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Particleworks™
Particle-based simulation software for CAE

PRESS RELEASE

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Powersys and Particleworks Europe are glad to announce a collaboration for the promotion of Particleworks, a mesh-less liquid flow solver based on the Moving Particle Simulation (MPS).

Powersys is a consulting and software company providing global solutions of engineering software and services.

Particleworks Europe is the **European competence center** for the Particleworks and Granuleworks technologies.

Presentation of the product

Particleworks is a CAE software for the simulation of liquid flows based on the Moving Particle Simulation method.

The **mesh-less solver** and the **intuitive interface** make the simulation process simple and fast even for **complex geometries with moving parts**, like gears and shafts in a complete transmission, in an engine or in an electric-motor. The Navier-Stokes solver is based on a deterministic Lagrangian method.

Particleworks is widely used in **different industrial sectors**, from automotive and aerospace to consumer goods, from power generation to the Food & Beverage industry.

Key features

1. Particleworks is a mesh-less liquid flow solver based on the Moving Particle Simulation method conceived in 1996 by Professor Koshizuka of the University of Tokyo.
2. Particleworks can solve free-surface flow, liquid jets and sprays, accounting also for the interaction with air or gas phases and with solid granular materials.
3. Particleworks can also account for heat transfer, Conjugate Heat Transfer and calculate fluid-solid temperature and the Heat Transfer Coefficient distribution on wall boundary conditions.
4. The model definition and set-up is much faster and easier than the Finite Volume method, due to the mesh-less nature of MPS.

For this reason Particleworks is widely used in applications with complex geometries, moving parts and liquid flows like:

- Oil splasing and forced lubrication of **transmissions** – mechanical and electrical
- **Bearings** – oil and grease lubrication
- Engine lubrication, **gradeability** analysis, oil **separation** in breather chambers
- Oil sump **aeration**
- **Piston cooling** and **E-motors cooling**: thanks to the heat transfer capability, Particleworks can predict **oil temperature, piston and windings temperature** for IC engines and running-wet e-drives
- Interaction between vehicles and water, mud, snow – **wading, soiling and contamination analysis** including the aerodynamic effects
- **Water turbine** for torque and power prediction
- Mixing and **Highly viscous flows** – detergents, food, cement, glue, etc.

Company's presentation

Particleworks Europe is a Joint Venture between Prometech Software Inc. and EnginSoft S.p.A.. The JV aims to establish, promote and manage the European distribution of Particleworks and of Granuleworks.

We support distributors and assist customers who require help for applications, verticalization, **dedicated developments** or integration into their IT systems.

About Powersys

Powersys is a software and consultancy firm providing engineering software solutions and services for industry, research and education in the field of electrical and electromechanical systems.

To find out more: www.powersys-solutions.com

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