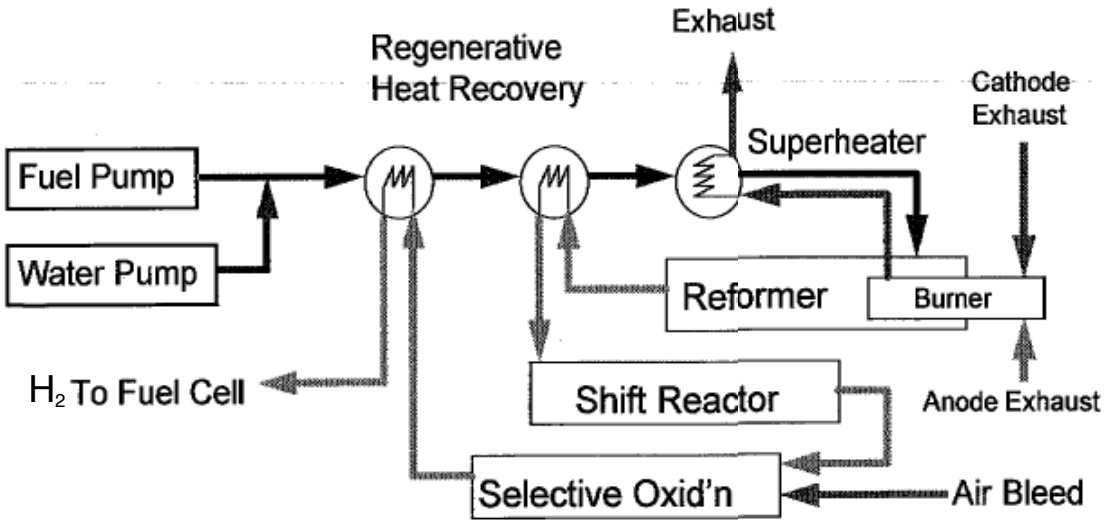

Figure 1: Diagram for Converting Methanol to Hydrogen Via Partial Oxidation. Royal Military College of Canada. Note how many steps are needed, and how many heat exchangers.

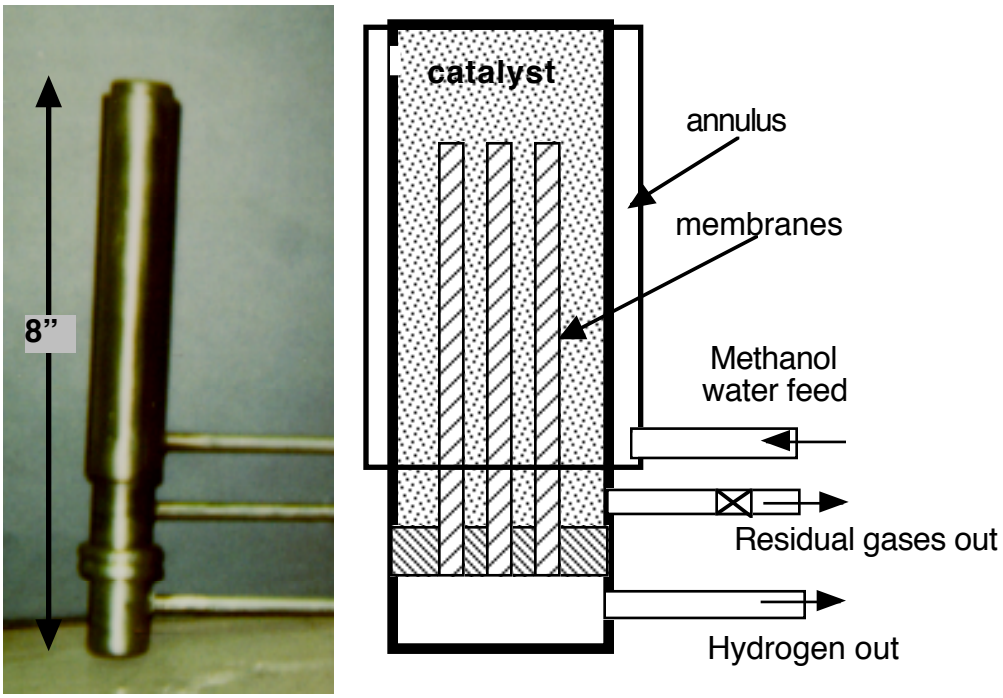

Figure 2: Small membrane reactor provides reforming, water-gas shift, and purification in one step

