

Quality control of liquids in the 21st century

Introduction

Liquids are used in a wide variety of industries, either during manufacture (eg. solvents used to produce drugs in the pharmaceutical industry) or as end-products in themselves (for example soft drinks in the beverage industry). Whatever the end product, quality control of liquids is crucial to many industries.

Liquids can be characterized in various ways and, due to the accuracy, simplicity and velocity of analysis, the determination of their physical properties (such as density, refractive index or color) and chemical properties (such as pH value or conductivity) have become routine requirements.

Determination of these properties can also be useful for further applications. For example, the refractive index of a cleaning solution is measured after use to find out whether production machinery is clean enough to start a new batch or not. Another example is the filling quantity declaration for liquid end-products, which is usually determined on a balance (in mg). Since many industries require a volume declaration in mL, the density of liquids also needs to be determined.

The dawn of a new decade brings with it the introduction of a new family of density and refractive index meters, LiquiPhysics™ Excellence from METTLER TOLEDO. These meters are the product of many years of experience in the field, as well as continuous user feedback. Their main benefits are exactly what has been asked for by end users in different industries, and can be summarized in three words: simple, sophisticated and secure.



Simple

The proprietary One Click™ interface allows users to utilize the touch screen on the instrument to perform various operations with just one click. This enables quick, simple and direct access to all routine tasks utilizing shortcut buttons on the screen. Each user has the flexibility to personalize their home screen and shortcuts, eliminating instrument operation error. A barcode reader can also be used, to input sample data or select the appropriate analysis method, ensuring the right measurement parameters every time.



Sophisticated

Imagine having limited lab space and a tight budget, but still needing to perform multiple measurements, such as density, refractive index, color and pH. LiquiPhysics Excellence allows you to do just that, by offering full instrument modularity. Simultaneous determination of several parameters is now possible as and when the need arises, with a simple expansion of the measuring system. This protects your investment throughout the instrument's lifetime, without the need to purchase additional instruments for new or more advanced measurements.

METTLER TOLEDO

Secure

Efficiency and productivity seem to be the main ingredients for success nowadays, due to globalization and business expansion during the past century. In this technological age, electronic records are the norm and, with this in mind, LiquiPhysics Excellence instruments are designed to not only fulfill customer requirements and produce correct results, but also to offer the functionality necessary to optimize user operations. However, this degree of integration can hardly be achieved with stand-alone measuring instruments, as each environment has its own specific requirements, such as:

- sample lists must be imported in a specific format;
- result reports must be created in a pre-defined format;
- measurement data must be automatically exported to an ERP system, (such as SAP);
- operators should be guided through special measuring procedures or SOPs;
- 21 CFR part 11 regulations must be fulfilled.



To enable customers to achieve such individual requirements, METTLER TOLEDO created LabX™, a new concept for laboratory software solutions, and a common platform for Excellence balances and LiquiPhysics density and refractive index meters. LabX

combines security, flexibility, ease of use and an advanced report designer which can easily be tailored to specific needs.

Regulatory compliance has always been important to pharmaceutical companies, as any breach of compliance can lead to staggering fines and an increase in regulatory bodies' scrutiny within a particular country. Companies' reputations will also be affected, due to growing level of public distrust, if these compliancy rules are not rigorously followed.

For this reason, LabX has all the tools customers need to fulfill compliance standards, for example the FDA 21 CFR part 11, which governs the use of electronic records and electronic signatures. In order to use software in a regulated environment, it must be capable of providing the following features:

• Secure access

LabX provides simple and secure operation of the instrument. User management is essential to prevent unauthorized use of, or access to, the instrument. Traditional user management systems, based on user names and passwords that must be regularly changed, can make operation of the system more secure.

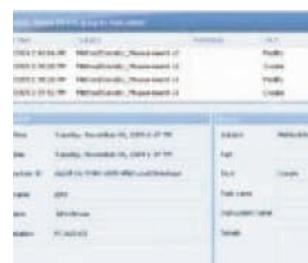


However, it is now common to have multiple user names and passwords for email accounts, computer access, online banking and much more, and all this increases the chances of losing or forgetting user names and passwords. METTLER TOLEDO recognized these challenges, and developed LogStraight™ biometric user management. With LogStraight, the operators simply put their finger onto the fingerprint reader, for immediate identification. The biometric sensing capability guarantees that only authorized staff can use the instrument, whilst eliminating the need for users to remember login details.

LabX allows methods and reports to be signed during review and approval steps, including the signatory's full name and the date, time and reason for the signature. In addition, it is possible to configure LabX so that any change made to the database (such as methods, sample series data, results, etc) requires a signature and reason for the change, with two signature levels to ensure that each action has been correctly reviewed and approved. The key benefits of this system are a paperless lab environment and greater workflow efficiency. Eliminating the use of paper records also helps companies to protect the environment and to save on precious lab space.

• Traceability

The LabX audit trail records every user action that creates, modifies or deletes data. Each entry includes the user name, a description of the action and the date and time of the action, together with the old and the new values of the changed record. In addition, the audit trail also contains a record of automatic system logs, such as the physical disconnection of an instrument.



The audit trail is stored within the SQL database, and cannot be deleted. Whenever a database backup is made, the audit trail is automatically backed up with it. The audit trail can also be filtered for specific actions, such as actions that occurred during a specified time window or were performed by a specific user. If a regulatory body requires log data for auditing purposes, LabX securely exports the relevant data .

And much more...

METTLER TOLEDO density and refractive index measuring systems feature many additional benefits to increase the simplicity and security of each analysis process, even for the most sophisticated systems. These include smart accessories, such as ErgoSens™ for hands-free operation and AtmoSens™ for accurate adjustment to 5 digits, and efficient automation solutions, such as the SC30 sample changer, which further increases the security and simplicity of multiple sample measuring or liquid standard reference material, for traceable instrument verifications. For more information, please visit www.mt.com/liquiphysics, or ask our local experts.



www.density.com

For more information