Prometech Software

Company Introduction

Empowered with Armatus

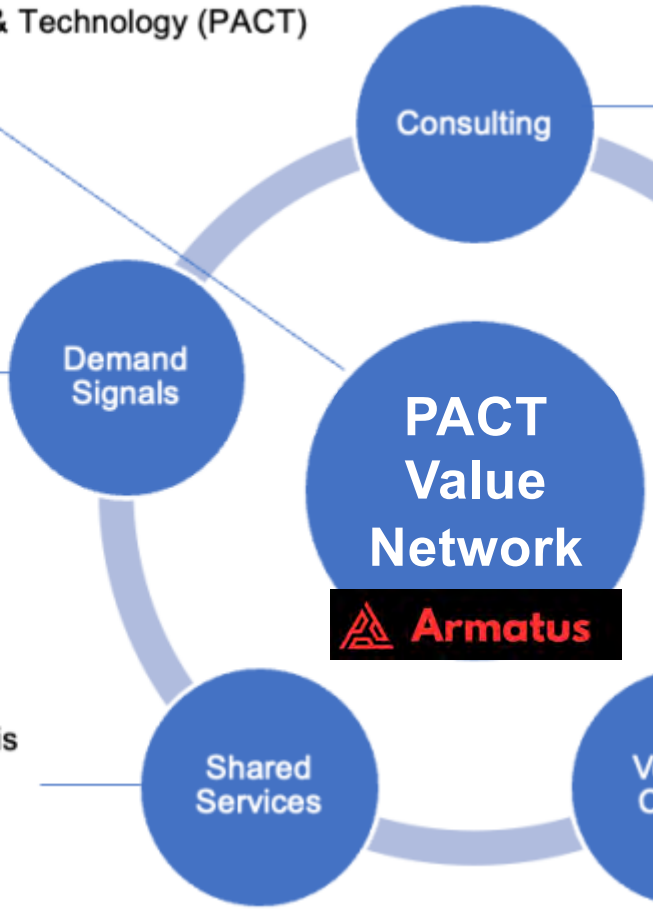
PROMETECH.

PROMETECH.

About Armatus

Armatus Business -> PACT Value Network

Pacific Alliance for Collaborations & Technology (PACT)
PACT Office – CIC Tokyo
- Ecosystem Building
- Innovation Pipeline



Japan Dual-Use
US & Allied Defense Startups
NATO DIANA/NATO Innovation Fund
Companies

Act as a Prime for JP and other allied tech companies

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Access to private capital to accelerate misson critical solutions or deploy existing solutions in Western Pacific.

Vetting and Supply Chain Analysis
Proposal Writing
Cyber training

DoD and MoD
Large Primes
Research Labs
Problems, requirements, priorities

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Prometech Group and Technology

Prometech Group

PROMETECH.

Prometech Group, Inc.

Prometech Software, Inc.

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GDEP Solutions

GPU Solutions

NVIDIA Elite Partner

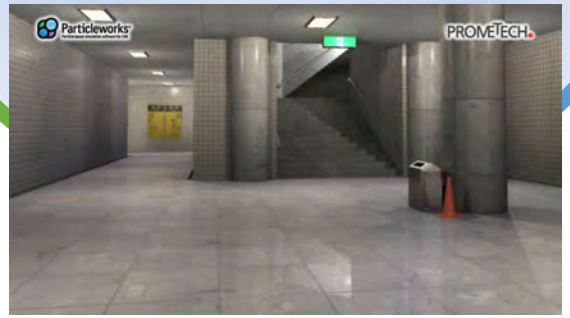
Elite level in two areas

"Compute"

&

"DGX AI Compute Systems"

Computational Reality

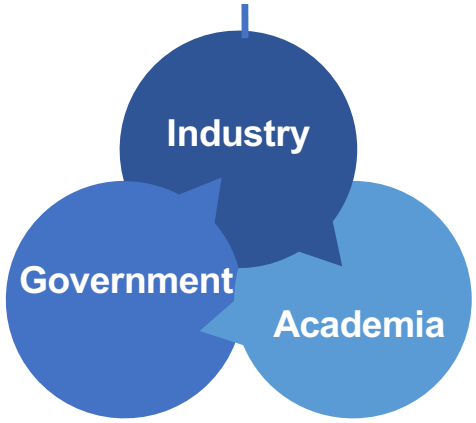


Particleworks™
Particle-based simulation software for CAE

Granuleworks®
Advanced Simulator for Granular Materials

SIMUNIMA

Best Researchers features Feedback



Strong Collaboration

Key Technology – Moving Particle Simulation Method

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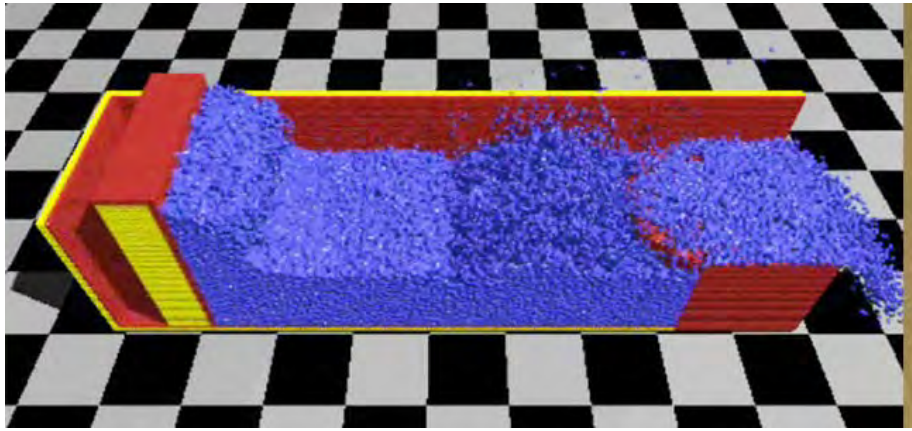
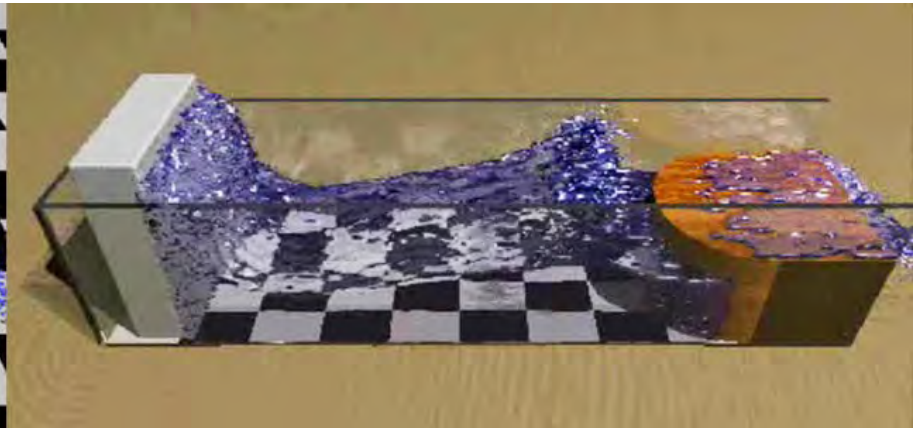
Professor Koshizuka of Tokyo University invented this MPS method in 1997





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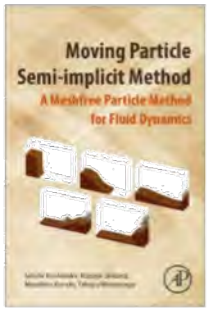

Moving Particle Semi-implicit Method

1st Edition

A Meshfree Particle Method for Fluid Dynamics

MPS (Moving Particle Simulation)
Present Particleworks could simulate
with either semi-implicit or full explicit/implicit solver

Moving Particle Simulation Method
Large Deformation
Liquid Flow

Key features of "MPS method"

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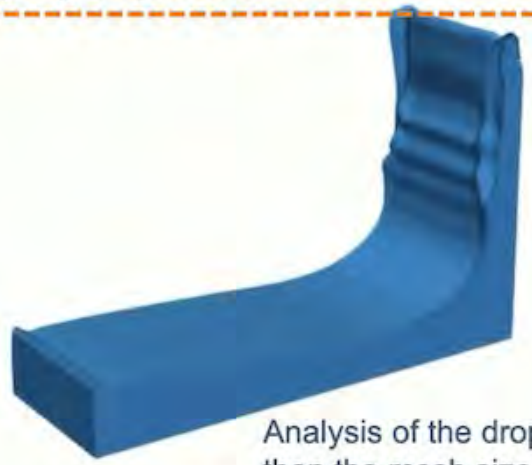
Famous experiment "Dam Break"

Conventional method (with Mesh)

Analyzing only meshed area



Analysis of the droplets smaller than the mesh size is not available

MPS method

Analyzing droplets flying out of the water tank

Analyzing sensitive surface transformation

Key features of "MPS method" Advantages

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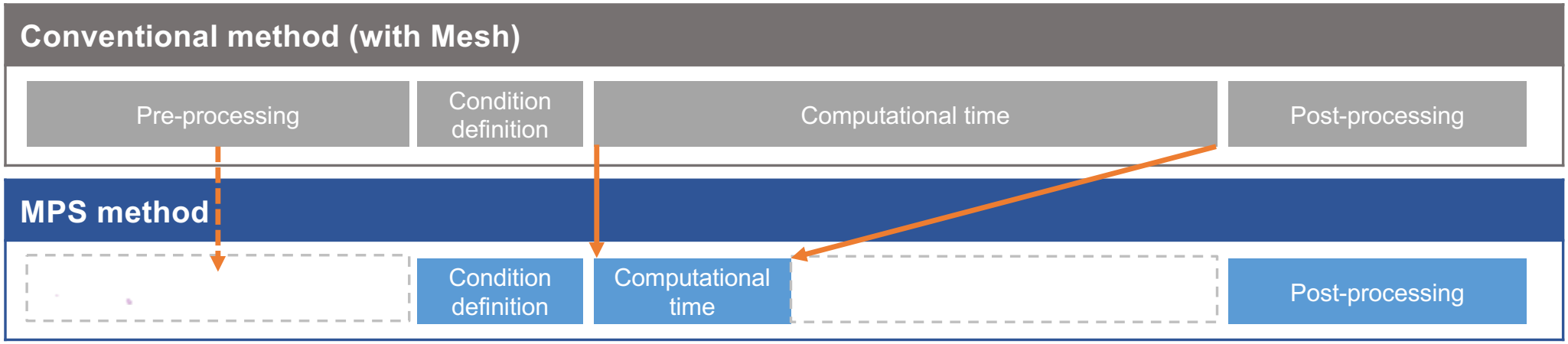
- Faster — Significant reduction in pre-processing Time
- Easier — Direct input of shape data, no complex Meshing
- Flexible — Handles complex geometries with ease



- Reduce Prototype Cost / Increase productivity
  - Parameter is configurable, you can run multiple simulations in parallel
  - We can get the simulation result faster
  - Feedback to the Analysis team, faster decision making update 3D model and design
- ROI : The return should be huge

370+ Customers WorldWide

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AUTOMOTIVE

AEROSPACE

ENERGY

ELECTRONICS

ARCHITECTURE

LIFE & ERTTH SCIENCE

DRIVETRAIN

HEAVY EQUIPMENT

MATERIAL SUPPLIERS

Value Proposition - ParticleWorks Everywhere!

