

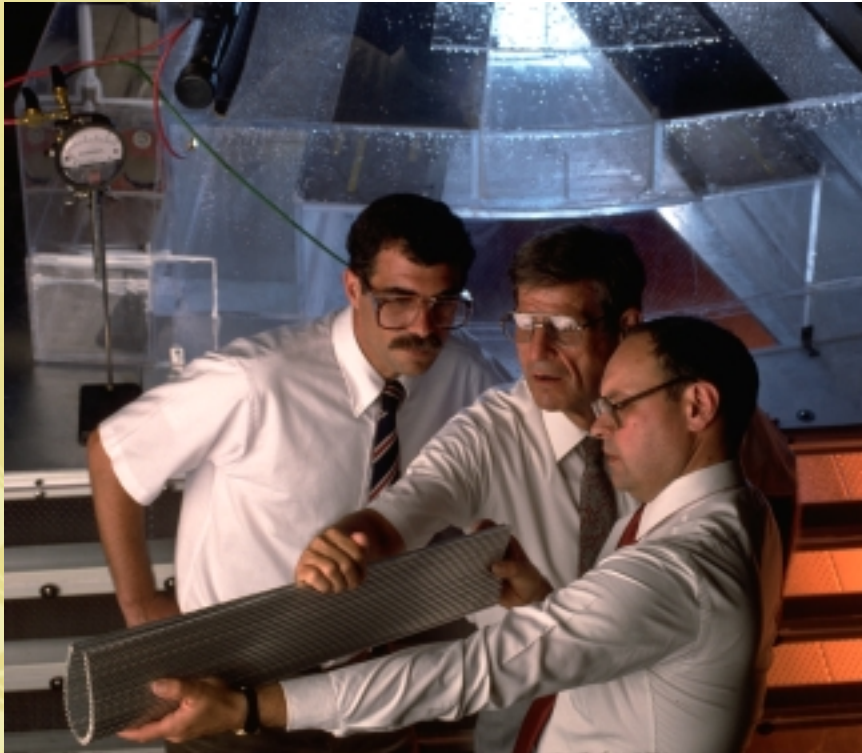
Consulting Services for Hydrogenation to Help Improve Your Plant Productivity

It's not easy to solve complex plant process problems in today's lean operating environment. The experience of the people at Air Products in the areas of reaction engineering and catalysis is available to assist your staff with your scale-up, troubleshooting, and debottlenecking problems. Our Hydrogenation and Oxidation Consulting and Support Services group would like to be your partner in removing

obstacles to plant productivity. On many occasions we have helped customers improve process conversion rates and batch times on a full-plant scale. One example is illustrated here.

Air Products' Consulting Services Can Help You

- Decrease Batch Times
- Increase Throughput



Efficient gas/liquid mixing and headspace turnover are crucial in most processes carried out in stirred tank reactors. To illustrate the importance of these parameters in overall system performance, a series of batch soybean oil hydrogenation experiments were performed to study the effect of gas headspace turnover rate on batch time.

Effect of Efficient Reincorporation of Headspace Gas

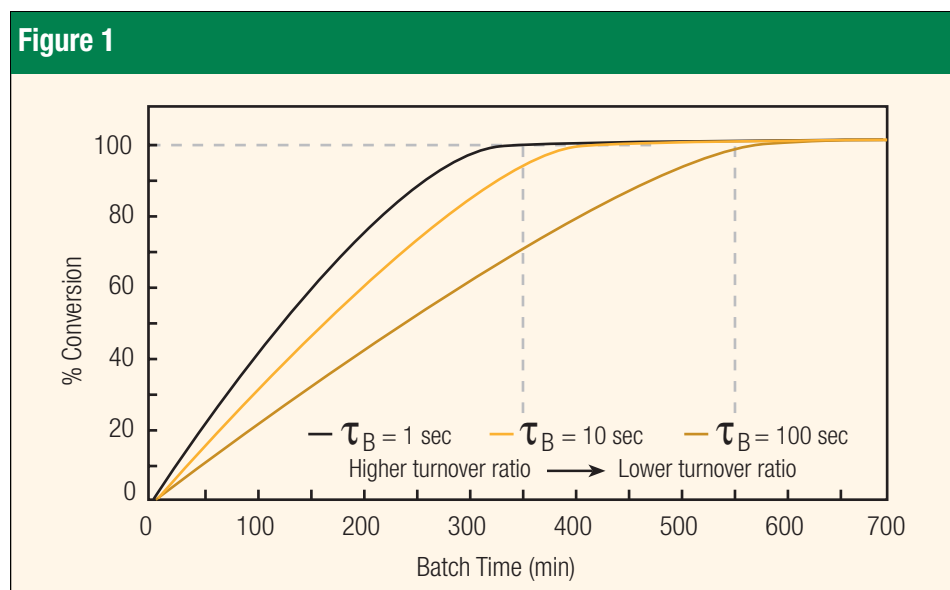
Poor turnover rate of the headspace gas can significantly increase your reaction time. The data in Figure 1 shows results of simulations for batch hydrogenation of soybean oil. The batch time is plotted on the x-axis versus the (%) conversion on the y-axis. The three curves correspond to varying gas headspace turnover ratios.

These ratios are inversely proportional to the displayed parameter τ_B , which is the amount of

time the gas spends in the headspace before it becomes redispersed into the liquid phase.

Under the conditions tested, the batch time required to achieve 100% conversion varied from 350 minutes for fast ($\tau_B = 1$ sec) to 550 minutes for slow ($\tau_B = 100$ sec) turnover of the gas in the reactor headspace.

Therefore, one way to reduce batch times and increase conversion is to use efficient turnover of the gas in the headspace of the reactor.



To find out more . . .

Talk to your Air Products representative about how we can help improve your plant's productivity.

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