

## KC32603 Process Simulation and Integration

### In-Class Exercise 2 (CLO4 – PLO5; WP1, WP4; WK3, WK4, WK5 WK6)

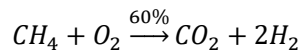
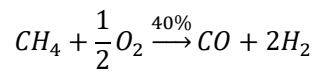
#### **Situation 1:**

Feed 1:

Comp: Methane	Temp: 25 °C
Pres: 1 atm	EOS: Peng-Robinson
Flowrate: 100 kmol/h	

Feed 2:

Comp: Oxygen	Temp: 25 °C
Pres: 1 atm	EOS: Peng-Robinson
Flowrate: 100 kmol/h	



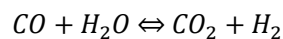
Simulate the reactions above. Take note of all output products. By doing some analysis, evaluate how that hydrogen product can be increased?

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#### **Situation 2:**

Feed 3:

Comp: Water	Temp: 150 °C
Pres: 1 atm	EOS: Peng-Robinson
Flowrate: 100 kmol/h	



In hydrogen production, CO composition will be maintained as low as possible using Water-Gas-Shift (WGS) reaction. Simulate this WGS reaction using the simulated design in Situation 1. Evaluate how the CO can be decreased?