

Newmix® - Levtech® Application note

Verification of Homogeneity during Liquid/Liquid Mixing with Jet-Drive™

Mixing system: Newmix®- Levtech® Jet-Drive™ system

Mixing bag: 200L A-Mix™ bag

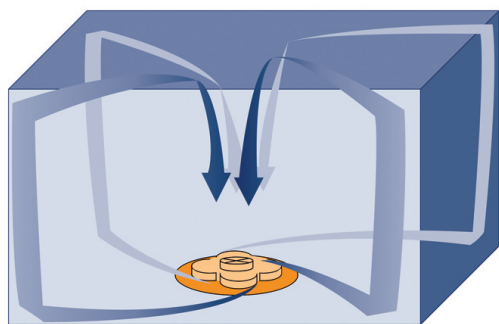
Mixing type: Liquid-liquid

The Newmix-Levtech Jet-Drive system is one of the lightest and most compact disposable mixing systems. It consists of a cubical shaped disposable bag with a magnetically impelled turbine, secured to the bottom of the bag, working as a centrifugal pump. The established 3D recirculation loop eliminates dead zones and ensures efficient and fast mixing.

Introduction

Liquid-liquid homogenization is a common requirement in biopharma processing, including after storage. Furthermore, a cubical bag shape is generally considered to be preferable from a storage efficiency (footprint) viewpoint. However, performing mixing in a cubical bag can be difficult; some mixing technologies can be prone to uneven distribution within the mixing bag, or can even introduce unwanted particulate contamination. The Jet-Drive impeller was developed to overcome these challenges.

In this experiment, a Jet-Drive system was used to mix 200L of salt solution. The objective was to demonstrate how the Jet-Drive magnetic impeller is able to quickly and efficiently deliver a high level of solution uniformity within the mixing bag.



A-Mix bag 3-D recirculation loop

Hoegaarden, Belgium - Europe

Phone: +32 (0) 16.76.61.59

Lexington, KY - USA

Phone: 859.263.1135

Minneapolis, MN - USA

Phone: 952.942.0855

www.atmi-lifesciences.com

info@atmi-lifesciences.com

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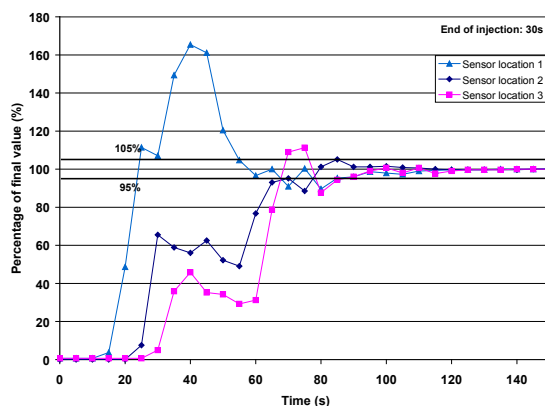
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Experimental

A 200L A-Mix bag was filled with 198L of DI water. The Jet-Drive impeller was set to a speed of 1000rpm, and then 2L of 3M sodium chloride (NaCl) solution was added to the mixing bag in one of the top corners.

Solution homogeneity was monitored via conductivity readings taken at three locations in the mixing bag: (1) bottom corner opposite the injection point, (2) top corner opposite the injection point, and (3) in the upper center of the mixing bag.



Mixing of 2L NaCl 3M in water in 200L A-Mix bag

Results

The accompanying chart shows the solution homogeneity in the bag during mixing.

Mixing was 95% complete within 90 seconds, with steady state reached in 120 seconds. At no time during the mixing cycle did the impeller stall or hesitate.

Conclusions

The mixing action of the Newmix-Levtech Jet-Drive system is capable of high mixing efficiency in liquid-liquid homogenization applications