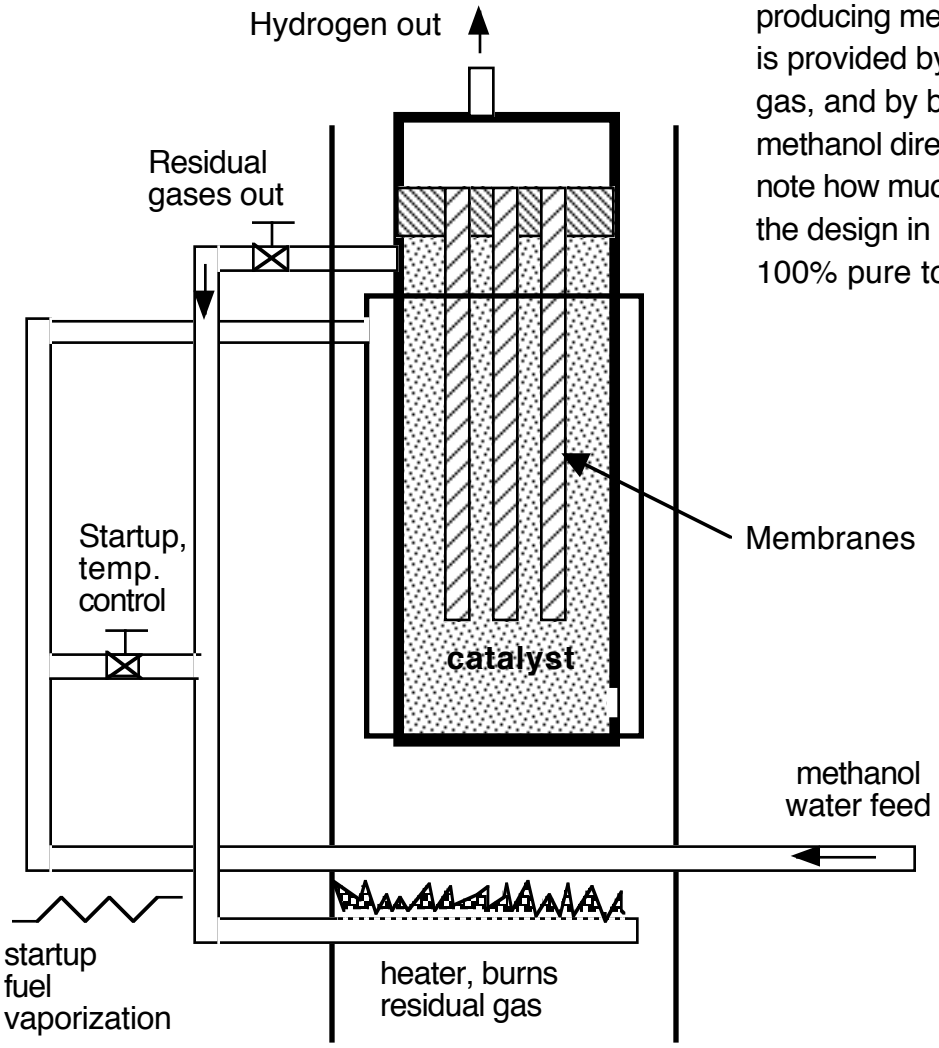

Figure 3: Design for a hydrogen-producing membrane reactor. Heat is provided by burning the residual gas, and by burning the feed methanol directly, when necessary. note how much simpler this is than the design in Figure 1. Output H2 is 100% pure too.

MEMBRANE REACTORS, FUNDAMENTAL AND COMMERCIAL ADVANTAGES

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