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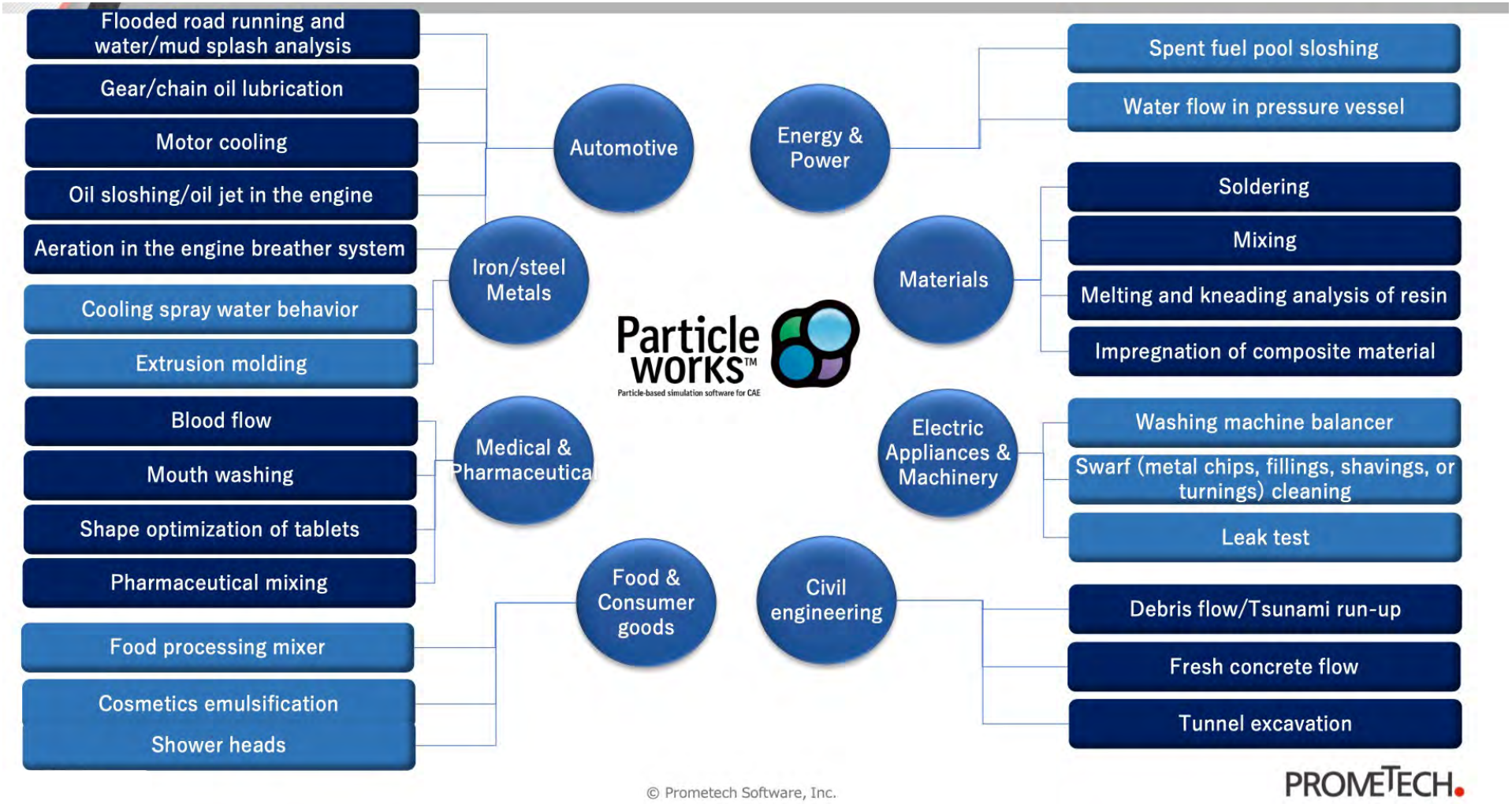

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Value Proposition - Granuleworks Everywhere!

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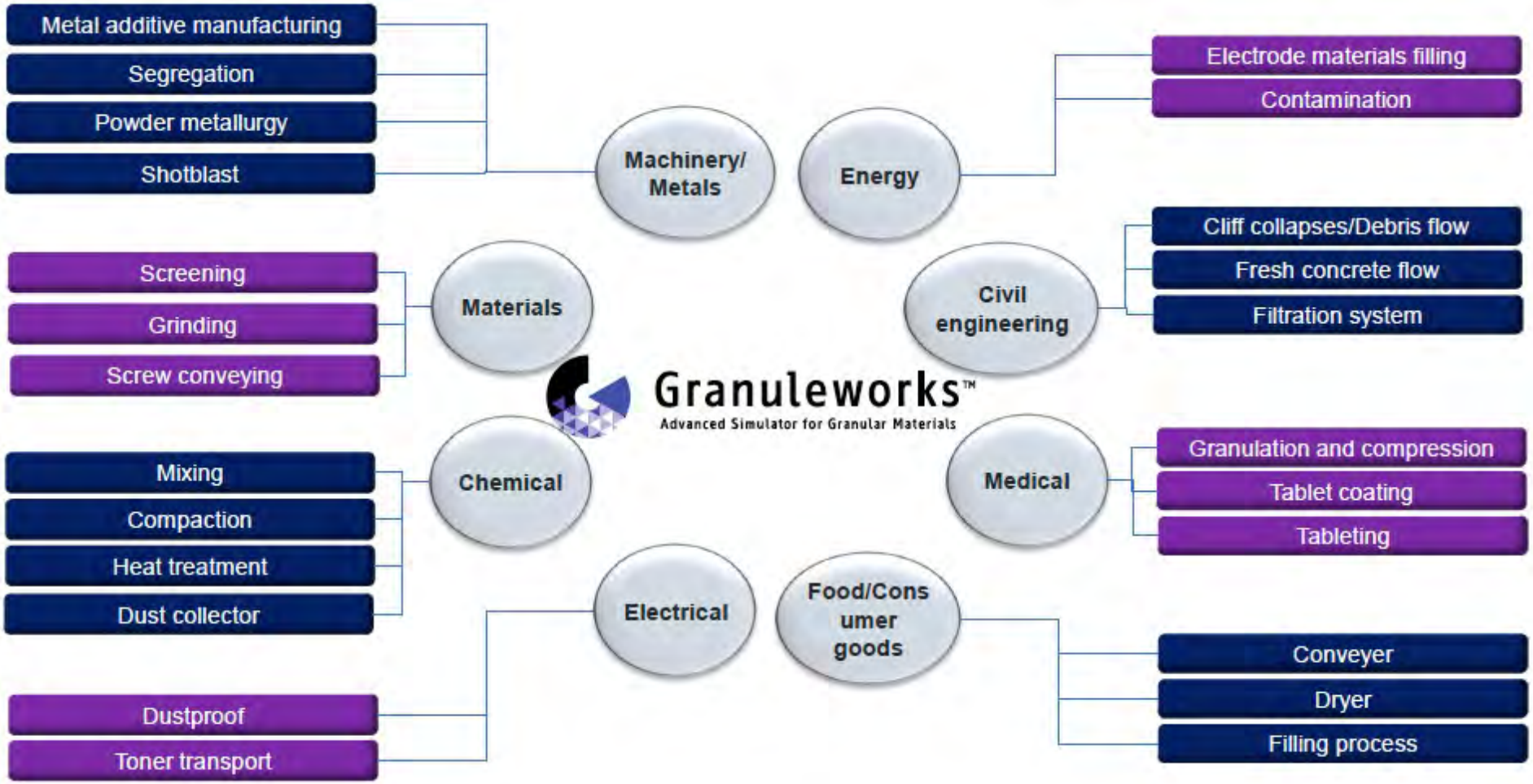

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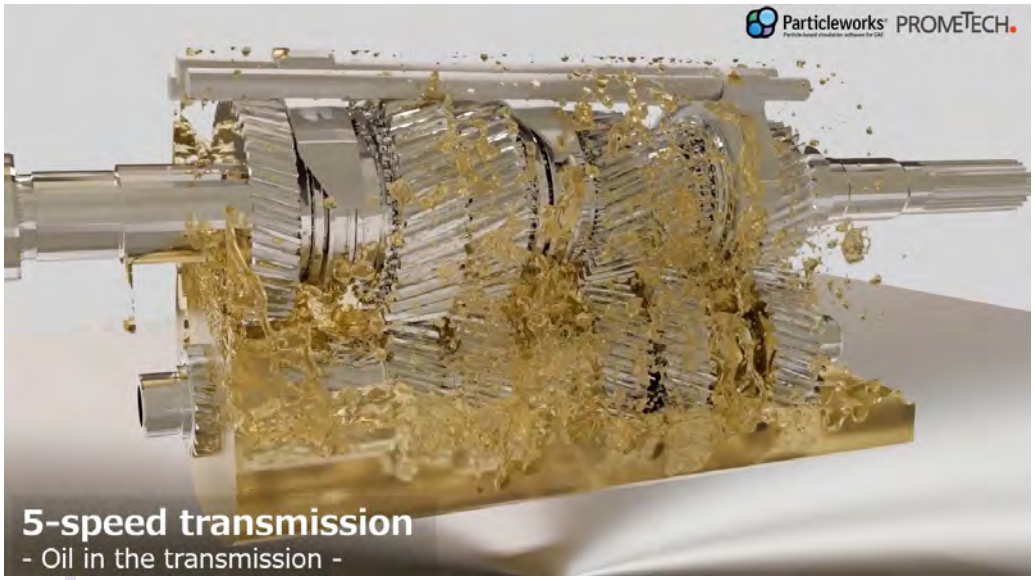
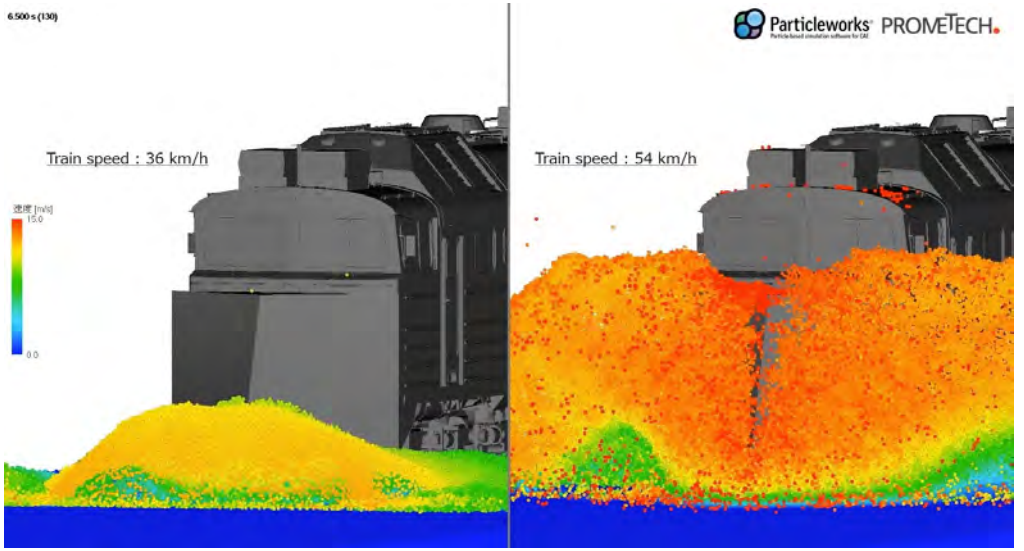
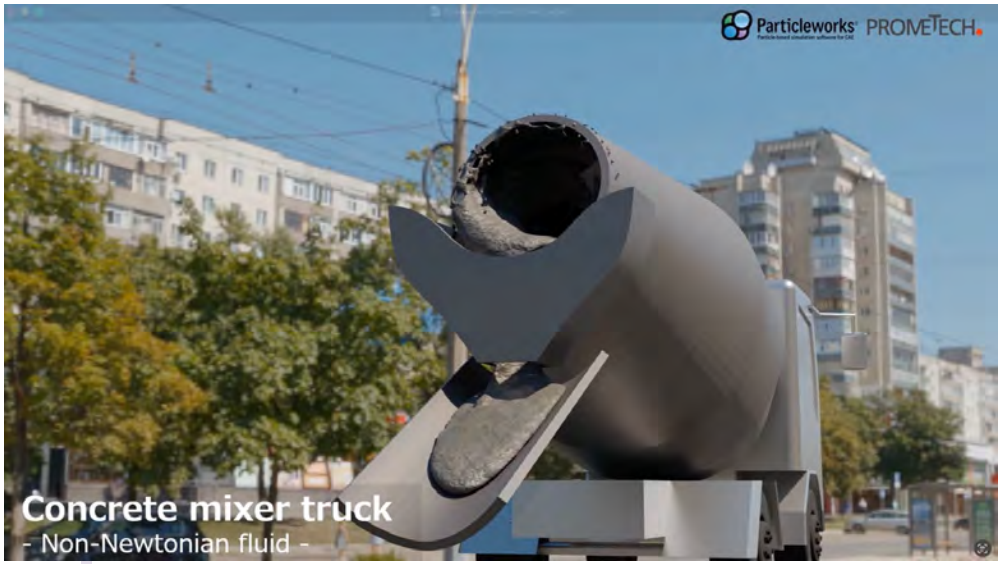
Seeing is believing – Hope you inspire

