

Overview of the International Activities in 2019

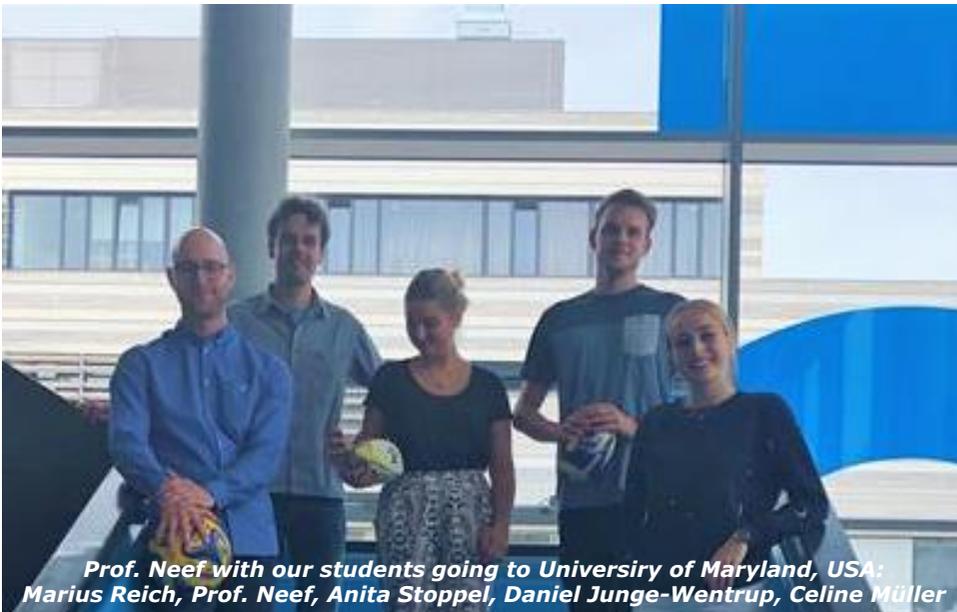
Student Mobility

In 2019, our department had incomings and outgoings for studies and traineeship. We hosted **incomings** from **India, Korea, France, Poland** and **Turkey**. Destinations of the **outgoings** were **Austria, Chile, Greece, Malaysia, Mexico, Portugal, Spain, South Africa, Turkey, UK, USA**.

The incoming trainees were hosted majorly in the laboratories of **Prof. Benim, Prof. Grote** and **Prof. Jahr, Prof. Niemann** and **Prof. Weber**. The majority of the student mobility activities were taking place within the **Erasmus+** program.



Gökce and Esra (Incomings, Sakarya University, Turkey)

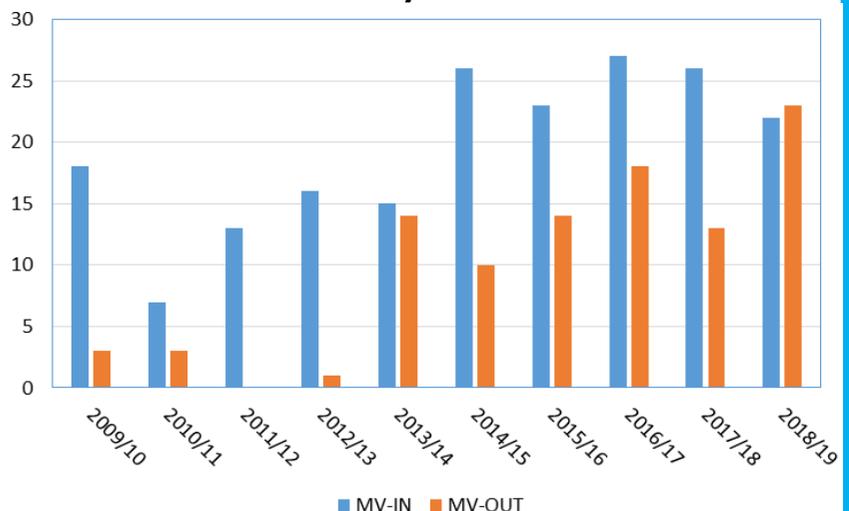


Prof. Neef with our students going to University of Maryland, USA: Marius Reich, Prof. Neef, Anita Stoppel, Daniel Junge-Wenttrup, Celine Müller

In addition, mobility activities took place within the framework of bilateral agreements and contacts, such as those with **India** (supervised by **Prof. Jahr**), **Malaysia, Mexico, South Africa** (supervised by **Prof. Niemann**) and **USA**.

The contact with the **University of Maryland, USA** for traineeships was initiated in 2013 by **Prof. Neef**, who also supervised it so far. For the future, the contact will be maintained by **Prof. Niemann**, who is also supervising our contacts to **Malaysia, Mexico, Malaysia** and **South Africa**.

