

TAGUCHI METHOD IN BIOPROCESS ENGINEERING: *Case Studies*

►► *Editors:*

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Case Study 4: Improvement of Clarification and Separation Process for Hybridoma Cell Supernatant

*Maizirwan Mel, Mohd Ismail Abd Karim, Faridah Yusuf, Dzun Noriani
and Hamadah Mohd Nur Lubis*

1. Introduction

Filtration is a general separation process, and membrane filtration uses membranes to separate components in a liquid solution or suspension based on their molecular sizes and charge differences. Membrane filtration's separation processes are usually driven by pressure. Generally, there are two operational modes of filtration which are, Normal Flow Filtration and Tangential Flow Filtration. Most of the time, membrane-based Tangential Flow Filtration (TFF) is used for removal of cells from cell culture, separation of cells from a product, concentration of products, exchange or removal of salts, and removal of viruses (Wang, 2001; Iverson, 2003). Tangential Flow Filtration is also known as Crossflow Filtration (CFF).

Crossflow filtration can be divided into categories based on the size of the components being separated (Ho and Sirkar, 1992). In a CFF unit operation, a pump is used to generate the flow of feed stream