

BAB V

KESIMPULAN

Kesimpulan yang dapat ditarik dari penelitian ini adalah:

1. Minimalisir korosi dan *plugging* harus berfokus pada keseluruhan unit.
2. Minimalisir korosi dan *plugging* dapat dilakukan dengan meminimumkan jumlah garam yang terpresipitasi dengan cara demineralisasi.
3. Untuk mencegah partikulat pada limbah menyumbat *nozzle* pada reaktor dan mengganggu kerja resin maka digunakan filter fisik sebelum proses demineralisasi
4. Oksidan yang digunakan adalah 200 % oksigen berlebih.
5. Kondisi operasi yang dipilih adalah 23 MPa, 500°C.
6. Pada umpan, proses peningkatan tekanan mendahului pemanasan, sementara pada keluaran reaktor prosesnya berkebalikan.
7. Kompresi dan ekspansi air limbah dilakukan dengan 2 buah turbin pompa multistage yang dapat saling mengintegrasikan kerja.
8. Kompresi oksigen menggunakan kompresor multistage sebanyak 2 buah (3 tahap pada kompresor pertama dan 2 tahap pada kompresor kedua) ditambah dengan *intercooler*.
9. Pemanasan hanya dilakukan untuk air limbah saja menggunakan 2 buah *Shell & Tube Heat Exchanger* yang bisa diintegrasikan dari panas keluaran reaktor yang akan didinginkan.
10. *Coupling medium*: sebagian kecil dari air limbah superkritik yang sudah siap masuk ke dalam reaktor.

11. Material yang digunakan adalah SS 316 untuk *outer vessel*, peralatan lainnya, dan perpipaan.
12. Material keramik berupa campuran silika dan alumina digunakan untuk *inner vessel*.
13. Pertimbangan keamanan yang diberikan meliputi keamanan dari segi desain (baik peralatan, proses, kontrol, maupun bangunan pabrik), keamanan operasional saat proses berlangsung (adanya SOP, P3K, alarm, *safety device*), inspeksi dan pemeliharaan secara berkala (*shut down*), peningkatan kualitas SDM (pelatihan, sanksi, dan *reward*).

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