BAB 5
KESIMPULAN DAN SARAN

5.1 Kesimpulan

1. *Heating energy consumption, cooling energy consumption,* dan energi kompresor dari skema VRC pada kondisi variasi paling optimal adalah 179.644,04 kJ/kmol, -204.205,14 kJ/kmol, dan 1.229,29 kW, di mana tidak terjadi penghematan pada biaya energi dibandingkan skema RDC biasa.
2. *Heating energy consumption, cooling energy consumption,* dan energi kompresor dari skema SRV pada kondisi variasi paling optimal adalah 57.548,51 kJ/kmol, -93.415,46 kJ/kmol, dan 2.115,54 kW, di mana terjadi penghematan pada biaya energi hingga 3,12% dibandingkan skema RDC biasa.
3. Besar TAC untuk skema VRC dan SRV pada kondisi paling optimal berturut-turut adalah $7.499.933,0 dan 5.222.523,6, di mana kedua skema tersebut lebih mahal dibandingkan skema RDC biasa.
4. Semakin besar rasio kompresi pada skema VRC, semakin kecil pula *heating* dan *cooling energy consumption*, tetapi disertai peningkatan energi untuk kompresi. Variasi T_{out} *Heater* tidak terlalu memengaruhi besar energi pemanasan.
5. Semakin besar tekanan operasi pada kolom H-HIRDC pada skema SRV, semakin kecil *heating, cooling,* dan *compression energy consumption*.

5.2 Saran

1. Penelitian dan perancangan lebih lanjut pada skema SRV untuk sintesis DME dapat meneliti pengaruh jumlah *stage* pada masing-masing kolom terhadap kebutuhan energi dan juga biaya kapital yang dibutuhkan.
2. Pembelajaran lebih lanjut mengenai kondisi kritik dan *vapor liquid equilibrium* dari campuran komponen yang akan diteliti harus dilakukan terlebih dahulu sebelum penelitian lebih lanjut aplikasi HIRDC skema VRC maupun SRV dilakukan.
3. Simulasi kedua skema menggunakan sistem kompresor *multi-stage* dapat diteliti untuk diamati pengaruhnya terhadap efisiensi kompresor.

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