CASE STUDY: SEMI BATCH POLYMERISATION

BHR Group
EXPERTS IN FLUID ENGINEERING

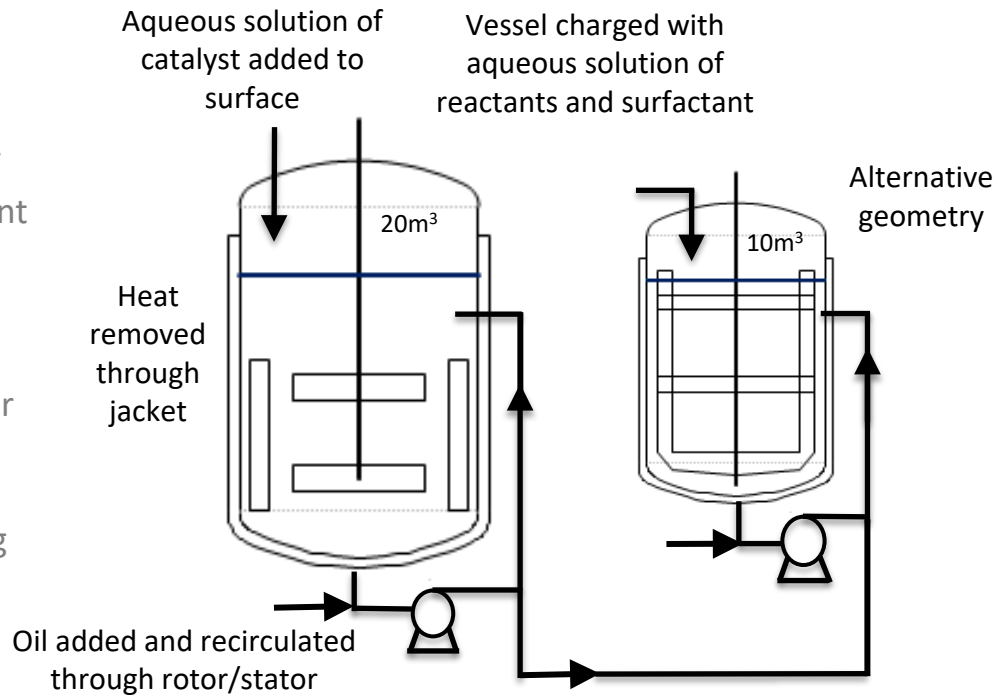
THE CHALLENGE

Our client's product **quality was inconsistent**, with productivity also varying between plants. Different reactor scales and geometries were being utilised across production and the lack of consistency was increasing time and operational costs for the business. It was vitally important to **minimise this batch to batch variability** and as the equipment was also being used to produce other products, this alternative product production could not be compromised.

OUR SOLUTION

The BHR Group team undertook **a comprehensive programme of analysis**, comparing reactor geometries and procedures across the different plant operations. We assessed all available client data, taking time to completely understand their drivers and all factors influencing the situation. This helped us to identify the most appropriate solutions to these challenges using our proprietary correlations, knowhow and experience. This analysis enabled us to identify that:

- The **low heat transfer** rate in the client's larger reactor was limiting cooling
- The surface addition of the product's **catalyst solution was liming blending**



THE OUTCOMES

Our client did not want to pursue a wholesale change given other complexities on the site and was working to a specific budget. In order to meet their full objectives on this project we worked closely with them to identify and discuss several options that would meet their requirements in the best manner possible. A new, alternative solution to the existing process, introducing a new in-line solution, was considered too radical for the organisation at that time, therefore we suggested utilising an existing smaller tank with a gate agitator to increase efficiency. This required a higher torque and hence a bigger motor and gearbox. We also proposed an alternative "up-pumping" design as an alternative, less intrusive improvement **to increase efficiency and effectiveness of operations.** Having provided a comprehensive analysis and different options for improvements, our client was then able to made appropriate changes that **improved quality and consistency**, benefitting from operational output and ultimately cost improvements.