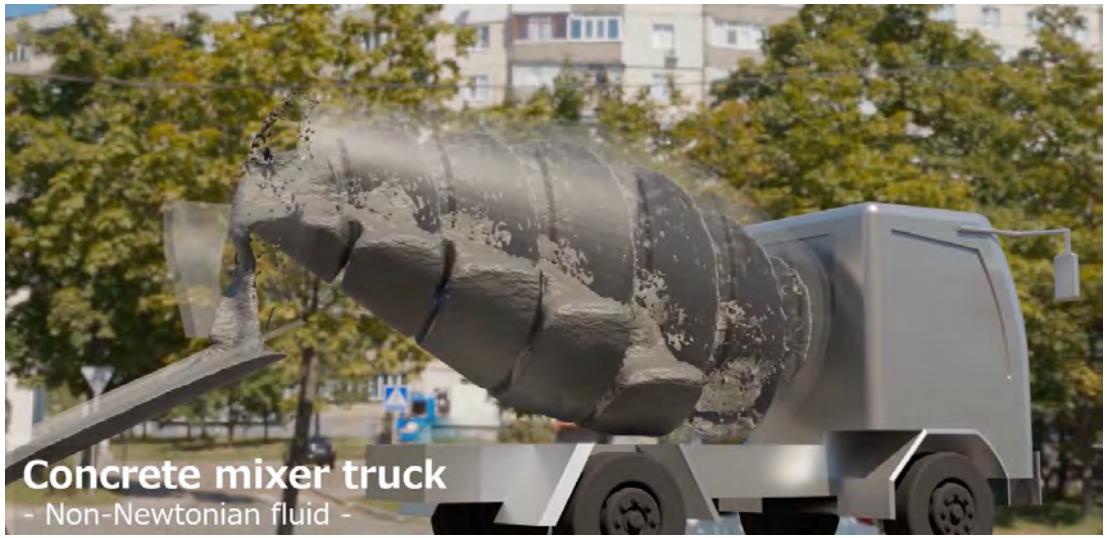

Particleworks PROMETECH
5-speed transmission
- Oil in the transmission -

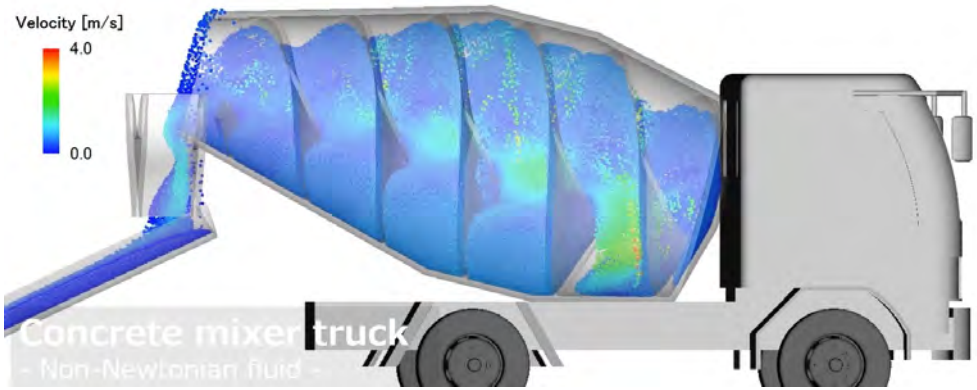
Particleworks PROMETECH
Fluid flow on the cutting board

Particleworks PROMETECH
Snow plow train
- Non-Newtonian fluid model -

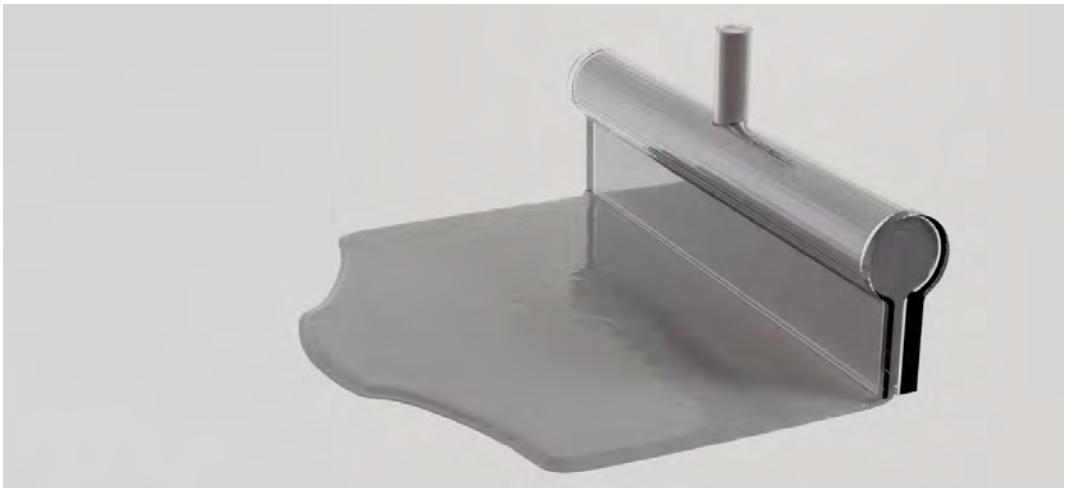

Particleworks PROMETECH
Train speed : 36 km/h
Train speed : 54 km/h


Particleworks
PROMETECH
Concrete mixer truck
- Non-Newtonian fluid -

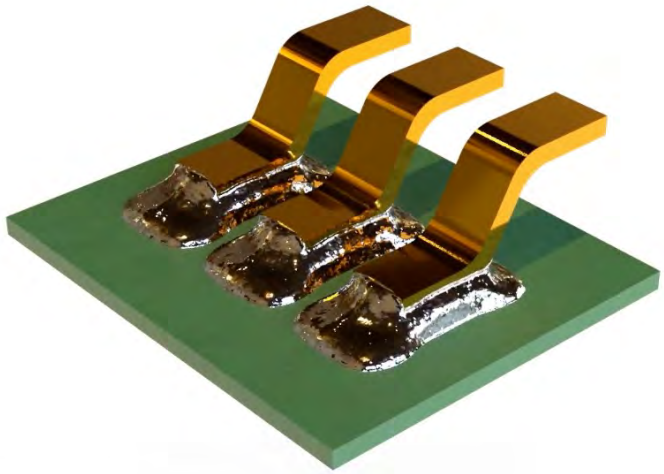

Concrete mixer truck
- Non-Newtonian fluid -


Velocity [m/s]
4.0
0.0
Concrete mixer truck
- Non-Newtonian fluid -

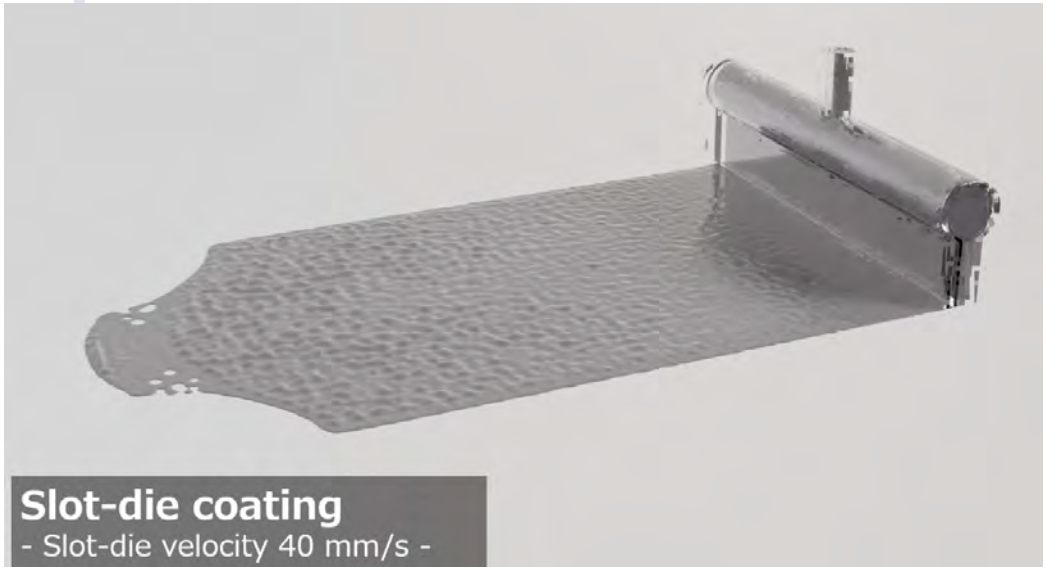
Chocolate fondue
- High viscosity fluid -



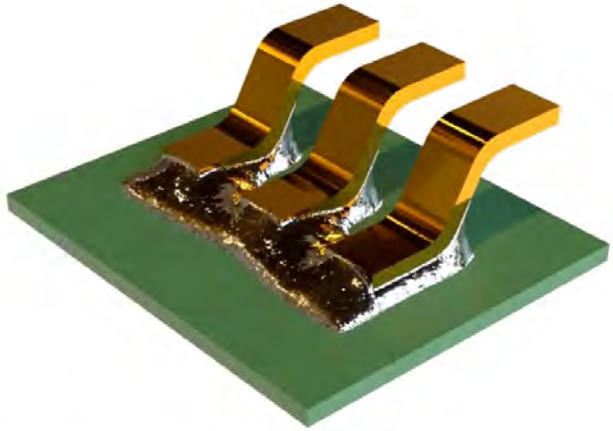
Slot-die coating
- Slot-die velocity 10 mm/s -



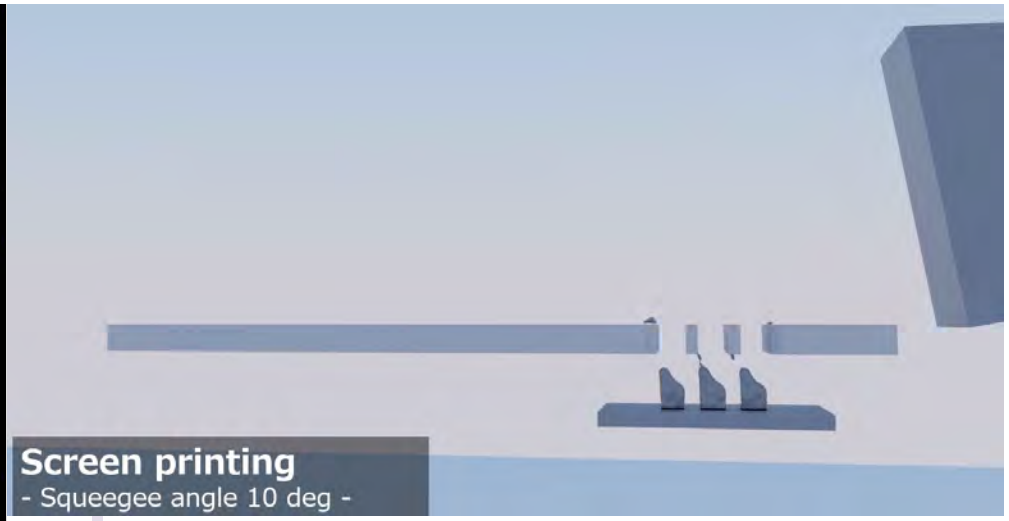
Reflow soldering
- High wettability on the lead -