For providing some insight on the evolution of student mobility over the years, the figure on the right is provided, which shows the number of incomings and outgoings for our department over the last ten years. The numbers stem from our **International Office, IO (Dr. Katz)**. One can see that the number of incomings is stabilized in the range 20-25, for the last five years (although the number of partnerships has increased). One can also see that there has been a generally increasing trend for the outgoings within the same period. A comparison to the other technical departments of HSD shows that our department's activity has been at least twice as intensive.



Staff Mobility / International Contacts

In May, **Ms. Zupfer** visited our partner **Univ. Politehnika Timisoara** in **Romania**, for one week, teaching courses on International Communication and English. In November, Ms. Zupfer gave seminar on Technical English for one week at the **Univ. Politècnica de Valencia** in **Spain**. A week later, **Dr. Michaela Muszynski**, Head of the *Gandia Campus* (UPV) followed Ms. Zupfer's invitation to the HSD. With a group of 20 students she and paid a visit to our department.

Prof. Benim visited our partner **University of Istanbul** in **Turkey**, Department of Mechanical Engineering, for a week in June and gave lectures on Turbulence Modelling.

The **Vice President K.V.D. Kishore Kumar**, and the **head of international relations, Dr. S. Sivaperumal** of our **Indian Partner Vel Tech University** visited our university during their multi-week tour of Germany and Europe. In a meeting with the students and the staff (**Prof. Benim, Prof. Jahr, Prof. Kaluza, Prof. Ruess**) of our department and International Office (**Dr. Katz**), they presented their campus as well as the study programs and laboratories that are available for cooperation in teaching and research.

Photo right: Vice president K.V.D. Kishore Kumar (2. from right) and head of international affairs, Dr. S. Sivaperumal (last row middle) with students and staff of HSD, in Building



During their visit in *Kapstadt, South Africa*, **Prof. Niemann** and his **FLIX** team, **Ms. Fussenecker, Mr. Schlösser**, played football with township football teams and sponsored a team with tricots (*the photo right*).

In 2019, **Prof. Niemann (FLIX)** had two successful Erasmus proposals for supporting exchange with **Malaysia** and **South Africa**.



International Conferences



Mr. Hintzen and Mr. Laux

In September 2019, **Mr. Laux** and **Mr. Hintzen**, who are assistants of **Prof. Neef (ZIES)** attended the „5th international Seminar on ORC Power Systems“ in **Athen, Greece**, and presented the results of their experimental research on low pressure steam Rankine cycle for waste heat utilization of internal combustion engines. The photo left shows Mr. Hintzen and Mr. Laux in the conference hall.



Also in September 2019, **Prof. Benim** attended the „12th international Conference on Computational Heat Mass and Momentum Transfer“ in **Rome, Italy**, together with a group of his assistants in the **CFS** team. Prof. Benim was also a **co-organizer** and the **European Chair** of the conference. The CFS team presented a number of papers in the fields of biomass combustion, hydrogen combustion, thermoelectric generators, wind turbine aerodynamics, microchannel phase-change heat exchangers as well as ventilation and urban wind aerodynamics. The photo left shows the CFS team in front of the conference venue „**La Sapienza**“ **University of Rome** (Department of Aeronautical & Energetical Engineering)

Front: Dr. Gül, Ms. Özman, Prof. Benim, Ms. Atalay, Mr. Diederich
Back: Dr. Basaran, Mr. Nahavandi, Dr. Saaedrashed, Mr. Pfeiffelmann

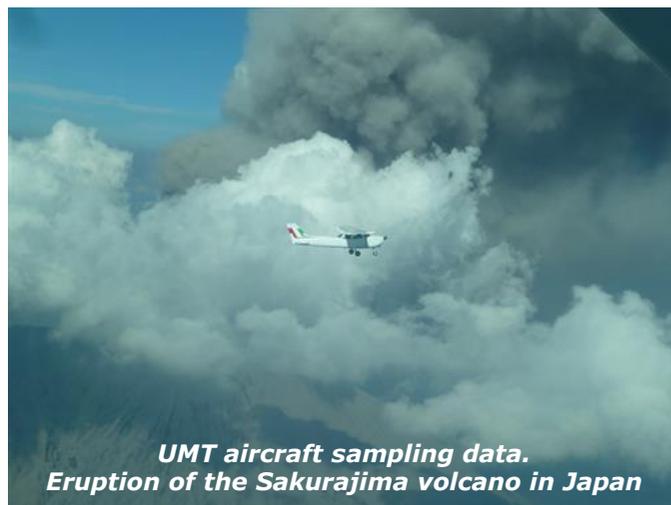
Prof. Niemann and his **FliX** team (**Ms. Fussenecker**, **Mr. Schlösser**) attended the „*International Conference in Competitive Manufacturing*“ in **Kapstadt, South Africa**, in January 2019, and the „*26th EuroSPI Conference*“ in **Edinburgh, Scotland, UK**, in September 2019, with four presentations to the former, and one presentation to the latter.



