

# PRESS RELEASE

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**Mathematical Fraunhofer Institutes at the Anuga FoodTec**

## **MESHFREE: process simulation for the food industry**

**With MESHFREE, the Fraunhofer Institute for Industrial Mathematics ITWM and the Fraunhofer Institute for Algorithms and Scientific Computing SCAI provide an innovative software product for the mesh-free simulation of physical processes. MESHFREE can simulate a large variety of food technology processes including shaping, homogenizing, injection, kneading, pressing or stirring. At the booth of the Fraunhofer-Gesellschaft at Anuga FoodTec in Cologne, the experts present the software solution in Hall 4.2 E054 / E058.**

“With MESHFREE, we meet the challenges of the food industry with innovative simulation. Almost all of the processes and procedures relevant in industry practice can be computed and virtually realized with the software solution,” says Dr. Jörg Kuhnert from the Fraunhofer ITWM. “In concrete terms, this means that companies optimize their processes on this basis and not only save resources, but also save money and time.”

### **Universal model for fluids and solids**

MESHFREE is based on a general material model. This generality allows complex material behavior to be modeled and treated using the same numerical methodology, regardless of whether the medium is liquid or solid. The specification of the material properties such as viscosity or elasticity in the form of a shear modulus is sufficient to compute the behavior of the medium with MESHFREE. With MESHFREE it is possible to simulate coating, extrusion, forming, homogenizing, injection, kneading, pressing or stirring processes.

### **Faster results with MESHFREE**

The software combines the finite point set method (FPM) for the solution of the conservation equations for mass, momentum and energy with efficient algorithms for solving linear systems of equations (SAMG). The user exports the geometry directly from common CAD tools and uses them for the simulation.

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#### **Editorial Stuff**

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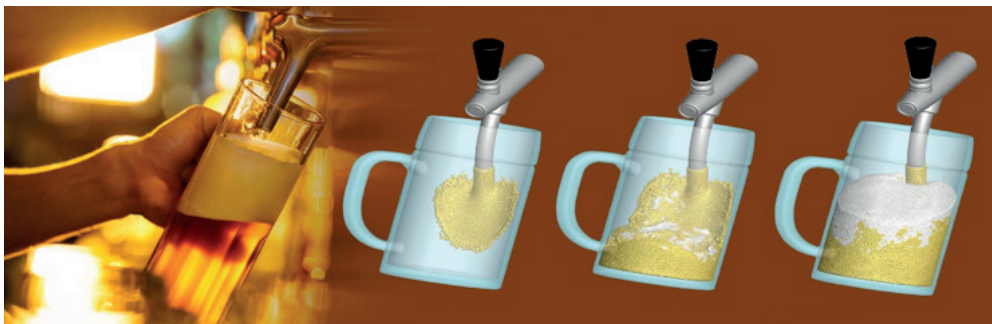
Since MESHFREE does not require any computational meshes, the software is very flexible in organizing the compute points; mesh generation and the time-consuming adaptation of the network topology in highly dynamic processes – such as flows with free surfaces or fast-moving geometry elements – become dispensable.

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### **Synthesis of successful software products**

With MESHFREE, the user benefits from the many years of experience of the Fraunhofer institutes ITWM and SCAI in the simulation of complex physical processes, because the new software bundles the expertise of both institutes in the field of mesh-free simulation methods. The product is a synthesis of two software packages (FPM and SAMG) that have been developed for many years and are used successfully in many industries.



**How does the foam form when filling a beer glass? – Simulation with MESHFREE.**

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**INFORMATION:**

[HTTPS://MESHFREE.EU](https://meshfree.eu)