Liquid Handling

Whitepaper

Liquid Handling

Generally, the scope of liquid handling engineering is to provide installations, instruments and accompanying protocols to transport or treat liquids in a reliable manner that can be defined, adjusted, monitored and tracked. To a certain degree, this implies that contemporary liquid handling procedures are widely automated.

As a major part of daily lab operations for testing, research or production relies on liquid-based techniques, the relevance of liquid handling procedures can hardly be overestimated.

According to the liquid volumes handled in labs (typically spanning a scale from deciliters to a fraction of a microliter), the number of work step iterations and the requirements for spatial assignment of liquid aliquots, appropriate liquid handling tools range from pump dispensers to microarray spotters.

During the past decades, in most fields of lab activity a strong growth of sample throughput came along with rising cost pressure and increasing efforts for process documentation. This created the need to introduce solutions that not solely covered the robotic part of automated liquid handling but also supported sample tracking and integration with other lab devices.

This is particularly true for applications like PCR reaction setups which at the same time are complex, multi-staged, and extensive. Therefore, modern liquid handling systems and their programming software should ideally meet a combination of criteria such as

- Providing a platform covering a wide range of sample throughput, open to a maximum variety of tubes, tube-strips, wells, plates, etc. as source and target disposables to match the formats of all adjacent devices (i. e. NA-extraction systems, qPCR instruments)
- Including easy and versatile sample data management (interfaces for data import and export)
- Enabling pre-treatment of samples like normalization and dilution using individual sample-related numeric data
- Allowing sample allocation to individually different groups of PCR reactions
- Allowing spatially fixed or automatically arranged localization of single or replicate reactions
- Offering a flexible and interactive preparation of Master-Mixes
- Offering preparation of standards
- Delivering high pipetting precision for all operations
- Applying a sensing system to verify presence of sufficient liquid amounts
- Providing a detailed and instructive procedure report

Dornier-LTF GmbH

http://www.dornier-ltf.com

Do you have any questions? Please do not hesitate to post them to info@dornier-ltf.com.

Phone +49 8382 2730 890

Fax +49 8282 2730 8929