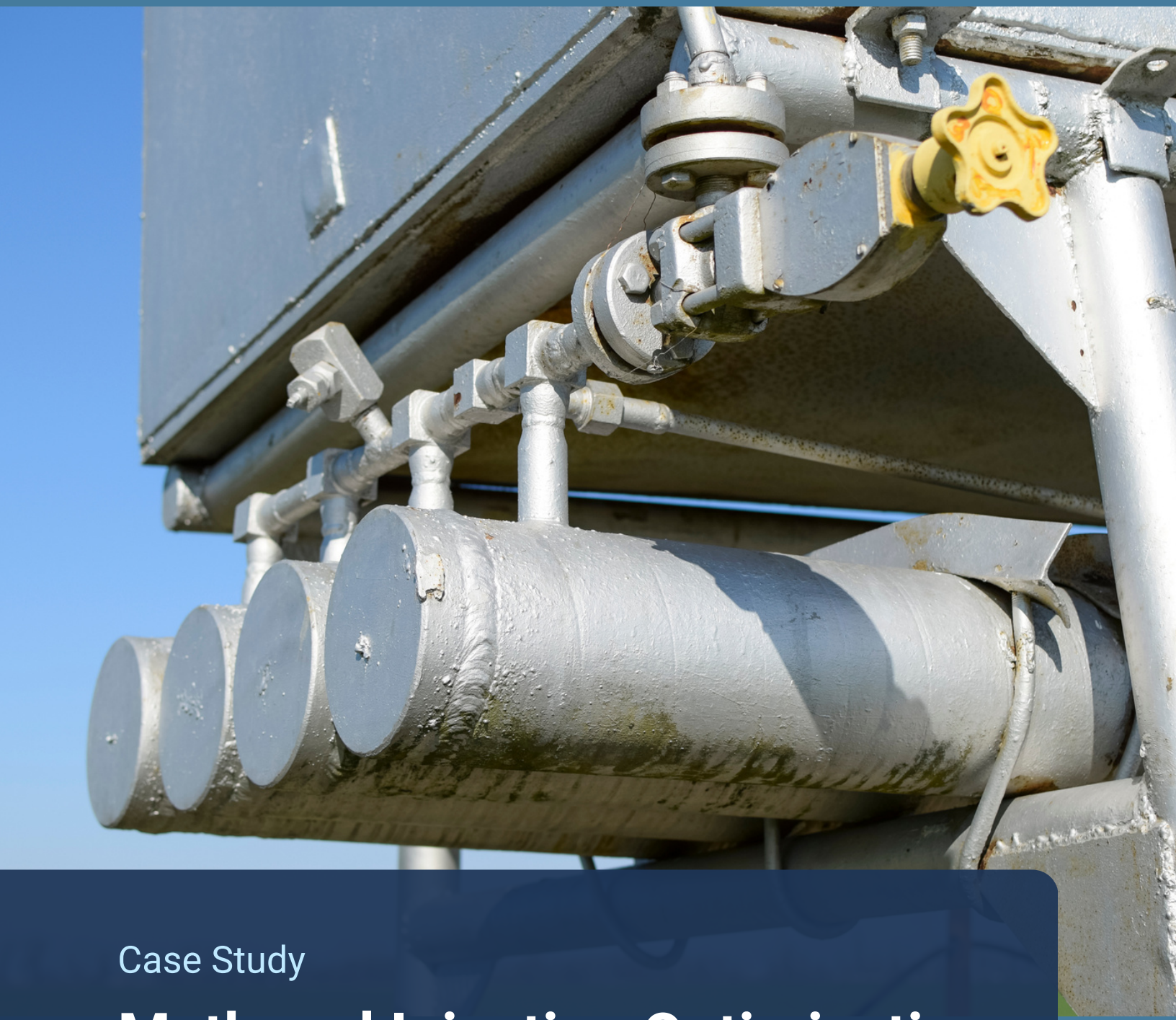
Geminus



Case Study

Methanol Injection Optimization

For Natural Gas Transport Flow Assurance

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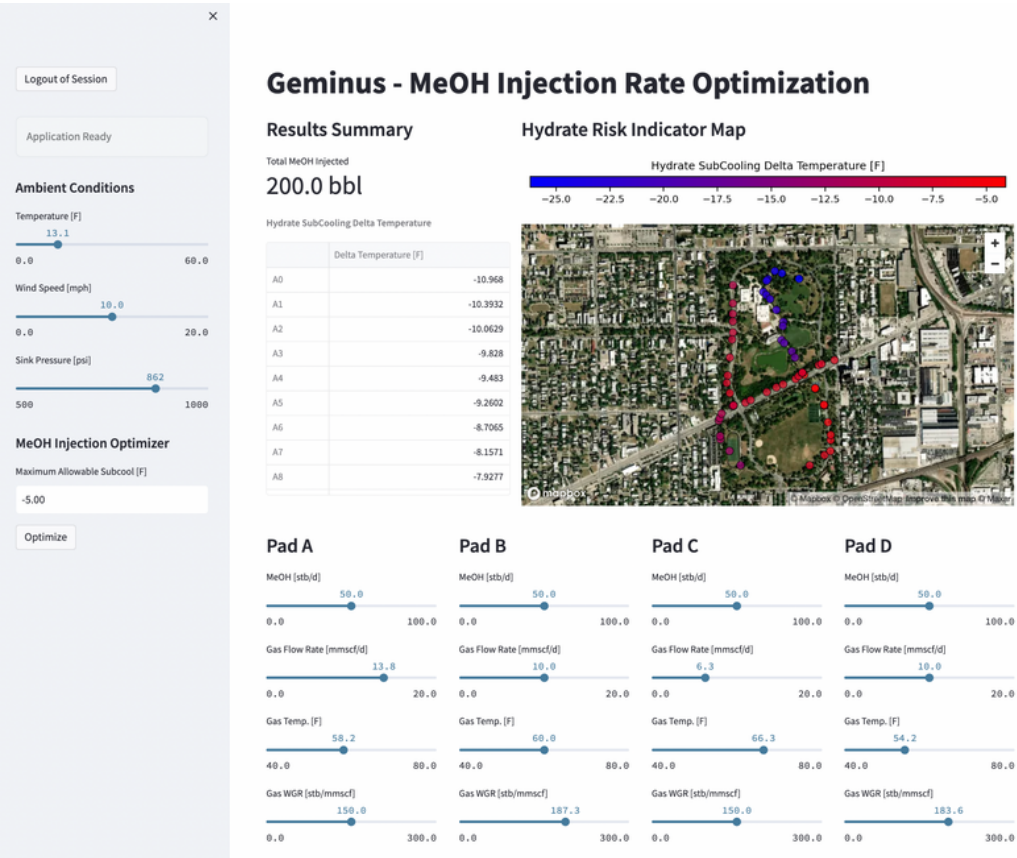
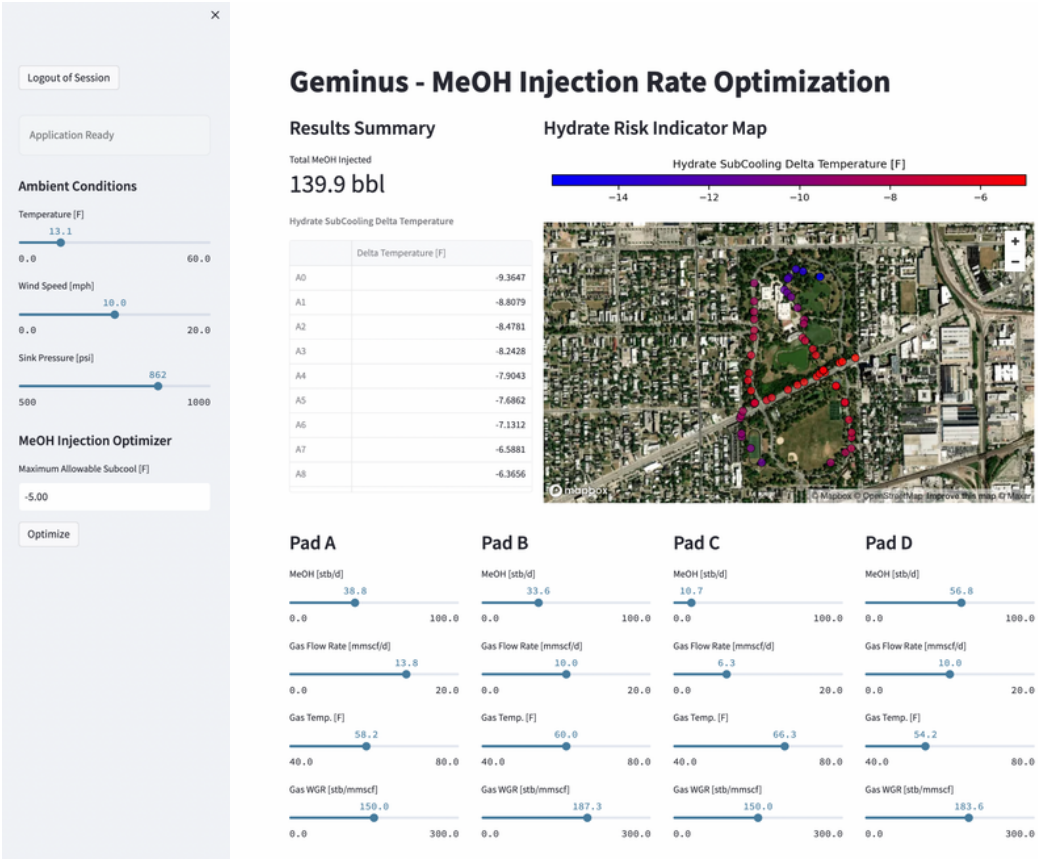
Hydrates – solid, ice-like crystals that form from water in natural gas pipelines and processing facilities can inflict serious consequences. These “freeze-ups” occur when pressure is elevated and temperature is low, causing high operational expenditure as well as precarious safety conditions. To combat hydrate formation, operators inject methanol, which lowers the freezing point of water and eliminates freeze-ups. It’s a common practice. In the US alone, oil & gas companies inject more than 2 billion gallons of methanol and hydrate inhibitors per year. That comes to roughly $5 billion - $10 billion annually.

