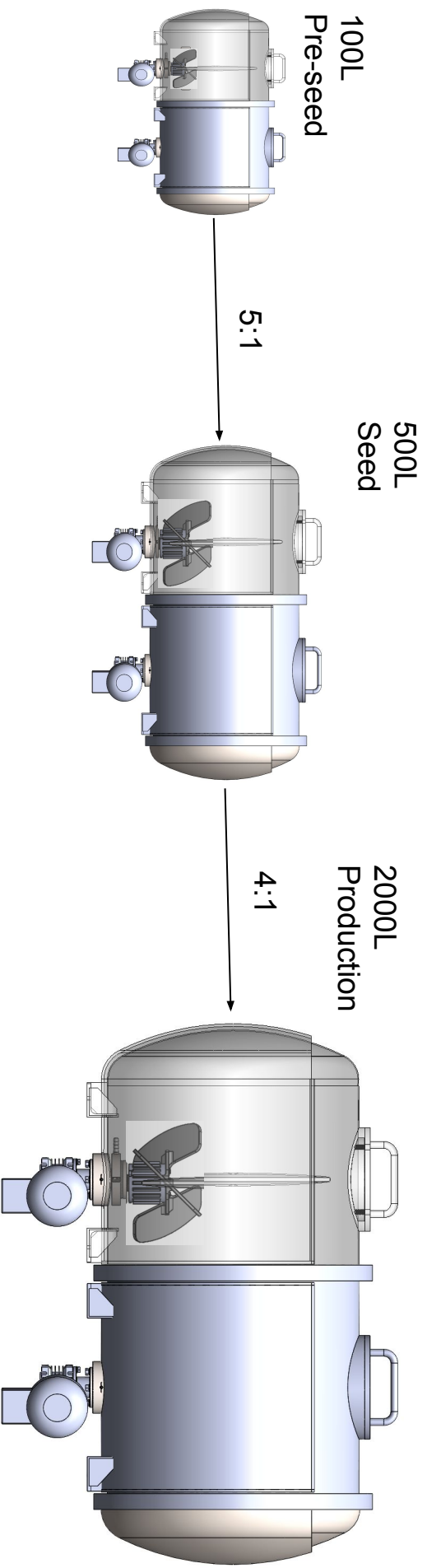


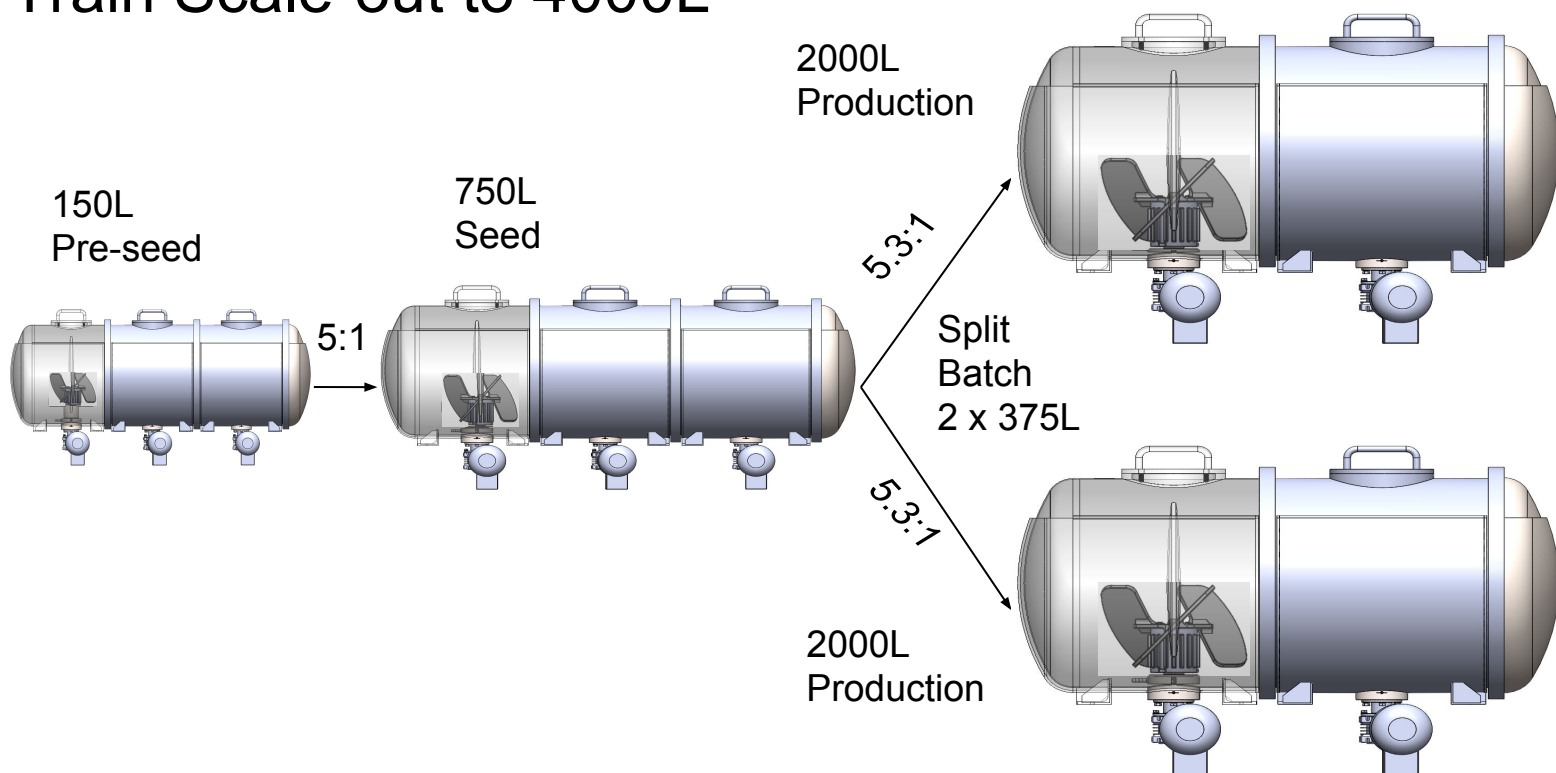
Single Use Horizontal Bioreactor (SUHB™) - Scaling Guide

This guide illustrates cell culture bioreactor scaling capability with opportunity to scale from 50L to 2,000L, 4,000L, and 6,000L working volumes. Various combinations of modules result in great flexibility when campaigning a biologic. In the presented scenario, the seed bioreactor batch is split to inoculate multiple larger size bioreactors with both a 4:1 and 5:1 cell culture seed ratio. Note that when these systems are used for cell culture rather than microbial use various sub components are customized for the application, particularly the agitator impeller (microbial impeller shown but low shear are available).

Cell Culture Production Train Scale Up to 2000L



Cell Culture Production Train Scale-out to 4000L



Cell Culture Process Intensification