Slot-die coating
- Slot-die velocity 40 mm/s -

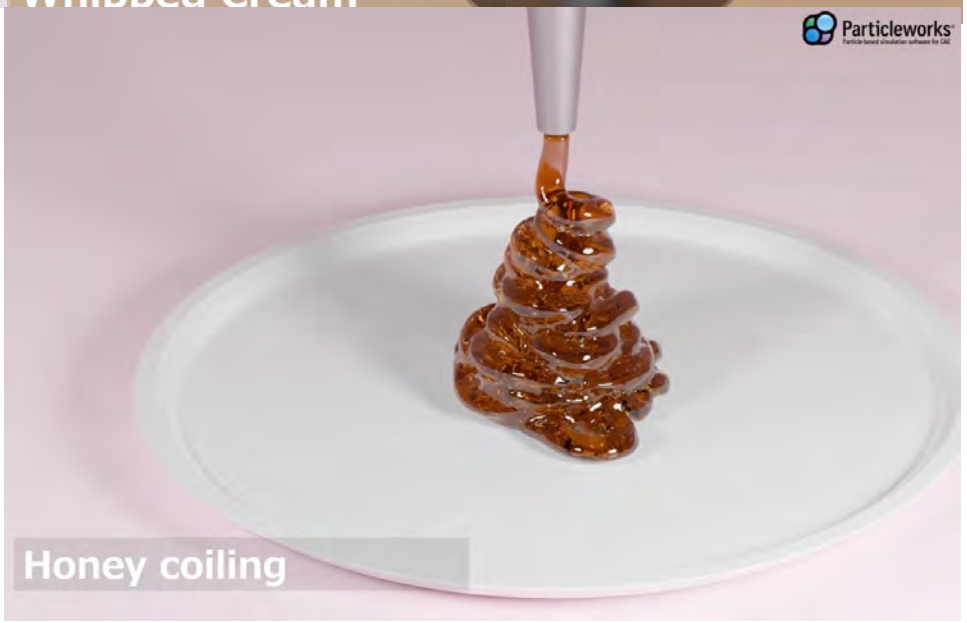


Reflow soldering
- Low wettability on the lead -

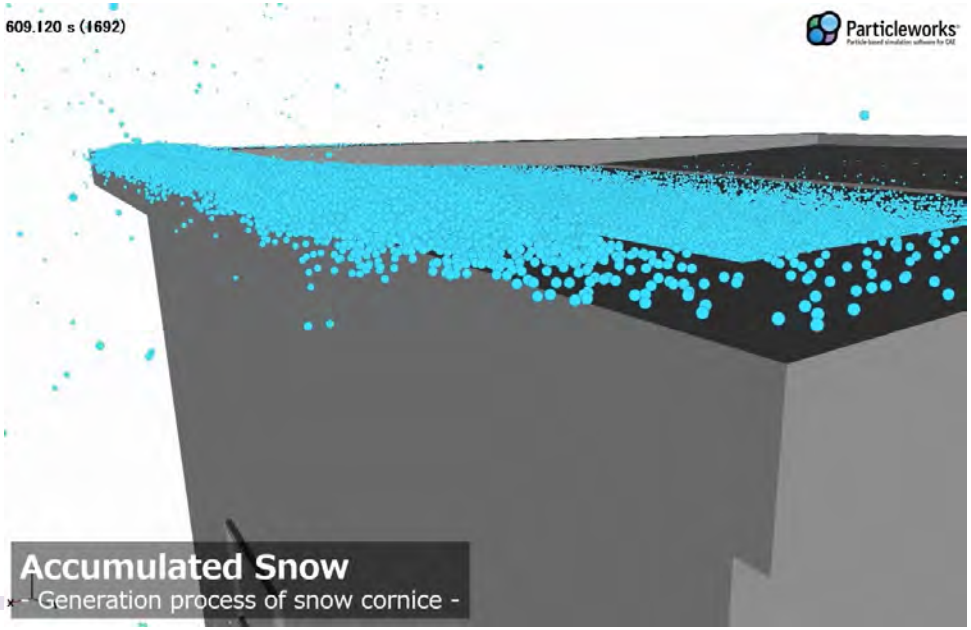

Screen printing
- Squeegee angle 10 deg -

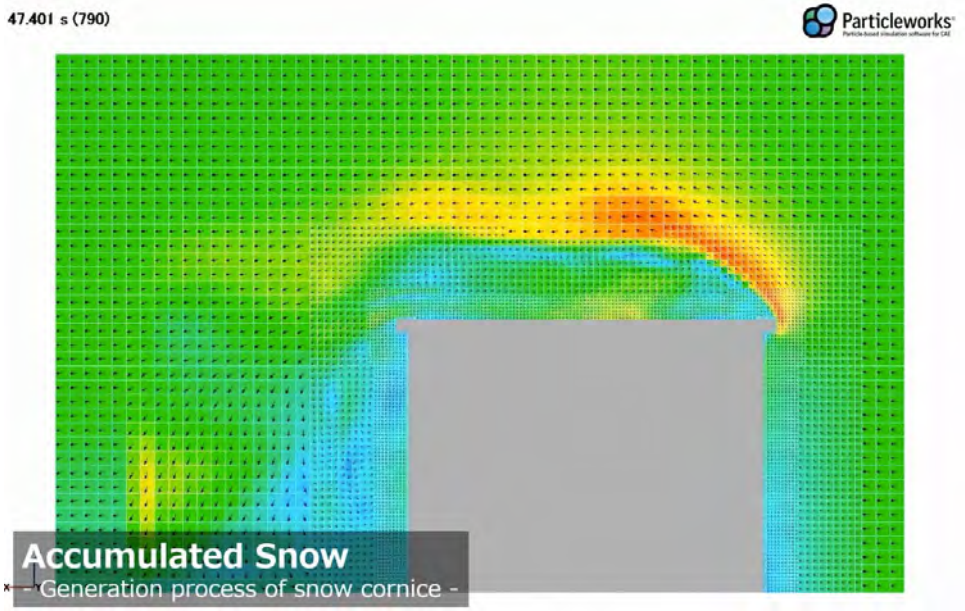
Simulation of
Whipped Cream

Screen printing
- Squeegee angle 40 deg -

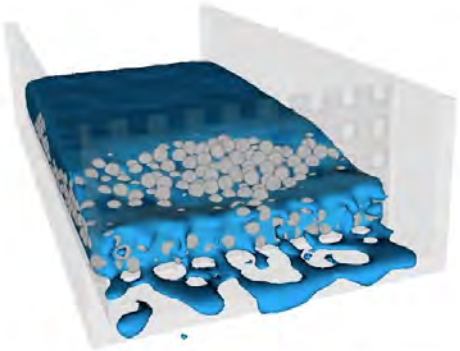

Particleworks
Honey coiling

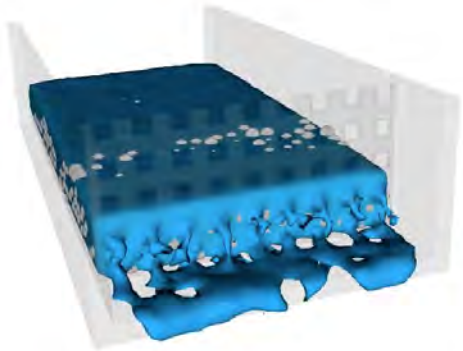
242.640 s (674)
Particleworks
Accumulated Snow
- Generation process of snow cornice -


609.120 s (1692)
Particleworks
Accumulated Snow
- Generation process of snow cornice -


47.401 s (790)
Particleworks
Accumulated Snow
- Generation process of snow cornice -

Particleworks
Accumulated Snow
- Generation process of snow cornice -



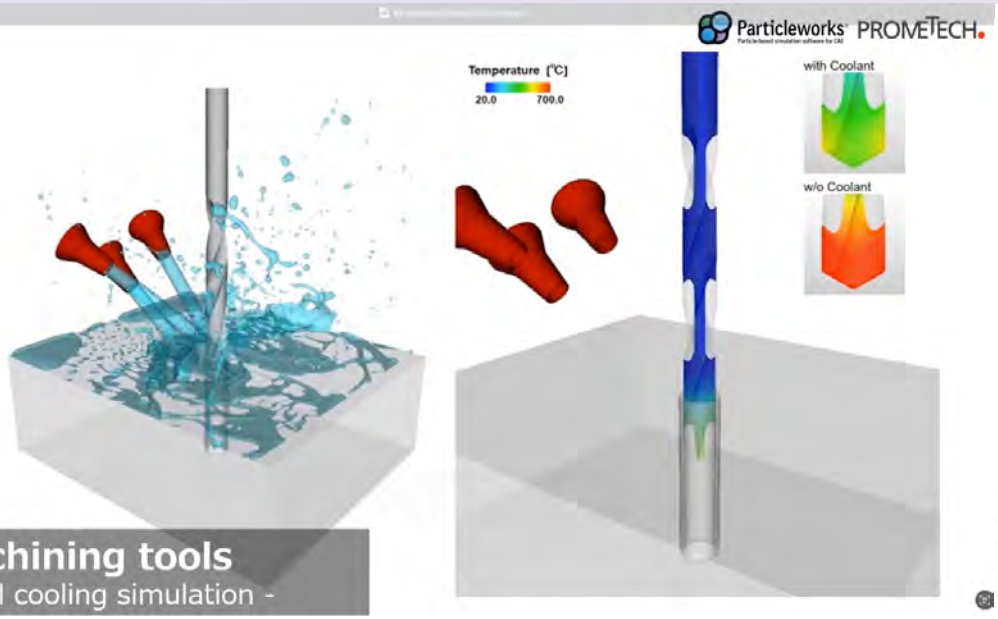


Excluded Volume Effect
- Channel Clogging Simulation -

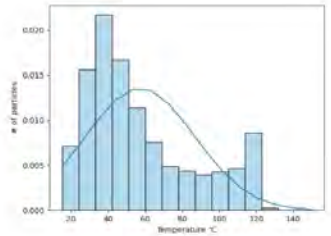
Particleworks
Particle-based simulation software for CAE

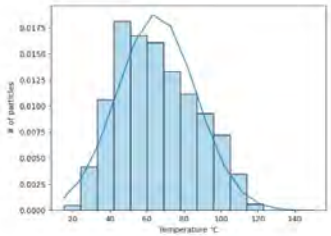
Granuleworks
Advanced Simulator for Granular Materials

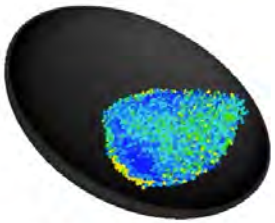
Snow Dome
- Particle in the fluid -



Machining tools
- Tool cooling simulation -







Heat Transfer
- Cooking Simulation -

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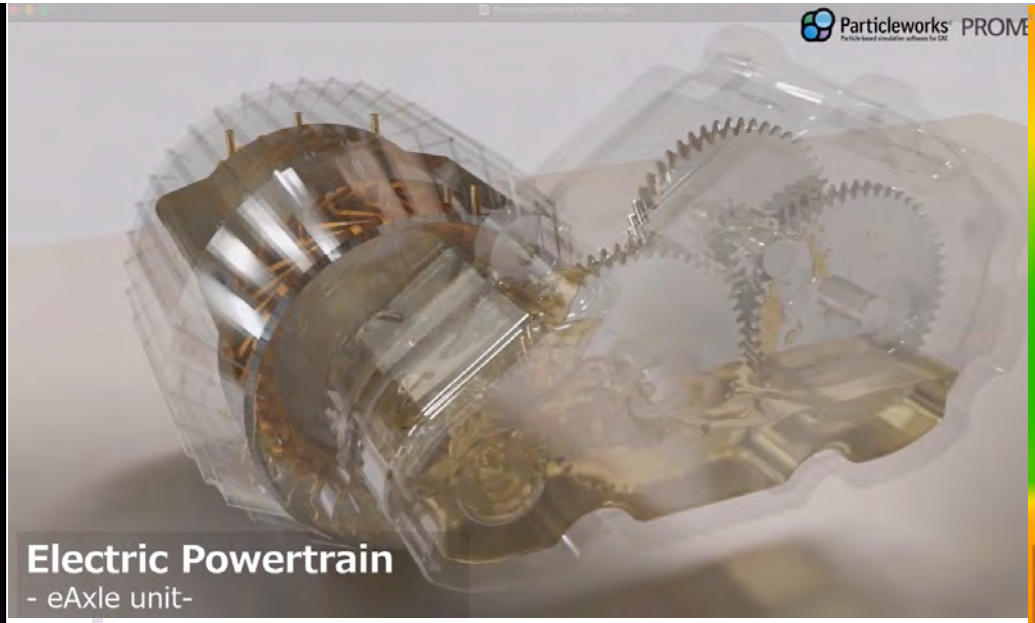
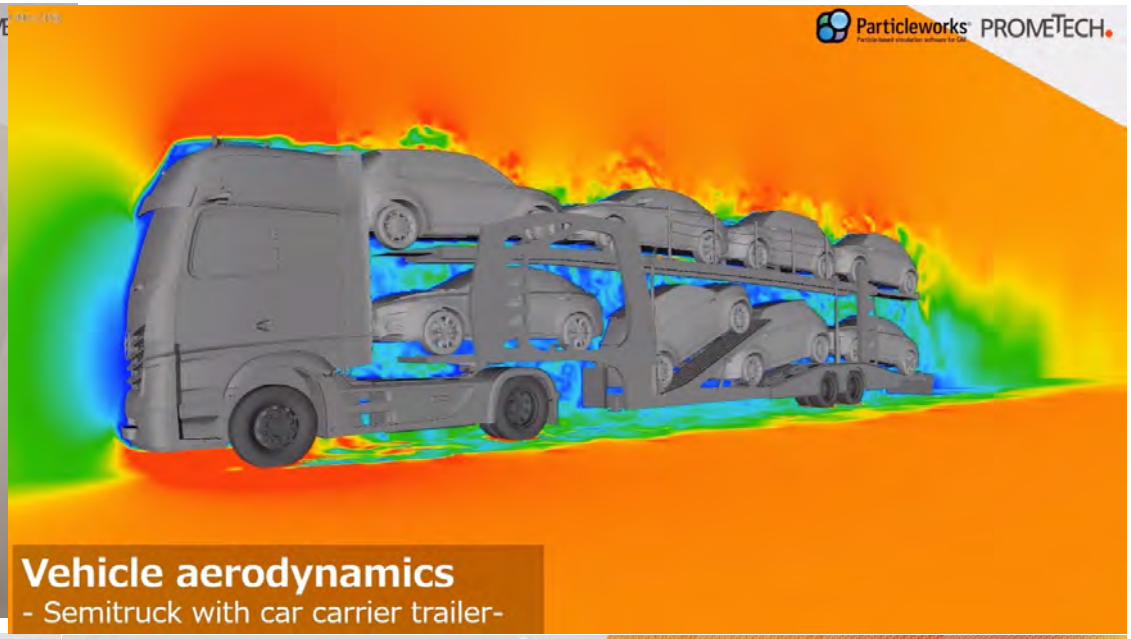
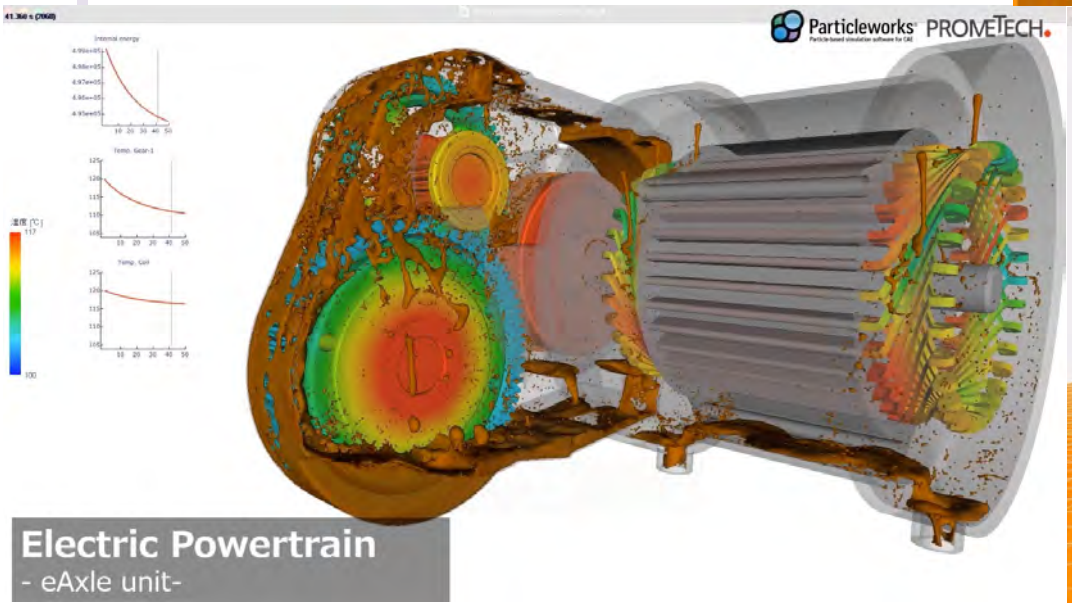
Granuleworks
Advanced Simulator for Granular Materials