In September 2019, **Prof. Benim** attended the „*22nd International Congress on Thermal Science and Technology*“, in **Kocaeli, Turkey**. (the photo left). As **Keynote Speaker**, he gave a talk on the challenges in the modelling of gas turbine combustion.

International Research

In March 2019, an international emergency drill was practiced within the framework of the European project EUNADICS-AV (European Natural Disaster Coordination and Information System for Aviation). It was about a simulation of the eruption of the *volcano Etna* in **Italy**, with its consequences on the aviation. **Prof. Weber**, who was a Member of the **Advisory Board** of this project, and his **UMT** team, took part in this exercise. A special highlight in the contribution of Prof. Weber and the UMT team was the online demonstration of a system for a direct, real-time transmission of the measured data from the sampling airplane, based on Iridium satellite data transmission system.



UMT aircraft sampling data.
Eruption of the Sakurajima volcano in Japan



Prof. Weber and Pilot Sievers during the
EUNADICS-AV emergency drill

Prof. Niemann and his **FliX** team have been involved in several **EU** funded projects: The „*ELIC*“ (Engineering Literacy Online – Teachers as Medium for Change) was completed in 2019. The **ASCENT** project (Competence Centers for Automotive Engineering and Sales Management in **Argentina, Brazil** and **Mexico**) is continuing and the **Power Train** project has started.

Prof. Benim hosted **Prof. Ahmed Neche** from the **University of Blida 1, Institute of Aeronautics, Algeria**, for a week in November 2019, for a joint research effort on combustion modelling. Prof. Benim served as **External Examiner** for a **Ph.D. Thesis** (Title: Numerical Investigations on Hydrodynamics of Gas-Solid Flows) from **IIT Madras, Chennai, India**. Prof. Benim also served as **Reviewer** for the research project proposals submitted to the **Swiss National Science Foundation** and **Polish National Science Center**.

Publications in International Conferences and Journals

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- A. C. Benim**: Challenges in Modelling Gas Turbine Combustion, Keynote Lecture, *Proc. 22nd Int. Congress on Thermal Science and Technology*, Kocaeli, Turkey, 11-14 September 2019.
- S. Bhattacharyya, **A. C. Benim**, M. Pathak, K. Dey: A Numerical Study on Heat Transfer Augmentation and Flow Structure in a Square Solar Air Heater Channel with Alternating V-shaped Inclined Ribs, *Proc. International Conference in Sustainable & Recent Innovation in Science and Engineering (SUNRISE-19)*, Motihari College of Engineering, Motihari-Bihar, India, November 28-29, 2019.
- O. G. Otukpa, M. A. Moghimi, S. Bhattacharyya, G. Ahmadi, **A. C. Benim**: Numerical Analysis of Porous Wind Barrier for Minimizing Collector Mirror Soiling in a Parabolic Through Collector Plant, *Proc. 25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMT-2019)* IIT Roorke, India, December 28-31, 2019.
- S. Bhattacharyya, A. Banerjee, **A. C. Benim**, R. Bennacer: Influence of Broken Twisted Tape on Heat Transfer Performance in Novel Triangular Axial Corrugated Tubes: Experimental and Numerical Study, *Proc. 12th International Conference on Computational Heat, Mass and Momentum Transfer (ICCHMT2019)*, Rome, Italy, 3-6 September 2019.
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- A. C. Benim**, M. Diederich, A. Nahavandi: Prediction of Flow and Dispersion in Cross Ventilated Buildings, *E3S Web of Conf.* 128 (2019) 05002.
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- B. Pfeiffelmann, M. Diederich, M. Gül, **A. C. Benim**, M. Heese and A. Hamberger: Analysis of Combustion Heat and Fluid Flow in a Biomass Furnace, *E3S Web of Conferences* 128 (2019) 03003.
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- C. Laux, A. Gotter, **M. Neef**: Experimental Investigation of a Low Pressure Steam Rankine Cycle for Waste Heat Utilization of Internal Combustion Engines, *Proc. 5th International Seminar on ORC Power Systems*, Athens, Greece, 9-11 September, 2019.
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- J. Niemann**, C. Fussenecker, M. Schlösser: Eye Tracking for Quality Control in Automotive Manufacturing, In: Walker, A.; O'Connor, R. Messnarz, R. (Eds.): *Systems, Software and Service Process Improvement*, *Proc. 26. European Conference EuroSPI 2019*, Edinburgh, UK, Springer Nature, Berlin, 2019, pp. 289-298.
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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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