

An internal combustion engine is operated at fuel-rich conditions by adjusting one or more operating parameters such as, for example, a throttle, an ignition timing, a load coupled to the engine, a fuel pressure, power to a supercharger, and power to a preheater to maintain a specified engine speed and a temperature of an exhaust gas. Operating the engine under these conditions allows the engine to function as a reformer producing a synthesis gas comprising hydrogen and carbon monoxide.