

### IB01x - 3.0 - Week introduction

In week 2 we have seen that the performance of microorganisms is quantitatively described by q-rates. In this week we will use these q-rates to design a full scale PDO continuous fermentation.

In unit 1 the process reaction is introduced, which is the cornerstone of this design.

The calculation of the process reaction requires a Black Box model of the organism, which is presented in unit 2 and 3 for the aerobic PDO producing organism and an anaerobic producing organism. In Unit 4 and 5 we discuss how to use the BB model to calculate the PDO process reaction.

In Unit 6 we present the calculation of flow rate and composition of all gas and liquid in- and outputs and heat output in a full-scale continuous PDO fermentor using the process reaction from Unit 5.

In Unit 7 we will use our insight from BB model and process reaction to discover how we can make the PDO fermentation more sustainable.

Our calculated in-and outputs of the continuous PDO fermentor are needed in week 4 where the focus is on design of transport processes, for the transport inside the fermentor of these quantified in and outputs.