Neef, Ms. Fussenecker, Prof. Niemann, Prof. Zielke contributed the "SEFI Annual Conference", September 17-21, 2018, *Copenhagen, Denmark* (SEFI: European Society for Engineering Education).

Prof. Niemann and co-workers (**Ms. Fussenecker, Mr. Schlösser**) attended the "International Conference on Production Research" organized by our partner university in *Cluj-Napoca* in **Romania**. Master students **Riccarda Behle** and **Dominik Kretschmar** also presented their work at the conference, who were awarded within the framework of the master course "Engineering Conferences". The team of Prof. Niemann (**FLIX**) implemented two subsequent workshops within the framework of Capacity Building Erasmus+ EU-Projects on "Automotive Engineering and Cooperation between Industry and University" in *Bahia Bianca, Argentina* and *Salttillo, Mexico*.

Prof. Weber gave an **invited talk** on fine dust sensors at the *University of Cambridge, UK*. This was his second invited talk at the university. Prof. Weber attended the International Conference "Optical Remote Sensing" in September, in Berlin, and had the function of a **Co-Chair**. Prof. Weber and his team (**UMT**) took part at large international aviation exhibitions. In Spring 2018, at the *Aero 2018* in Friedrichshafen, UMT demonstrated the most recent measurement technology for research flights. At the *ILA 2018* in Berlin, a test rig for a micro aircraft turbine was presented, which resulted from a cooperation with the *German Aerospace Center (DLR)* and the *Hammer Engines*.



Prof. Weber



Mr. Diederich, Prof. Mohammad, Prof. Benim, Mr. Pfeiffelmann,
Dr. Cicek, Dr. Saeedrashed at ICCHMT 2018, Cracow, Poland

International Research

In a three-year project funded by the EU, an online teaching concept on the subject of Industry 4.0 has been developed, since October 2018, by **Prof. Jahr**, **Prof. Nachtrodt** and **Prof. Heckmann**.

Partners of the project are: *International Academy of Management and Technology (INTAMT) e.V., Düsseldorf, Scientific Agency ASEV, Empoli, Italy, Saxon University of Applied Sciences, Enschede, The Netherlands, Concilio Nazionale delle Ricerche, Rome and Florence, Italy, University of Lodz, Poland* and the *Polytechnic University of Bucharest, Romania*.

The share of our university will include the Additive Manufacturing, i.e. 3D printing. Users of the learning platform should be industrial practitioners. The planned new course "Additive Manufacturing" in our department should also benefit from this.



Prof. Weber and his Team

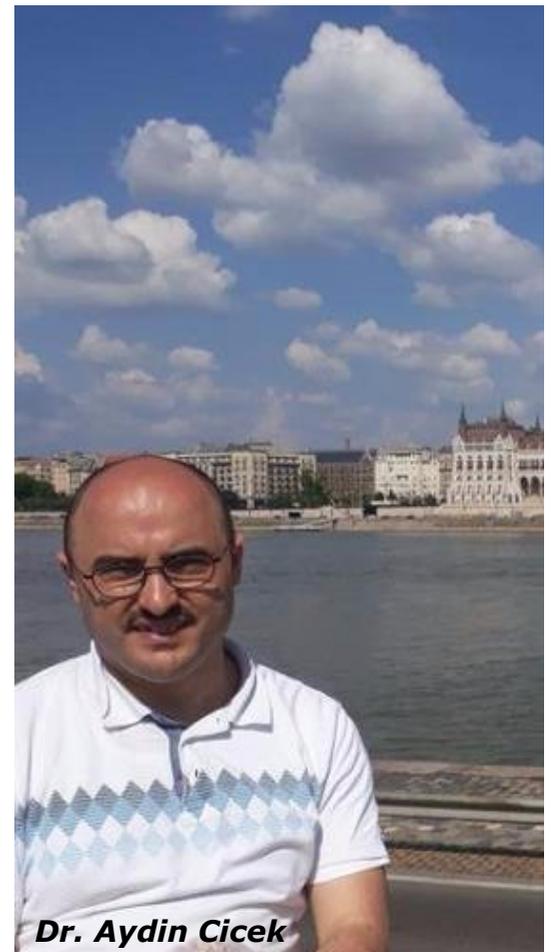
Prof. Weber and his team (**UMT**) took part in a large international tracer dispersion experiment with a twin-engine DA42 as research aircraft in September 2018. The experiment was funded by EU and coordinated by the German Aerospace Center (DLR) within the framework of the European project EUNADICS-AV (*European Natural Airborne Disaster Information and Coordination System for Aviation*).

A further activity of Prof. Weber and his team was the research flight at the large European volcanic ash experiment VOLCEX18 on 28. November 2018. In the exercise, the eruptions of Icelandic volcanoes 2010 and 2011 were simulated.

Prof. Benim hosted **Dr. Cicek** from the *General Directorate of Mineral Research and Exploration of Turkey (MTA)* in his Lab (Center of Flow Simulation (**CFS**)) for a period of six months, for a research project on "Enhanced Geothermal Systems", funded by *The Scientific and Technological Research Council of Turkey (TÜBİTAK)*. Prof. Benim continued his research cooperation on computational modeling of flow, heat and mass transfer with research teams from various countries: *Jadavpur University, India* (Heat Transfer Enhancement), *Cracow University of Technology, Poland* (Aerodynamics, Combustion), *University of Central Asia, Kazakhstan* (Non-Newtonian Fluids).

Prof. Benim was the **External Examiner** for two **Ph.D. Thesis**: **T. S. Rajesh**, "Optimization of Thermal Spray Process Used in Petrochemical Industries", *Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat, India*, **A. M. Prakash**, "Numerical Investigation of Gas-Particle Flow in Static and Dynamic Separators", *IIT Madras, Chennai, India*.