Particleworks PROME
Electric Powertrain
- eAxle unit-


Particleworks PROMETECH.
Vehicle aerodynamics
- Semitruck with car carrier trailer-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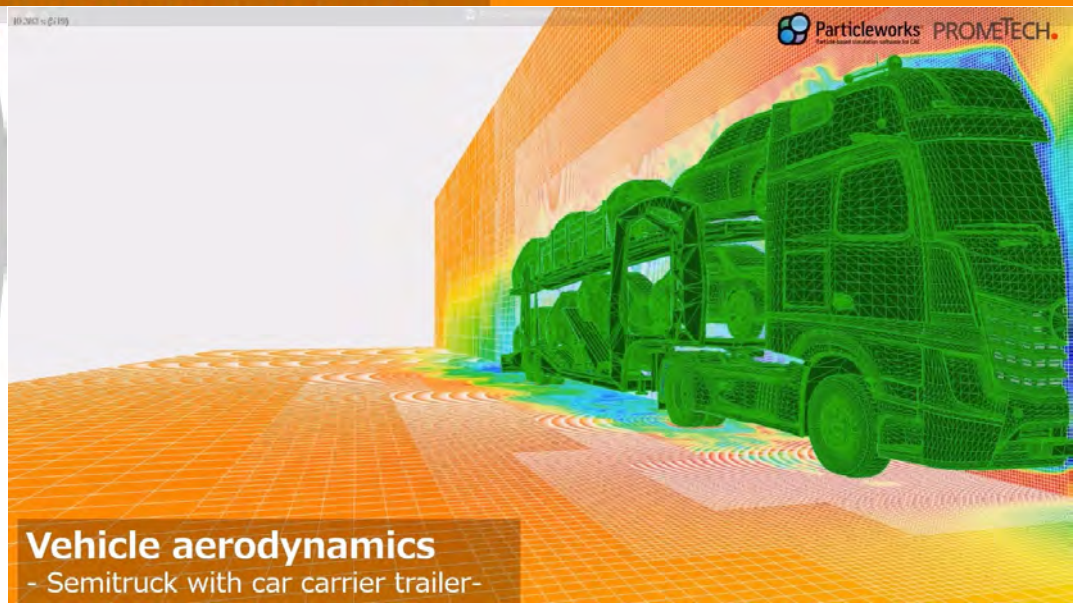
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Vehicle aerodynamics
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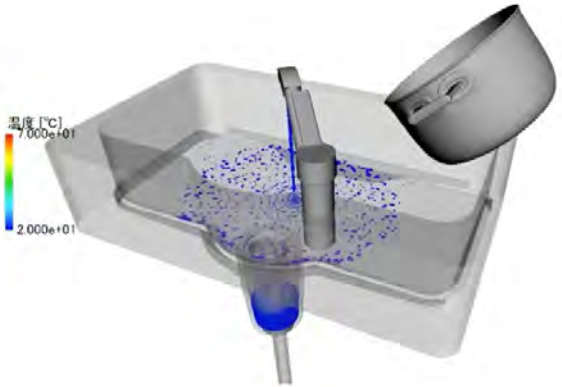
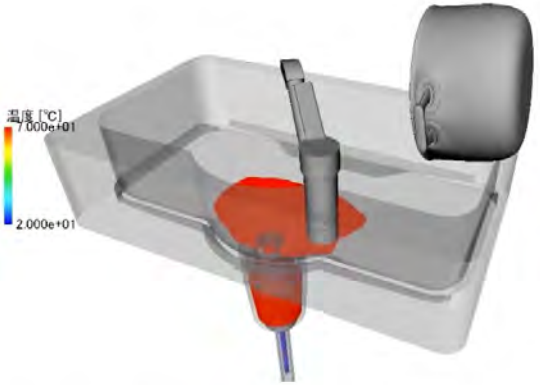
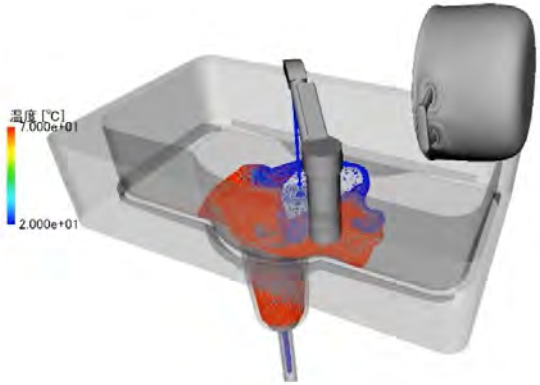


Fluid flow in a sink
- Thermal simulation -





Fluid flow in a sink
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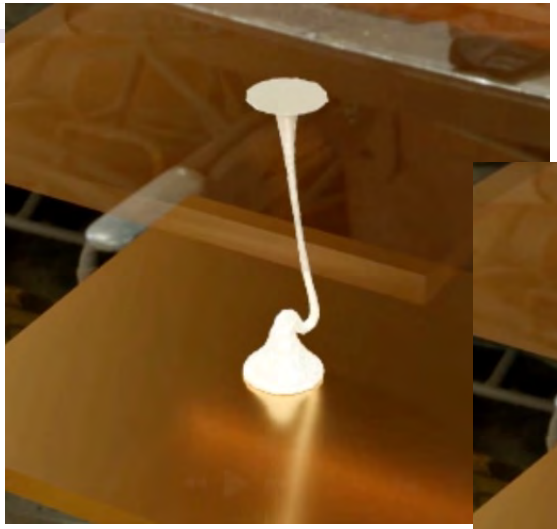
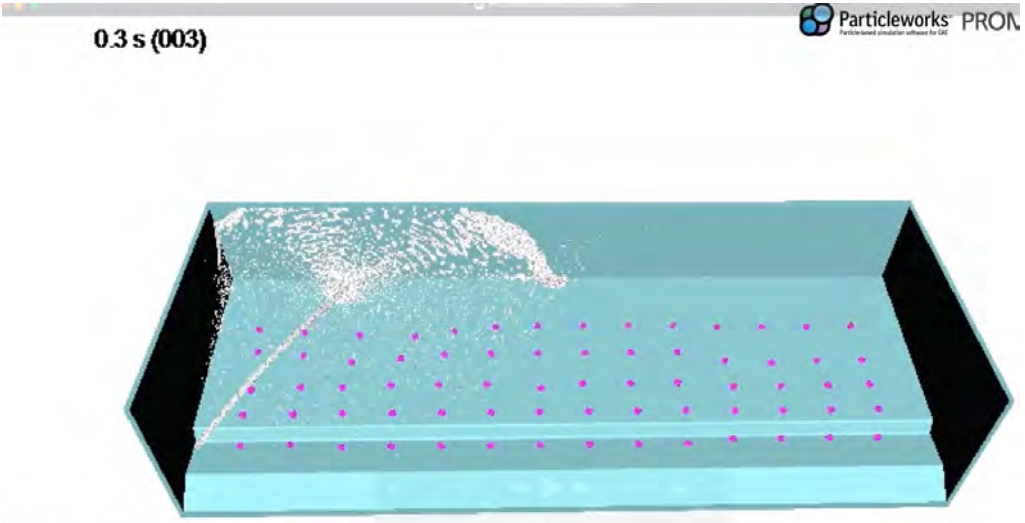
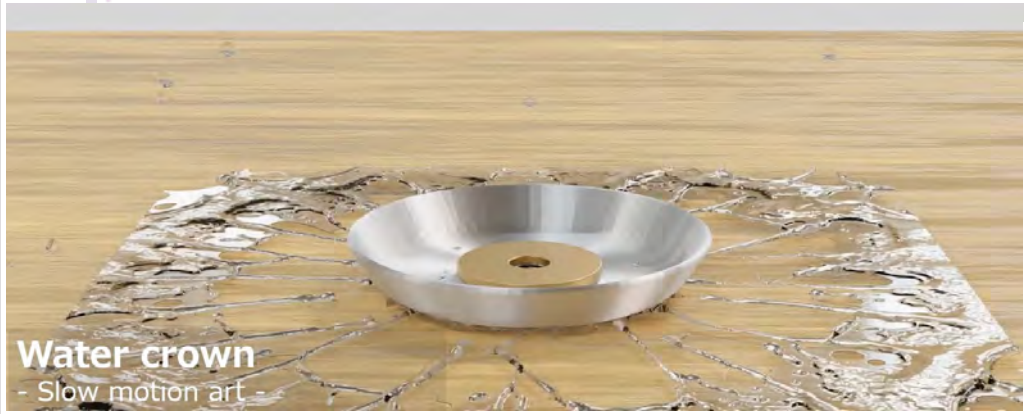
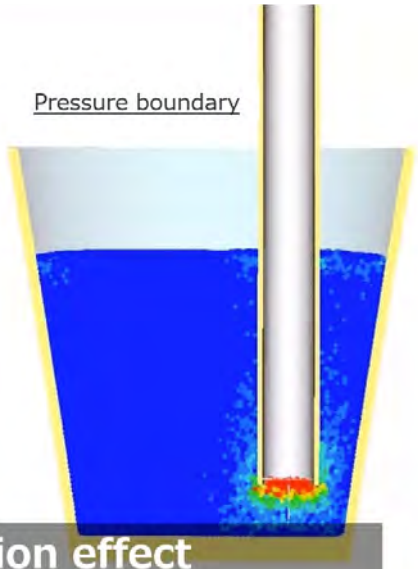


