The Path of Hydrogen (H_2) Production through the Autothermal Reforming (ATR) Process

Explores the key steps involved in producing hydrogen from natural gas through the Autothermal Reforming (ATR) process. The process includes feed gas pre-treatment, oxygen supply, gas-heated reformer (GHR), autothermal reforming (ATR), the water-gas shift reaction, and hydrogen purification via pressure swing adsorption (PSA). The GHR recovers heat from the syngas to preheat the feed, improving overall efficiency. The PSA tail gas is utilized for power or heat generation. This pathway offers higher hydrogen yield and carbon efficiency compared to Steam Methane Reformer (SMR), making it a key technology for industrial hydrogen production in refining, ammonia synthesis, and clean energy applications.