

Newmix® - Levtech® Application note

Demonstrating Temperature Uniformity in Cubical Mix Bags with Pad-Drive™

Mixing system: Newmix®- Levtech® Pad-Drive™ 1000 system

Mixing bag: 200L Q-Mix Bag

Mixing type: Liquid-liquid

The Newmix-Levtech Pad-Drive system is a scalable and non-invasive single-use mixing system. The heart of this mixer is an innovative top-mounted mixing paddle that allows effective and uniform mixing in demanding applications, such as preparation of contained high-solids solutions or mixing of high-viscosity liquids.

Introduction

The cubical design of the Q-Mix single-use mixing bag delivers superior mixing efficiency because of the way its shape disrupts laminar flow and promotes thorough mixing. This mixing efficiency also ensures uniformity of temperature throughout the mixing bag.

In this experiment, the uniformity and stability of temperature throughout the mixing bag of a Pad-Drive mixing system was evaluated.



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

© 2008 ATMI, Inc. All Rights Reserved.

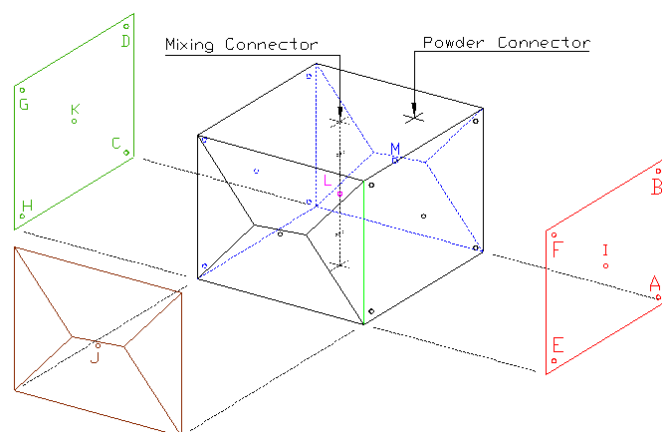
ATMI, the ATMI logo, Levtech, Newmix, Pad-Drive and Q-Mix are trademarks or registered trademarks of Advanced Technology Materials, Inc in the United States, other countries or both.

Application note XA013E 0810rev1

Experimental

A 200L Q-Mix bag was installed in a double-jacketed 200L Q-Mix vessel, filled with 150L of water, and presented to the Pad-Drive 1000 mixer. The vessel was then connected to a Lauda T4600 heater/chiller unit, and the temperature was set to 40°C. Mixing was initiated at a speed of 30rpm and a mixing angle of 10°.

To measure temperature uniformity, Pt-100 temperature sensors were placed in 13 different positions inside the mixing bag (8 corners, 4 sides and the center of the bag; locations A-M in the accompanying drawing). Once the set-point temperature had been reached, temperature measurements were made throughout the bag.



Results

The accompanying table shows the statistics for temperature readings from the 13 sensors.

MINIMUM TEMPERATURE	39.4	°C
MAXIMUM TEMPERATURE	39.6	°C
MEAN TEMPERATURE	39.5	°C
STANDARD DEVIATION	0.07	°C

Conclusions

The paddle mixing action of the Newmix-Levtech Pad-Drive 1000 system facilitates a high degree of temperature uniformity inside a cubical bag, even when operated at its least vigorous, lowest-shear settings.