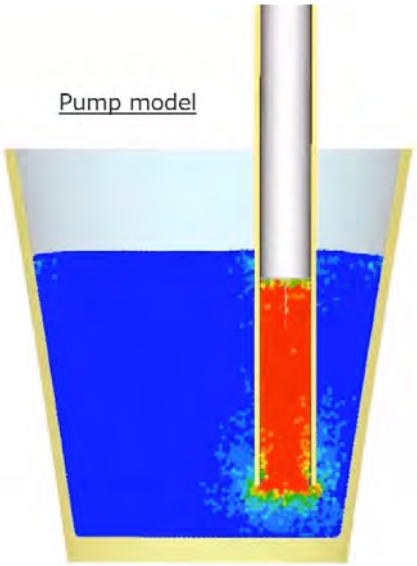


Machining dusts cleaning

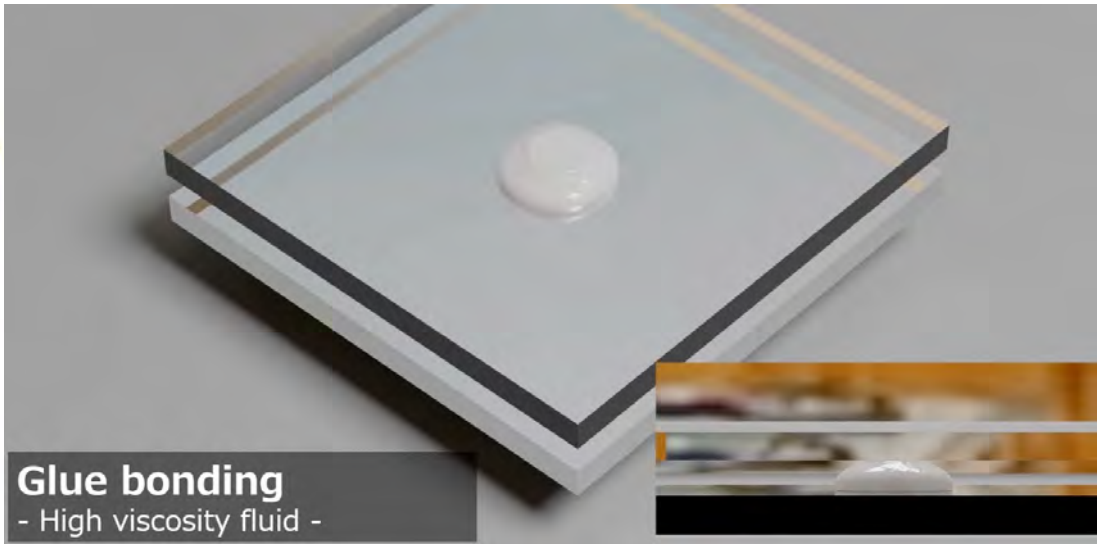


Machining dusts cleaning

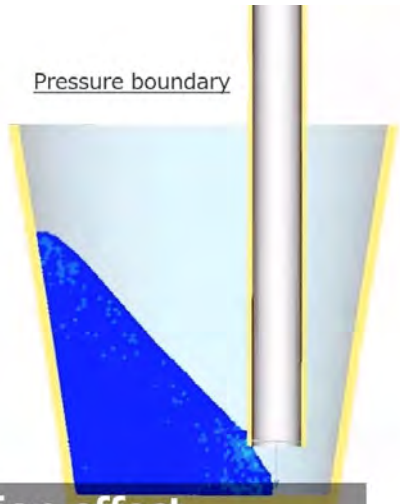


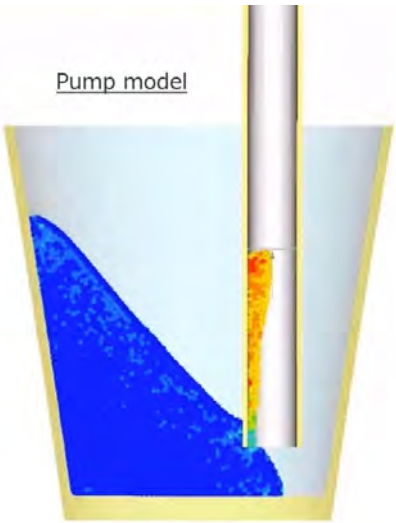


Suction effect
- pressure difference -



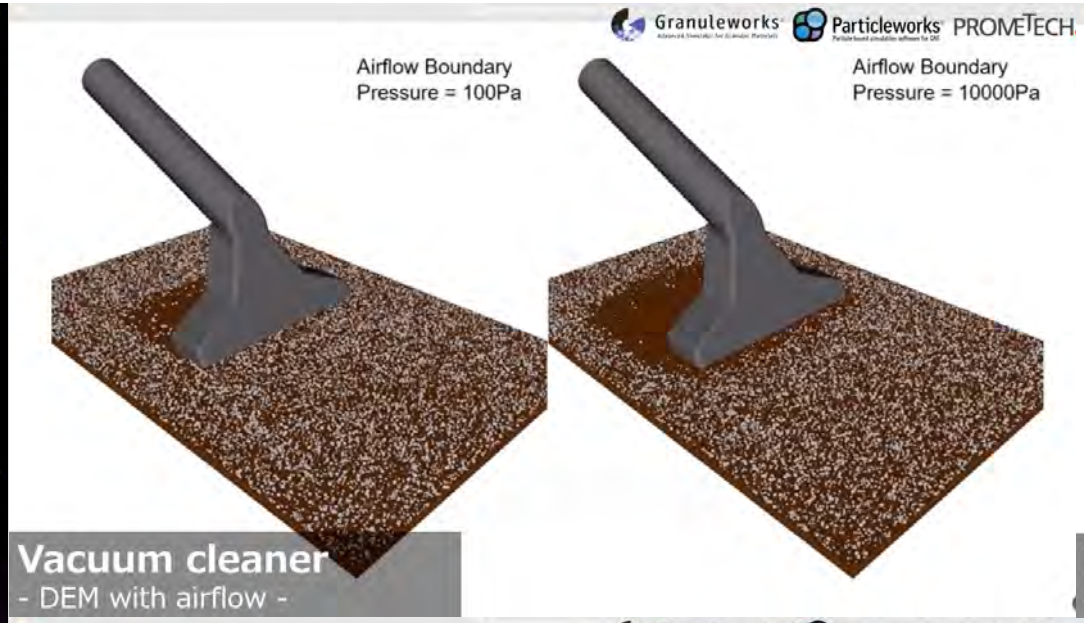
Glue bonding
- High viscosity fluid -

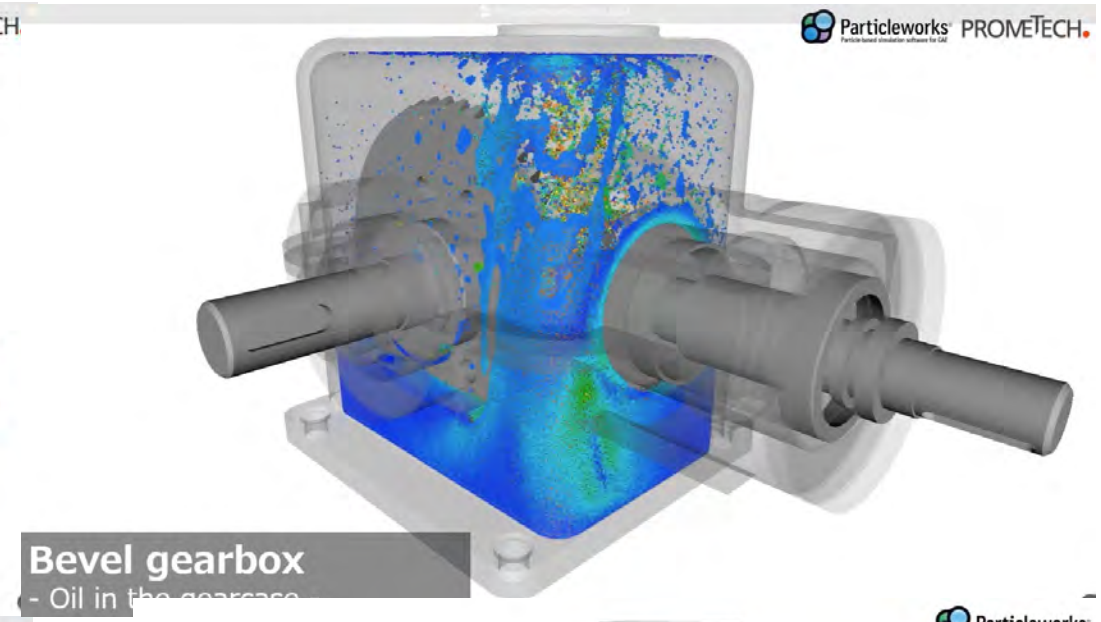


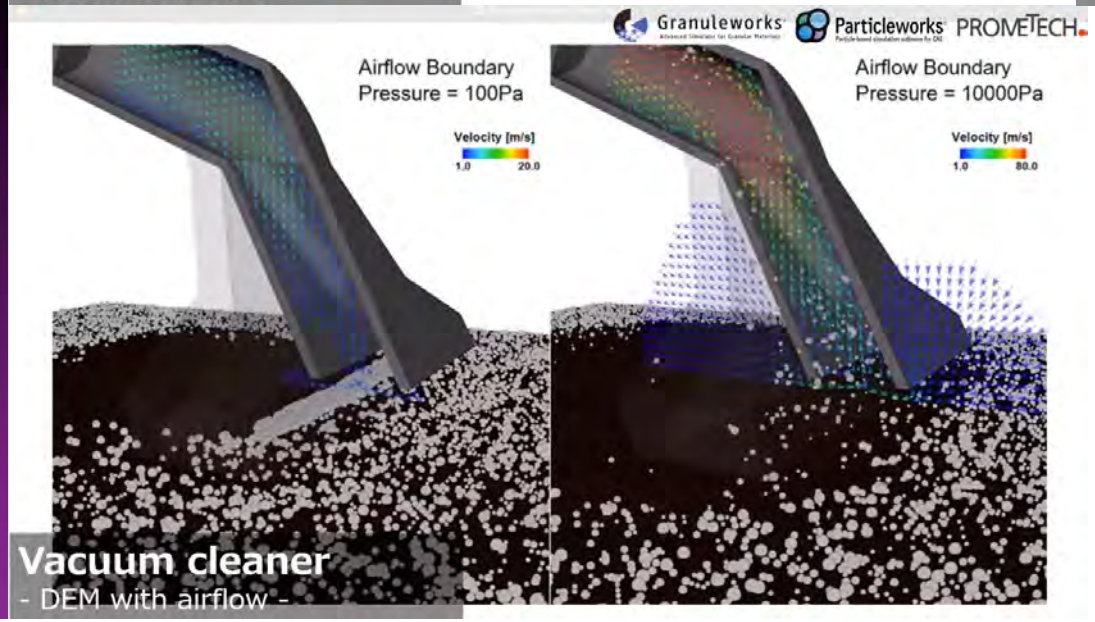


Suction effect
- pressure difference -

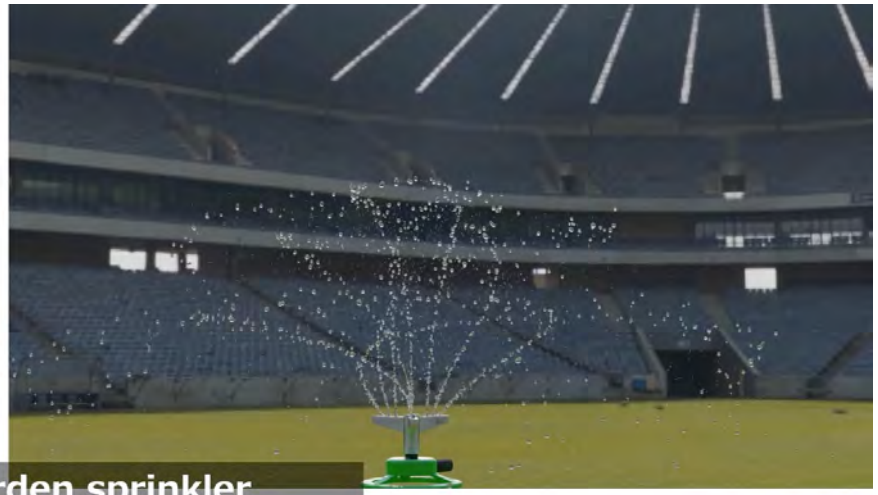
Glue bonding
- High viscosity fluid -


Granuleworks
Particleworks PROMETECH
Airflow Boundary
Pressure = 100Pa
Airflow Boundary
Pressure = 10000Pa
Vacuum cleaner
- DEM with airflow -

