

Defining flour water absorption with high-precision dosage

by Brabender, Germany

In the literal meaning of “on top”, Brabender now introduces its automated water dosing system for the Farinograph-TS.

The new Aqua-Inject is a real high-tech piece of equipment: Dosing can be realised with the highest level of precision. In the 300g mixer, accuracy of 0.25ml can be achieved. This is achieved thanks to a new technology, in which a miniaturised rotating turbine measures the flow rate of the water being dosed. The integrated heating module makes temperature control superfluous during dosing, ensuring constant water temperatures in your lab processes.

This increases the accuracy and reproducibility of the results, as any possible effects that ambient temperature may have on water dosing are eliminated. Automatic titration instead of manual dosing removes discrepancies caused by humans at a stroke, and ‘adieu burette’ also brings with it two safety arguments:

Usage errors are minimised, and glass breakage as a possible critical hazard point for food processing operations is ruled out at this stage.

Last but not least: Not only does the new Aqua-Inject simplify operation for laboratory staff, but it also reduces your investment costs.

High-precision dosage: The new Brabender Aqua-Inject measures the flow rate of the water being dosed by means of a miniaturised rotating turbine.

Flour analysis in digital dimensions

The Aqua-Inject has been designed as an add-on module for use with Brabender’s Farinograph-TS. It can however also be adapted for use with the E-series Farinographs (with USB connection). However, in this instance, connection to the MetaBridge Controller is required, whose software then controls the Aqua-Inject module.

The Brabender MetaBridge controls the new Aqua-Inject, which is the standard software for the Farinograph-TS. In conjunction with the MetaBridge Controller, the device can also be used with the Farinograph-E.

Today, reliable and reproducible testing of the processing characteristics and quality of flour products is a basic requirement in the milling and baking industry, in order to ensure continuously optimised flour quality when producing the widest variety of baked or pasta products. The Brabender Farinograph has proved

itself ideal for this task over the course of decades, which has made it the world’s most widely used piece of equipment for determining the properties of wheat flour and rye flour.

The TS generation is the latest addition to the Farinograph range from the company based in Duisburg, Germany. The TS distinguishes itself thanks to its space-saving compact housing shape, and is ready for immediate operation thanks to plug and play functionality. Its modular design is optionally available with a touch screen. And the digital icing on the cake: The Farinograph TS already features the groundbreaking MetaBridge software as standard.

Brabender has forged new paths with this software, as well as with the MetaBridge Controller (MBC) as a digital tool for Lab 4.0. Your staff therefore gets more than just some additional interactive interface. Instead, the software makes lab work and results compatible. Several colleagues can simultaneously carry out, track or manage measurements – all using standard operating systems spanning from Android or Apple via Blackberry and Linux to various Windows applications from Microsoft.

The web-based software does not require local installation, which in turn enables equipment to be connected without problems occurring. And when it comes to security, it has three plus points:

- Password-protected login protects against unauthorised access;
- The administrator mode enables you to individually customise access rights;
- The Linux-based software architecture makes the system more secure on the web.

The MetaBridge and the controller work in tandem, and were specially designed by Brabender to work with Brabender equipment. Their functions and measurement profiles are therefore optimally tailored to work with it. When the MBC is connected, the laboratory’s wealth of knowledge stored in its data remains intact, meaning it can be systematically developed. Thanks to adaptation to existing device know-how, users benefit from consistent, company-specific performance.

Multiple users can access different output devices at the same time, for example to track a current farinogram on various different terminals. This multi-access saves time, as well as enabling the continuous exchange of information and making it easier for those responsible for quality management to make qualified decisions.

To this end, the MetaBridge solution has four important bonuses:



- Info about updates of the instrument software is received automatically;
- It is possible to receive direct feedback from Brabender on measurement results;
- In the event of a fault, the Brabender service technicians can quickly help via remote access, removing the need for a site visit;
- Within the device network, there are no charges for additional user licences.

An upgrade for the day-to-day lab work classic

As a proven lab analysis classic, the farinogram shows the quality characteristics of the flour being tested in a rheologically realistic test for the dough phase. In its measuring mixer, the flour/water sample is kneaded, and the knead resistance is measured as a torsional moment according to the viscosity of the dough: This enables water absorption, dough development time, stability, fermentation tolerance and the degree of

softening to be reliably depicted.

But with the MetaBridge, a Brabender Farinograph can now do even more. The software records the measurements vividly, enabling monitoring, analysis and documentation of the measurement data – on the equipment itself, or, if required, on external monitors for others to see.

As well as the standard analysis, the software offers countless possibilities for designing your own custom tests with the Farinographs of the TS generation, for example:

- Shorter test length and/or higher kneading intensity via adjustable rotational speed (2–200 rpm);
- Variable kneading intensity and energy input into the dough for applications in research and development;
- Programming of more complex rotational speed profiles, e.g. premixing at lower rotational speeds, kneading at higher rotational speeds, or the definition of pause times for longer dough-making processes;
- Analysis of charts with atypical farinogram profiles, such as

with wholemeal and/or rye flours or with the observation of enzyme effects.

Dosing water automatically, tracking farinograms on your mobile end device: The Brabender MetaBridge makes it possible, as the Farinograph-TS standard software or as an add-on, i.e. for the Farinograph-E.

In order that measurements can be carried out not only quickly, but also without errors, MetaBridge offers an intrasystem quality assurance process, featuring several features for the prevention of errors. So, for example, the measurement range is set according to the specified instrument configuration; tarring is automatic, and for farinograms, increments, timings and threshold values are already integrated. But of course, they can also be modified on a product or company-specific basis.

As a further innovation, the MetaBridge software in conjunction with the Aqua-Inject enables automatic creation of a titration curve if flour with unknown water absorption needs to be tested. This makes it possible to carry out other lab work in the meantime, whereas before, painstaking and time-consuming manual titration was necessary.

During the software development stage, the MetaBridge 'bridge builders' also built in further intelligent communication opportunities, which enable connection to existing laboratory management systems, and in particular optimise customer communication of measurement results. It goes without saying that Brabender applications can call up the widest range of international benchmarks and display them effectively.

Double controlled reliability with the calibration kit

Regular control measurements for the Farinograph-TS,

using the Brabender reference material, secure reliability of the measurement data. The combination of specially prepared calibration flour and its reference curve offers direct comparison of an on-site device's measurement values to the target measurement values. This is an easy matter using the calibration kit that can be obtained: Simply prepare the sample according to the specifications, carry out the test and compare the values to those of the supplied reference curve taken from the master equipment in Brabender's service laboratory.

If the values are within the permitted tolerance range, the lab equipment's measurement values, as well as their validity, are okay. But if, despite repeated testing, the values lie outside the tolerance range, the MetaBridge offers an optional bridge, enabling you to search for the cause and quickly rectify it, online and together with the experts.

Grounded competence and professional dialogue meaningfully linked

The software's many features, along with the combination of instruments in networked interplay, increases a company's depth of rheological competence and experience. The model-like simulation of parameters makes it possible to test alternative processing procedures, such as for example the effect and observation – live on screen – of recipe additions to dough development during kneading.

This makes professional dialogue between partners in the value creation chain much easier when it comes to making decisions on complex quality requirements, as well as providing documented data that can be used for certifications or audits. QA staff and auditors alike will be equally delighted by this. ➡