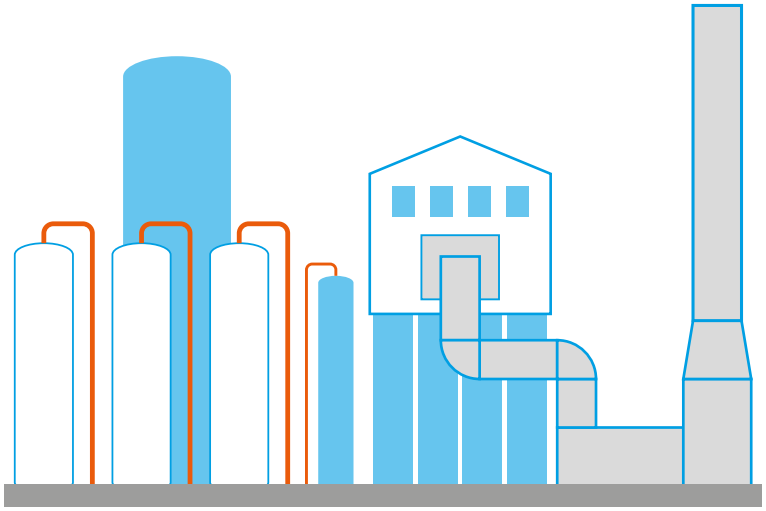
Steam Methane Reforming Decarbonisation

sbh4 consulting

Notes:

- CO_2 is released from the reforming process chemistry
- CO_2 emissions are also associated with heat energy required to drive the reforming reactions
- The heating process can potentially be decarbonised with renewable power and electrical heating or microwaves
- CCS to capture CO_2 from the process and / or the associated heat energy production is possible



Steam Methane Reformer

	Steam Methane Reformer SMR
Combustion reaction forming post-combustion CO_2	$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$
Chemical reaction producing CO_2 in process	$CH_4 + H_2O \rightarrow CO + 3H_2$ $CO + H_2O \rightarrow CO_2 + H_2$
Decarbonisation approach for CO_2 generated by the process	Feed the reformer with biomethane instead of natural gas or CO_2 capture
Industries with SMR applications	Ammonia, Methanol, Gas-to-Liquids, Refining