For a network system that consists of hundreds of miles of pipelines across varying terrains, predicting how much methanol to inject and where to inject it is a particularly complex task. Operators need to factor in gas flowrate, amount of water in the gas stream, pressure and temperature change across the pipe segment, ambient temperature, and wind velocity. Capturing these details and generating insights in real-time is challenging, so, out of an abundance of caution, methanol is typically injected in massive quantities to minimize the risk of deferred production. This overuse of methanol is highly inefficient and costly, due to a lack of timely and predictive capabilities.



Geminus' intelligent application which allows what-if scenarios shown before optimization. In this case, 200 methanol barrels per day are needed to combate hydrate formation.



After optimization, the Geminus intelligent application found that it's possible to inhibit hydrate formation using less methanol, saving 60 barrels per day under these conditions.

By leveraging simulation data from PIPESIM, a steady-state multiphase flow simulator, Geminus developed a surrogate of an example pipeline network to capture system hydraulics with high accuracy. Through a Geminus intelligent application, operators could instantly see the impact of different system conditions and get recommended methanol quantity at each injection site in less than a minute. In this example, **one scenario showed savings upwards of 60 barrels of methanol per day.**

By accurately estimating the amount of inhibitor needed to combat hydrate formation, natural gas pipeline operators can significantly reduce methanol consumption, driving down waste and operational spending.

Geminus

Geminus is an industrial AI optimization platform challenging the AI status quo. Our next-generation predictive intelligence solution fuses measurement data and physics to power resilient and efficient digital twins. This approach enables model creation in hours, rather than months. It's industrial AI, made easy.

Get in Touch

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