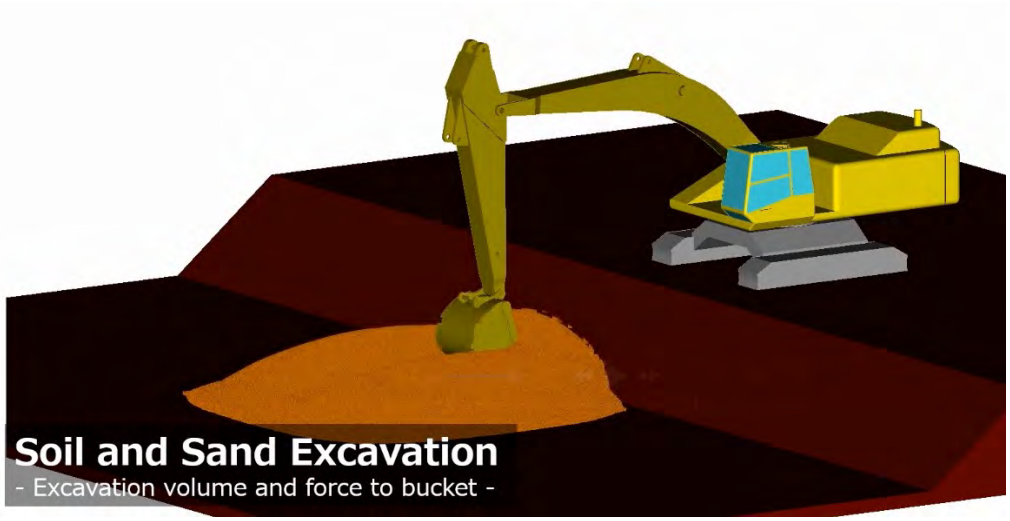

Particleworks PROMETECH
Bevel gearbox
- Oil in the gearcase -


Granuleworks
Particleworks PROMETECH
Airflow Boundary
Pressure = 100Pa
Velocity [m/s]
1.0
20.0
Airflow Boundary
Pressure = 10000Pa
Velocity [m/s]
1.0
80.0
Vacuum cleaner
- DEM with airflow -

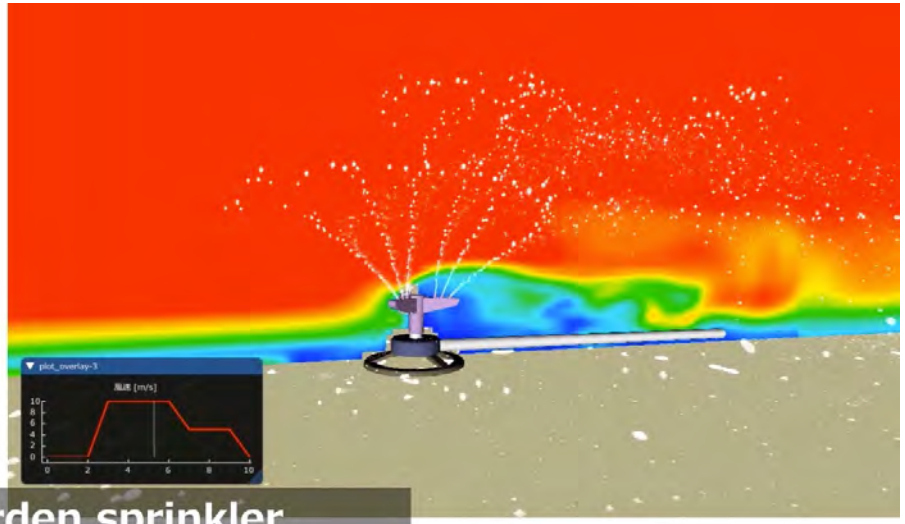
Particleworks
Bevel gearbox
- Oil in the gearcasing -



Garden sprinkler
- Water spray simulation -



Soil and Sand Excavation
- Excavation volume and force to bucket -



Garden sprinkler
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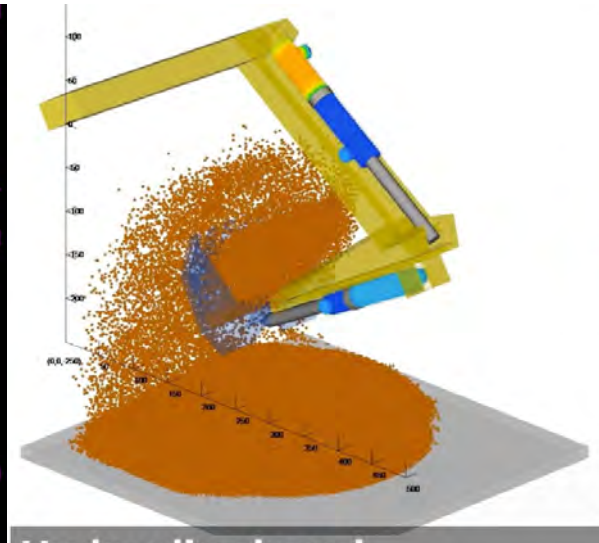
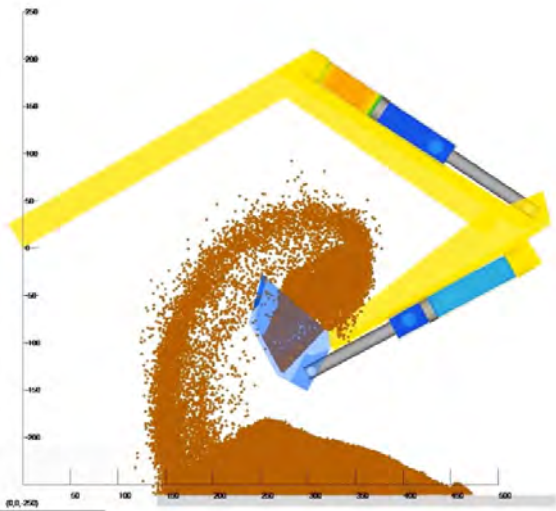
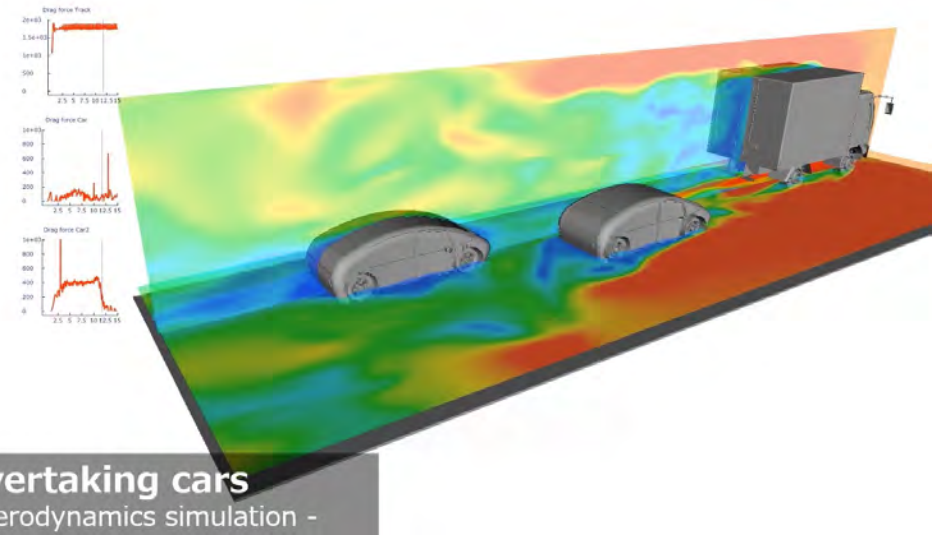
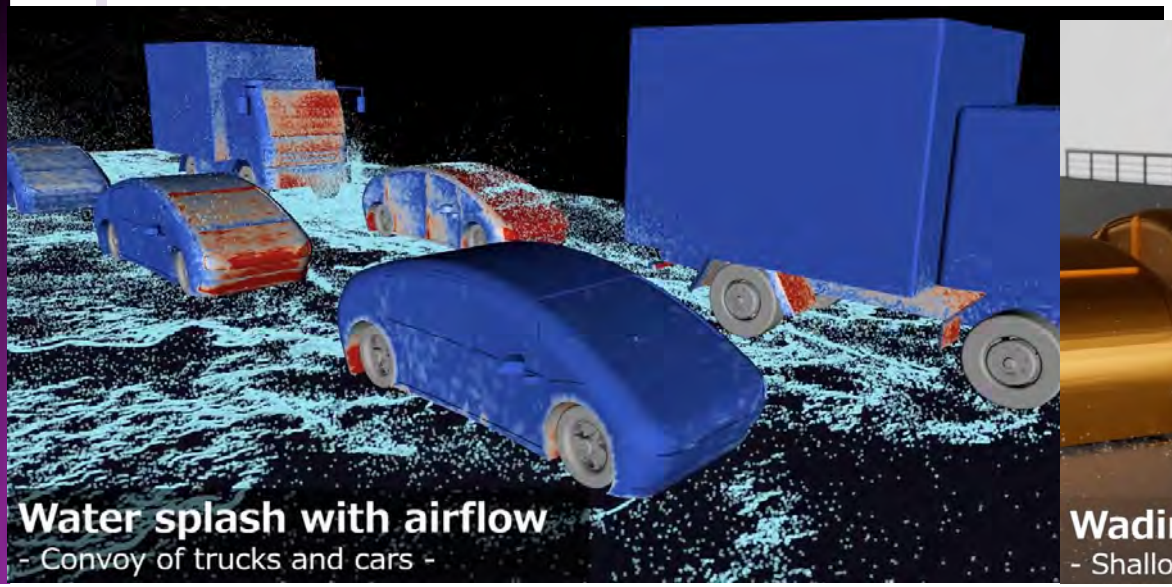




Hydraulic shovel
- Co-simulation with kinematics simulation -



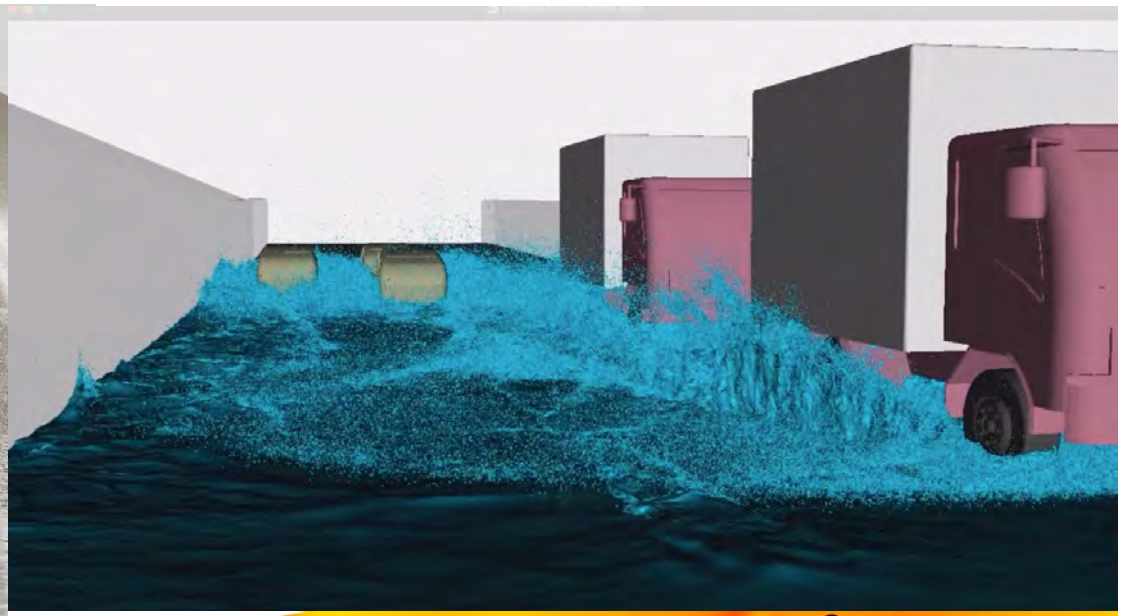
Overtaking cars
- Aerodynamics simulation -