Prof. Benim continued hosting **Dr. Saeedrashed** from **Erbil, Irak** (PhD from **Gaziantep University, Turkey**) as guest researcher, who is performing research on the simulation of environmental flows in large scale. Dr. Saeedrashed is currently funded by a fellowship program of the **Alexander von Humboldt Foundation**.



Dr. Aydin Cicek

Publications in International Conferences and Journals

- L. Nolting, T. Spiegel, M. Reich, **M. Adam**, A. Praktijn: Can Energy System Modeling benefit from Artificial Neural Networks? Application of Two-Stage Metamodels to Reduce Computation of Security of Supply Assessments, *CIE48 - International Conference on Computers & Industrial Engineering*, 02.-05.12.2018, Auckland / New Zealand (peer reviewed, Best Application Paper Award).
- K. Backes, **M. Adam**, H.P. Wirth, D. Götzelmann, S. Helbig, D. Eggert: Efficient Design of Solar Assisted Heating Systems for Multi-Family Houses, *EuroSun 2018 - 12. International Conference on Solar Energy for Buildings and Industry*, 10.-13.09.2018, Rapperswil / Schweiz.
- M. Rödder, L. Frank, D. Kirschner, **M. Neef**, **M. Adam**: EnergiBUS4home – Sustainable energy resourcing in low-energy buildings, *Energy* 159 (2018) 638–64.
- F. Ille, **M. Adam**, J. Gottschald, H.P. Wirth: Analysis of Ageing Phenomena for Big Solar Thermal Plants, *ECOS 2018 - The 31th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems*, 17.-21.06.2018, Guimaraes / Portugal.
- M. Reich, **M. Adam**: Robust Optimization of District Heating Networks Structure and Dimension combining Metamodels and Multi-Objective Optimization, *ECOS 2018 - The 31th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems*, 17.-21.06.2018, Guimaraes / Portugal.
- T. Biedermann, M. Reich, **F. Kameier**, **M. Adam**, C. Paschereit: Assessment of Statistical Sampling Methods and Approximation Models Applied to Aeroacoustic and Vibroacoustic Problems, *NOWEM 2018 - The 6th conference on Noise and Vibration emerging methods*, 07.-09.05.2018, Ibiza / Spain.
- J. Gottschald, **M. Adam**, M. Reich: Multi-Objective Optimization of a District Heating Networks Energy Supply Systems Structure and Dimension, 5th International Solar District Heating Conference, 2018, Graz / Austria.
- M. Neef**, C. Fussenecker, **J. Niemann**, **T. Zielke**: Publish Your Undergraduate Research! – A Mandatory Course for Master Students in Engineering, Paper ID 1216, SEFI Annual Conference, Copenhagen, Denmark, September 2018.
- J. Niemann**, C. Fussenecker, R. Behle, D. Kretschmar: International Conf. on Production Research, Cluj-Napoca, Romania, 2018.
- K. Weber**, T. Kramer, C. Fischer, T. Pohl, M. Schulenberg, G. Heweling, C. Böhlke: Testing and evaluation of low-cost sensors for fine particulate matter PM10 and PM2.5, *Geophysical Research Abstracts*, Vol. 20, EGU2018-11298-1, 04.2018
- R. Naraparaju, H. Lau, M. Lange, C. Fischer, D. Kramer, U. Schulz, **K. Weber**: Integrated testing approach using a customized micro turbine for a volcanic ash and CMAS related degradation study of thermal barrier coatings *Surface & Coatings Technology*, Volume 337 (2018) 198-208.
- S. Bhattacharyya, H. Chattopadhyay, A. Banarjee, **A. C. Benim**: Heat Transfer and Flow Field in a Circular Twisted Channel, *Proc. ICCHMT 2018, MATEC Web of Conferences* 240, 01005 (2018)
- Y. S. Saeedraashed, **A. C. Benim**: A Computational Investigation of the Hydrodynamics of the Badush Dam in Northern Iraq, *Proc. ICCHMT 2018, MATEC Web of Conferences* 240, 04009 (2018).
- A. Cicek, A. M. Eker, **A. C. Benim**: A Numerical Analysis of the Thermohydraulics of an EGS Project in Turkey, *Proc. ICCHMT 2018, MATEC Web of Conferences* 240, 05001 (2018).
- M. Diederich, F. Gül, **A. C. Benim**: Prediction and Measurement of the Aerodynamic Performance of a Wind Turbine, *Proc. ICCHMT 2018, MATEC Web of Conferences* 240, 04001 (2018).
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- B. Pfeiffelmann, **A. C. Benim**: Numerical Study of the Quenching of a Laminar Premixed Hydrogen Flame, *Proc. ICCHMT 2018, MATEC Web of Conferences* 240, 01031 (2018).
- S. Iqbal, B. Pfeiffelmann, **A. C. Benim**, F. Joos: Numerical Analysis of Lifted Hydrogen Flame, *Proc. ICCHMT 2018, MATEC Web of Conferences* 240, 01014 (2018).
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- A.C. Benim**, A. Cicek, A. M. Eker: A Computational Investigation of the Thermohydraulics of an EGS Project, *Journal of Thermal Science* 27 (5) (2018) 405-412.
- A. Farooq, R. Ali, **A. C. Benim**: Soret and Dufour Effects on Three Dimensional Oldroyd-B Fluid, *Physics A: Statistical Mechanics and its Applications* 503 (2018) 345-354.

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This is an overview, which is not claimed to be exhaustive. Some activities have been omitted due to space limitations. We apologize, in advance, for any activity that might have unintentionally be omitted due to an oversight.



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