

# THAI POLYETHYLENE CO.,LTD.

SCG Chemicals

Thailand



## Overview

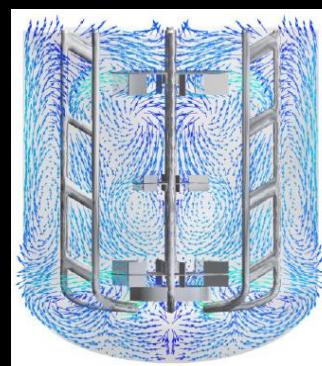
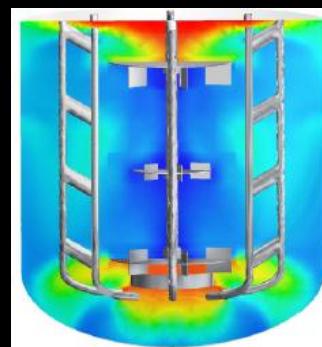
Thai Polyethylene (TPE) Company Limited operates as a subsidiary of SCG Chemicals. At present, SCG Chemicals manufactures and supplies a full range of chemical products ranging from upstream chemicals such as olefins, intermediate chemicals such as styrene monomer, PTA, and MMA, to downstream chemicals such as polyethylene, polypropylene, polyvinyl chloride, and polystyrene resins. It is now one of the largest integrated chemical companies in Thailand and a key industry leader in the Asia-Pacific region. Thai Polyethylene produces several categories of high quality polyethylene and polypropylene resins which are raw materials widely used in the plastics industry. TPE was granted the world standard quality TIS/ISO 9002 system certification by the Ministry of Industry.

## Testimonial

Computation Fluid Dynamic (CFD) have been widely used in TPE including their most important polymerization process, the mixing phenomena and health and safety compliance. With ANSYS, work done with **Design Modeler** has been invaluable in creating geometry, with meshing the 3D volume using ANSYS **Meshing**, and solved with numerical method of **ANSYS CFX**. The final results were captured and analysed by **CFD POST**.

Thanks to **ANSYS CFX**, an extremely powerful tool to simulate the transient behaviors and to monitor gas distribution within the reactor, we were able to analyze how well the liquid and vapor phases were mixed. There is a new level of confidence to improve our processes in our upcoming plants because of our investment and we are now fully focused on centering ANSYS as part of our product improvement processes.

**Noppon Monggranonchai**  
Process Control & Simulation engineer



### Challenges

- Obtain how well the raw materials in the reactor were mixed
- Use CFD as a guide to establish the biggest capacity HDPE plant for slurry process in the world
- Design the new polymerization reactors to double capacity with concerning about keeping production yield and product properties

### Solution

- ANSYS CFX allowed TPE to investigate flow pattern and mixing behavior that never seen before.
- The errors between simulation and mock-up reactor are acceptable performing that the simulation is adequate to use for ongoing improvement phase.

### Benefits

- The biggest HDPE slurry process plant which was scaled up has started up on January 2010 can also operate smoothly reaching the target production rate.
- Important chance to change TPE's role to the technology provider.