Full-blown optimization of CO_2 precooling process in carbon capture and storage system

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Carbon capture and storage (CCS), is the process of capturing waste carbon dioxide (CO_2) from large point sources, such as fossil fuel power plants, transporting it to a storage site, and depositing it where it will not enter the atmosphere, normally an underground geological formation. The aim is to prevent the release of large quantities of CO_2 into the atmosphere (from fossil fuel use in power generation and other industries). One of the process of CCS is precooling of CO_2 storage tank. Instant loading liquid CO_2 into storage tanks on CO_2 carrier can lead mechanical instability of CO_2 carrier wall because of sudden temperature difference from boil off gas. To solve this problem, installing spray device is one way and modeling equation is needed to calculate. With simplfing assumptions and settling constained optimization, this model can be set from MATLAB and can be solved.