

Høegh LNG and Altera Infrastructure is scaling up large scale CCS infrastructure

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Abstract. In a joint initiative, called “Stella Maris CCS” Altera Infrastructure and Høegh LNG are working together to provide cost efficient floating Carbon Capture and Storage infrastructure solutions for a global market, not limited to size or geographical location.

Valuable infrastructure experience is brought together; with FPSO (Floating Production, Storage and Offloading) and Dynamically Positioned Shuttle Tankers from Altera and FSRU’s (Floating Storage Regasification Unit) from Høegh. We intend to continue to build on our heritage and experience, using our combined skills to contribute to carbon emission reduction around globe. With the “Stella Maris CCS” project, we will essentially be doing what we are doing today, only in reverse. Our solution, initiated in 2019 as the first of its kind, will offer a large-scale floating infrastructure for collection, transport, and injection of CO₂ into subsea reservoirs/aquifers.

Our infrastructure concept consists of 2-3 Carbon Collection Storage Units (CCSU) to aggregate volumes at different key locations, 3-4 CO₂ Shuttle Carriers and one Floating Storage and Injection Unit, the total amount of CO₂ injected with these assets can reach up to 10 million tons per year.

In order to realize large scale CCS, the unit costs must come down, and the barriers for emitting industries to invest in capture plants must be lowered. With Stella Maris we are addressing these hurdles. The larger ship design enables carrying volumes of CO₂ at low pressure and will allow for greater economies of scale in the absence of a pipeline which places less limitations on distance to reservoir and ultimate flow capacity. Having a centralized conditioning of CO₂ in a CCSO hub allows more flexibility for on-site capture design from multiple onshore industrial emission sources with shared port access. To defray high logistics cost in e.g. the Baltic region, a hub and spoke transportation approach enables collection in smaller parcels, milk-run gathering and conditioning for large scale transfer for storage in an offshore subsea reservoir on the Norwegian Continental shelf.

Keywords: CCS infrastructure solution, large scale, one-shop-stop CCS.