

## Design of Optimal Cooling Temperature of Multi-tubular Fixed-bed Reactor for Gas-to-liquid Process based on CFD Simulation

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Oil consumption in the world has in middle of increasing gradually on developing countries and in Asia, many countries are focused on technology development of gas resources in the discovery of large quantity shale gas layer. GTL process is one of the technology of converting the liquid fuel and natural gas. Fischer-Tropsch synthesis reaction is the core of the GTL process, it generally use for Slurry Bubble Column Reactor format from land-based GTL process. But we were apply the reactor of Multi-tubular Fixed-bed reactor (MTFBR) in the present study, in order to target the limit gas fields in the sea. To support the scale-up, enhanced design and resilient operation of the reactor on Floating Production Storage and Offloading, this research develops a spatio-temporal model to analyze the dynamic performance of a MTFBR, and the CFD simulation of the reactor interior is performed on a CFD tool such as COMSOL Multiphysics. For prevention of hotspots, this research designs optimal cooling temperature at the cases of 500, 520, 525, 530, 540 and 550 K for shellside inlet temperature, getting the result of optimal cooling temperature at 530 K.