Hochschule Hof
University of Applied Sciences

Press release

Research project at Hof University of Applied Sciences:

Power generation in aquacultures, wastewater treatment plants and sewers - sustainable and efficient

Hof, 20.05.2021 - A new research project of the Institute for Water and Energy Management at Hof University of Applied Sciences aims at promoting the potential and usage of hydropower in existing water facilities. The project "Network for the Generation of Energy with Hydropower in Existing Water Facilities (NEEWa)", funded by the European Social Fund (ESF) with 417,000 EUR, strengthens the knowledge transfer from the Green Tech University Hof to regional companies. In addition, the project contributes to the success of Hof as a center of competence for water and renewable energies in the region.

"Everywhere you see water flowing, you also see the power of water. Not using it means wasting potential," says Dr. Harvey Harbach from the Institute for Water and Energy Management (iwe) at Hof University of Applied Sciences, who came up with the idea for the research project. In the new project, five scientists from the iwe are now working on sustainable power generation in existing water plants.

Project manager Prof. Manuela Wimmer points out: "We are working only with water which is to be used additionally for power generation after initial use. Specifically, we are talking about water that has been used in aquacultures for fish farming, recycled into drinking water in wastewater treatment plants, or simply service water that flows through household sewage systems."

In all these cases, the water flows driven by gravity alone. Electric energy can be generated in the process - by using turbines or water wheels - without affecting ecosystems. Here is an example for a potential application: "In our region, for traditional aquaculture, water is routed through ponds in which fish grow. Often the young fish are pre-bred in a hatchery so that by their size, they are better prepared for the environmental conditions outside the hatchery. Therefore, in the hatchery, electricity is needed for pumps, among other things. The idea is therefore to produce the required electricity on site using sustainable methods. Hydropower, which can provide energy 24 hours a day, is ideally suited for this purpose," says Dr. Harbach.

Putting it all together in a network

Our region is home to a wide range of expertise in the form of specialized companies, state offices, authorities and educational institutions such as the university. "Only through exchange and joint dialog can we find the best solutions for sustainable energy generation 4.0" says Dr. Harvey Harbach. Hof University of Applied Sciences not only coordinates the project but also plays an independent role in the network. The university does not pursue any financial interests and thus offers a scientifically neutral network activity to promote water power on the basis of a cost benefit calculation. The aim of the project is bring together the whole value chain under the aspect of knowledge transfer in the network. Through the establishment of the network, the participants will be educated regarding the chances and possibilities of water power. The regular exchange supports the usage and further development of existing and new technologies of hydropower.

Hydropower contributes to climate neutrality

With the Green Deal, the European Union has set itself the goal of being climate-neutral by 2050, i.e., net greenhouse gas emissions must be completely avoided. This goal can only be achieved if the share of renewable energies in final energy consumption is increased. This share is to grow to 32% by 2030. These targets are implemented at national level with the 2030 climate protection program. One further option for decentralized power generation like wind power, solar energy and biomass is hydropower. Hydropower is characterized by favorable production costs and 100% clean, base-load energy from power plants driven purely by altitude. The biggest challenge, however, is the ecological compatibility of the power plants. "Hydroelectric power plants, regardless of their size, may not lead to a threat to the flora and fauna of the riverbed. For this reason, no new constructions are considered in this project but exclusively existing water plants," says Prof. Dr. Wimmer.

Entire institute works together

The iwe bundles competencies in the field of water and energy. "I am immensely pleased that both competencies are being brought together in this project," says institute director Prof. Dr. Tobias Plessing. Hof University of Applied Sciences works together in numerous areas of applied Green Tech research.

For more information on the project, please visit www.hof-university.de

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About Hof University:
Practice orientation, internationalization and intelligent use of resources are the focus of teaching and research at Hof University of Applied Sciences. In the area of internationalization, the university places a further focus on India, and with regard to the topic of intelligent use of resources, the focus is on

water and energy efficiency. Our wide-ranging and interdisciplinary study programs range from economics and business law to computer science and engineering. The Münchberg campus offers an education that is unique in Germany thanks to textile and design study programs that are closely interlinked with business. Regional companies also benefit from the establishment of competence centers and institutes at the university. The four research institutes focus on information systems, materials science, water and energy management, and biopolymers. At Hof University Graduate School, working professionals and managers can find German and English-taught continuing education programs at university level; their program includes part-time bachelor's and master's programs, certificate courses, academic continuing education courses and seminars. The Bavarian-Indian Center for Business and Higher Education BayIND, which is affiliated with Hof University of Applied Sciences, coordinates and promotes cooperation between Bavaria and India. Students with an interest in startups or entrepreneurship are advised and supported by the Digital Startup Center Einstein1 at the university campus.