

# Newmix® - Levtech® Application note

## Heating in a Part-Filled Cubical Mixing Bag 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 ability to increase temperature to a set-point in the partially-filled mixing bag of a Pad-Drive mixing system, and to hold at that set-point, was evaluated.



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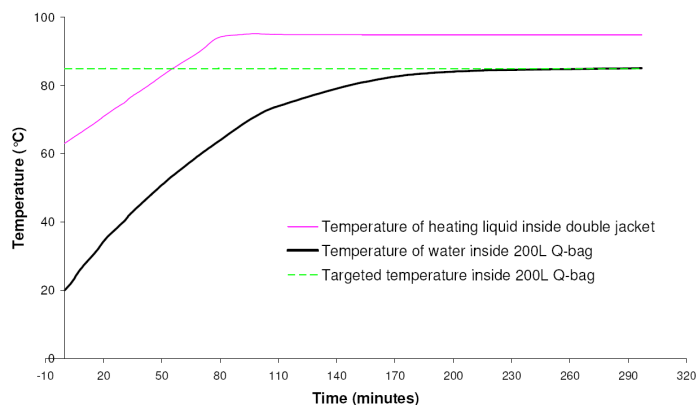
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## Experimental

A 200L Q-Mix bag was installed in a double-jacketed 200L Q-Mix vessel, and filled with 50L of water that had been pre-chilled to 20°C. The vessel was presented to the Pad-Drive 1000 mixer, and then connected to a Lauda T4600 heater/chiller unit.

A set-point temperature of 85°C was programmed into the heater/chiller unit, and mixing was initiated at a speed setting of 100rpm and a mixing angle of 10°. A Pt-100 sensor located in the center of the bag was used to monitor the temperature.



## Results

The accompanying chart shows the temperature in the center of the mixing bag as a function of time.

The 50L of water was heated from 20°C to 85°C over a period of 4 hours. During the initial, rapid-heating phase, a heating rate of 41°C/hour was achieved.

## Conclusions

The paddle mixing action of the Newmix-Levtech Pad-Drive 1000 system facilitates rapid temperature adjustments inside a cubical bag, even when it is only filled to 25% of maximum capacity.