The term I-DOT refers to an automated high-throughput system for handling liquid samples. One of the most common handling steps in bioprocess technology is the handling of liquids. With standard devices, processing those media and cleaning the dispensing systems not only costs time and money but is also associated with quality losses. At the Fraunhofer Institute for Manufacturing Engineering and Automation IPA, a process has been developed which enables most pipetting steps to be carried out fully automated in a compact device and therefore quick, cost-effective and flexible. I-DOT uses a contact-free technique to dispense volumes from one microtiter plate to another, to glass slides, fleece or components with complex surface structures.

Direct, fast and contamination-free sampling from a microtiter plate without the need for disposable pipette tips!

A microtiter plate (MTP) in SBS format is used as the source plate. The utilized MTP differs marginally from standard plates in that it has a small centered borehole in the base of each well (so-called »nozzle«). As the diameter of the borehole is small, capillary pressure inside it is many times higher than pressure from liquid in a well. In consequence, the corrugation remains watertight despite the presence of the borehole and functions as a threshold valve. If pressure in the well is significantly increased for a short time, liquid is passed through the nozzle.
The advantages of I-DOT at a glance:

- No cross-contamination
- Fewer disposables, lower costs
- Reliable liquid handling even in the lower nanoliter range
- Source plates made of almost any type of thermoformable plastic
- High viscosity range
- No complex cleaning steps necessary
- Compact, easy-to-operate device

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