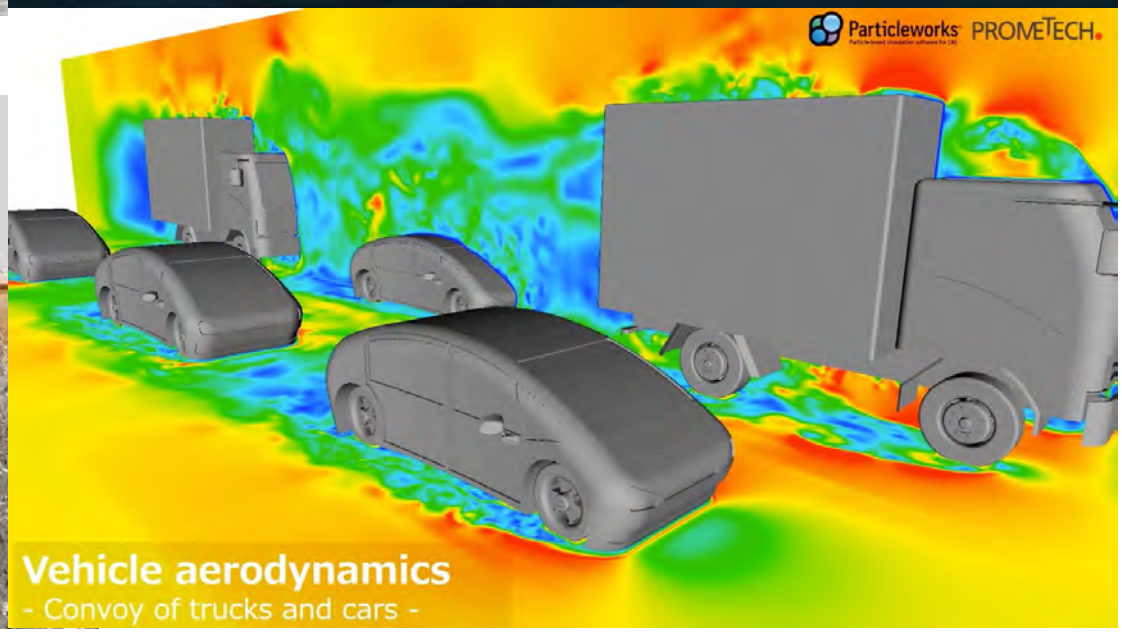
Water splash with airflow
- Convoy of trucks and cars -

Wading
- Shallow water driving -

Wading
- Shallow water driving -

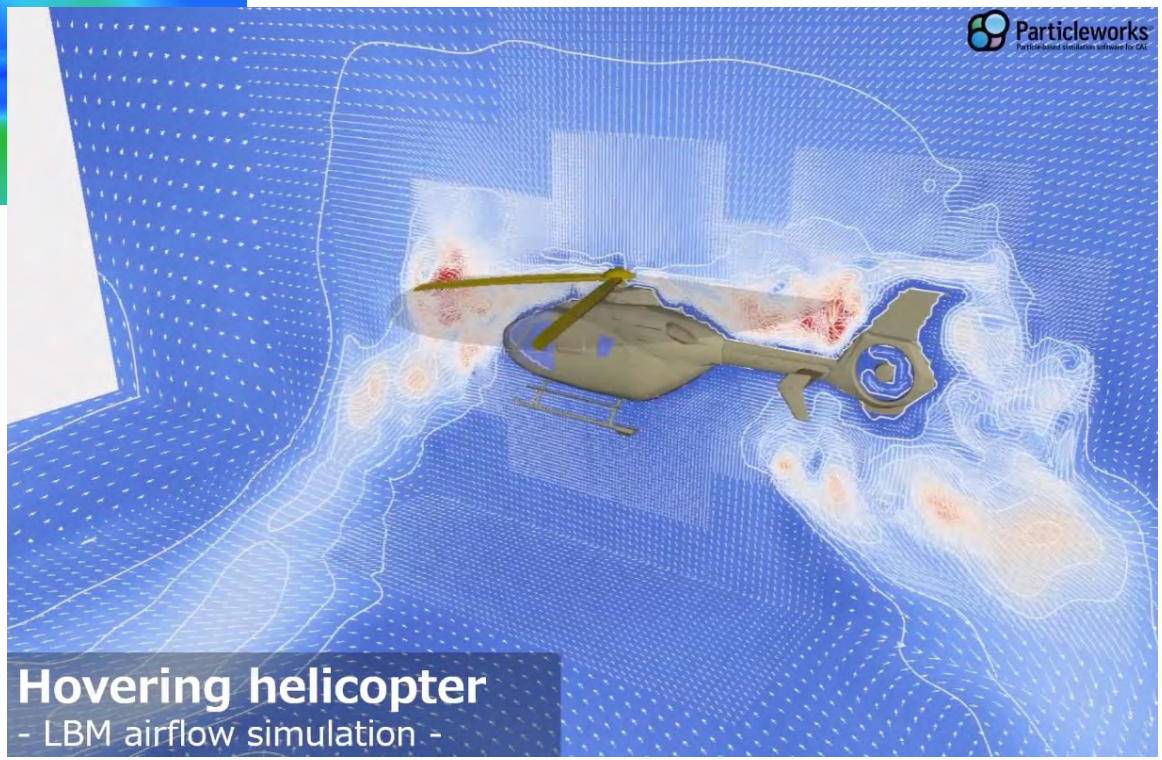


Wading
- Shallow water driving -

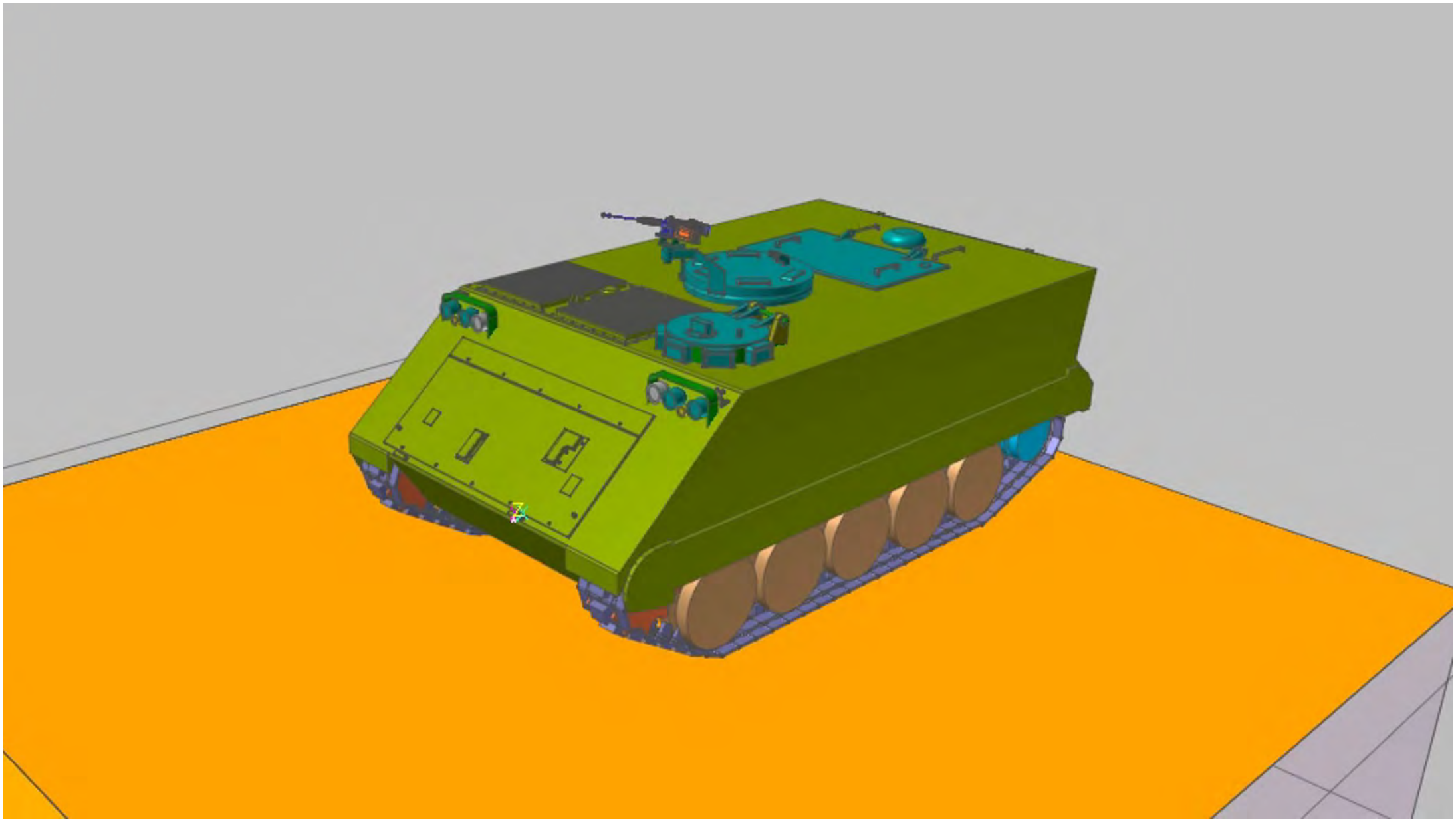

Particleworks
PROMETECH
Vehicle aerodynamics
- Convoy of trucks and cars -

PROMETECH.

Hovering helicopter
- LBM airflow simulation -

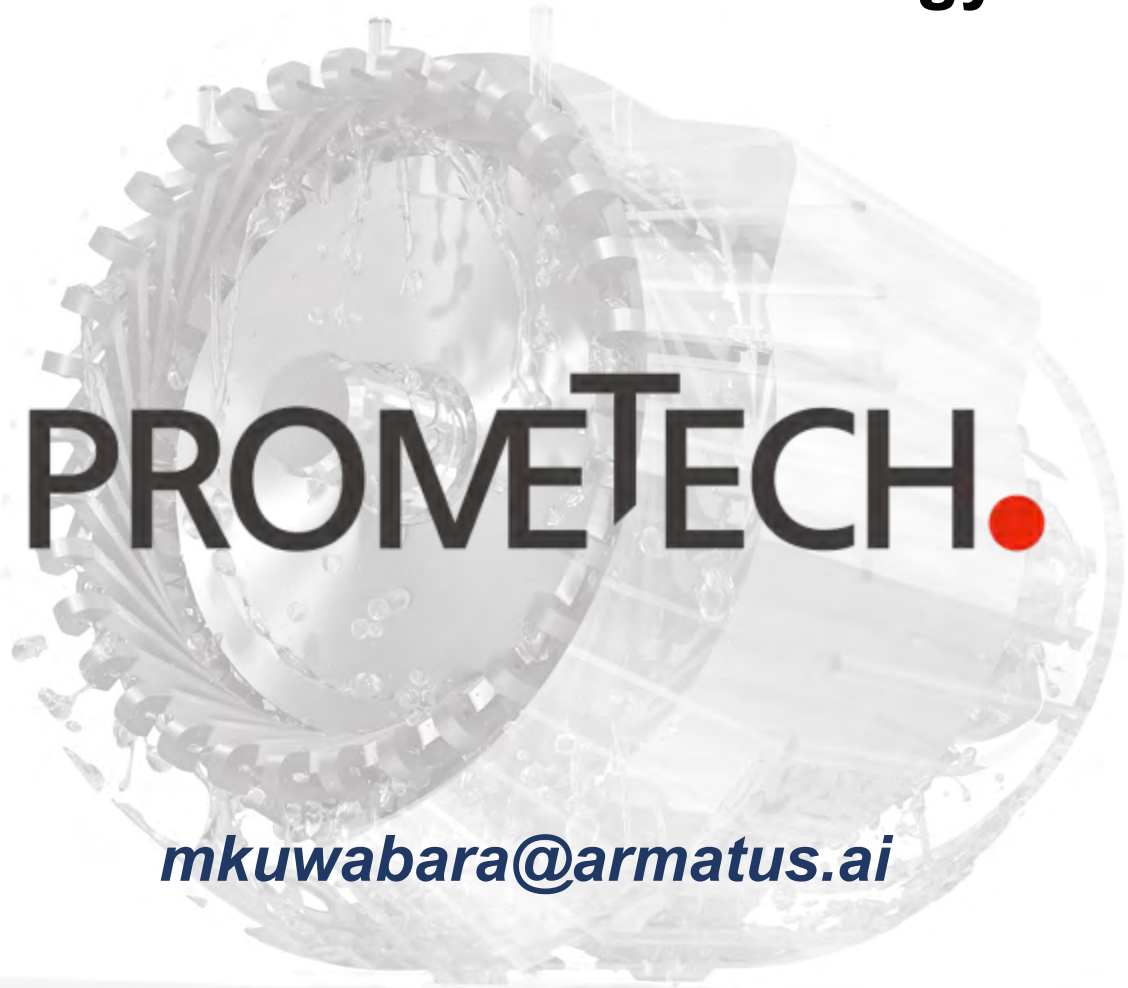


Hovering helicopter
- LBM airflow simulation -



I hope you enjoy this view
mkuwabara@armatus.ai

Together, Accelerate Dual-Use Technology Production !



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