



ABSTRACT

**INTEGRATED STEAM METHANE REFORMING PROCESS
FOR PRODUCING CARBON MONOXIDE**

A process for producing carbon monoxide (CO) by reforming methane and steam in the presence of a reforming catalyst to produce a reformat product enriched in CO, carbon dioxide(CO₂) and hydrogen. CO₂ in the enriched reformat is shifted to CO in an integrated sorption enhanced reaction (SER) cycle which employs a series of cyclic steps to facilitate reaction of CO₂ and hydrogen at high conversion and to produce a CO-enriched product obtained at reactor feed pressure and at essentially constant flow rate. A series of adsorbent regeneration step including depressurization, purging and product pressurization are used to desorb water which is selectively adsorbed by the adsorbent during the shift reaction and to prepare the reactor for a subsequent process cycle.