

# Industrial Application of Moving Particle Simulation Method

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## ABSTRACT

Moving Particle Simulation (MPS) method was first developed for incompressible flow by employing Poisson equation of pressure with the source term of the particle number density[1]. Free surfaces were detected by the decrease of the particle number density. This algorithm was simple and robust to analyze violent free surface behavior even if splashing of the fluid occurred. Further developments concerning the algorithms, physical models and large-scale computing techniques have been studied, which spreads the utility of the MPS method [2].

To date, various industrial problems have been solved by the MPS method: for example, shipping water on a ship deck, tsunami run-up on the coast, oil behavior in a gear box and mixing processes in a chemical plant. These application examples are shown.

## REFERENCES

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- [2] S. Koshizuka, "Current Achievements and Future Perspectives on Particle Simulation Technologies for Fluid Dynamics and Heat Transfer," *J. Nucl. Sci. Technol.*, **48**, 155-168 (2011).