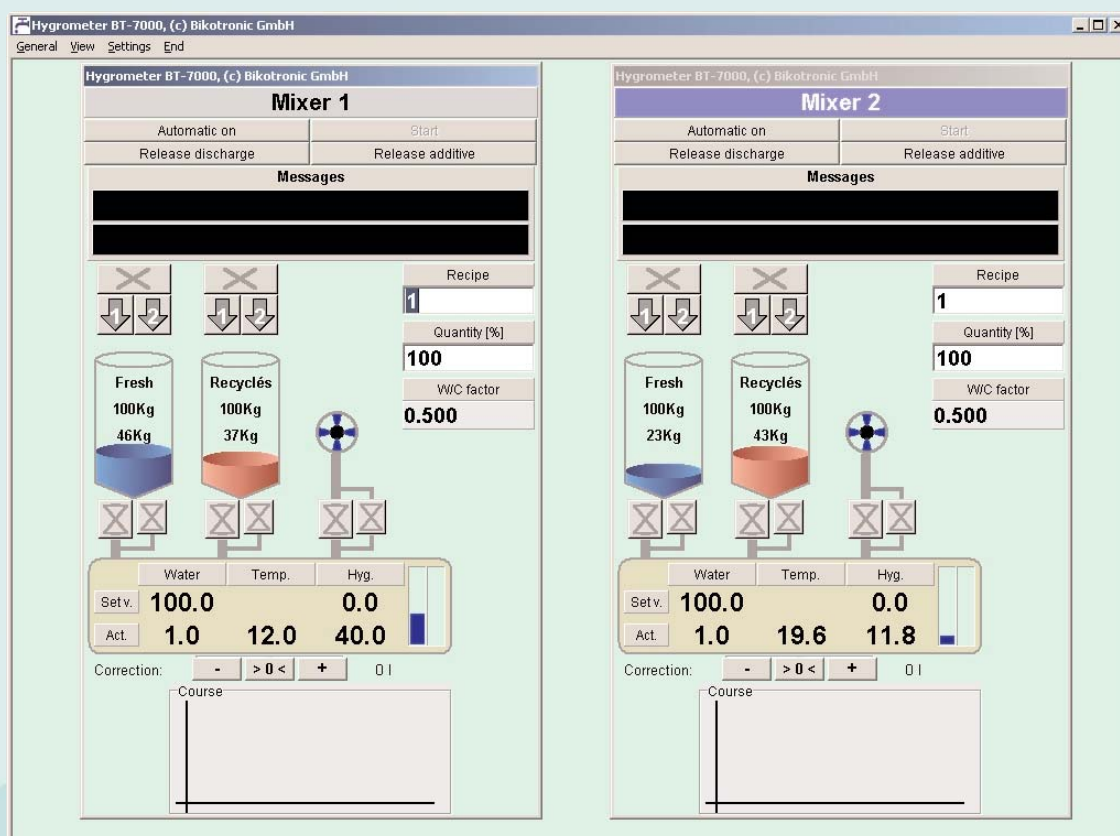




BT-7000

Water Batching Computer Concrete Moisture Measurement in the Mixer



Nowadays, the concrete quality is of vital importance for the industrial production process. In order to meet the increasing quality demands, it is essential to control and regulate the moisture content. The **Water Batching Computer BT-7000** determines the moisture of the concrete in the mixer fast and exactly. It calculates and doses the water to be added with high repeatability and is thus the basis for a constantly optimal concrete quality.

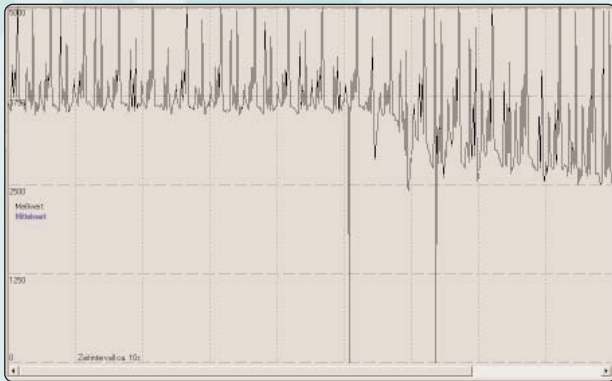
BT-7000

Water Batching Computer

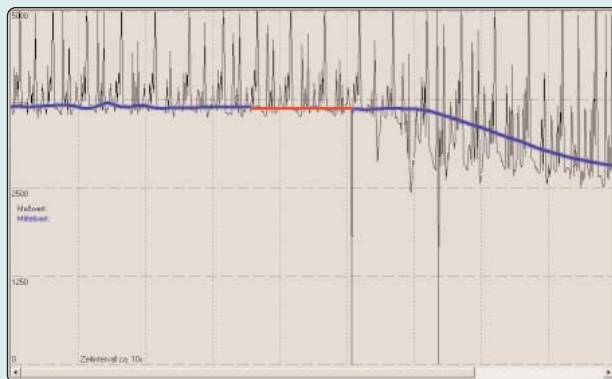
The advantages

High Repeatability

The multi-level processing of the measured values is an important feature of the BT-7000 as it ensures a particularly high repeatability. Thanks to this technique, every mixer with its specific mixing performance can be adjusted to the output signal of the sensor. Measurements in mixers, generating high amplitudes of signal fluctuations can be damped and filtered. Thus, we can have a constant value for calculating the water to be added. This is especially important for the production of precast parts or Self-Compacting Concrete and concrete precast parts.



Unfiltered input signal of the microwave sensor



Filtering of the multi-level processing of the measured values (blue) and interpretation of the final filtering (red)

Programming of the BT-7000

The programming of the Water Batching Computer BT-7000 has been designed to be extremely user-friendly, in order to make the operation as easy as possible. To enter and set up a programme for a concrete formulation, we prepare a batch in the manual mode. During the dry mixing cycle, we enter the amount of water necessary to make a perfect mix. After confirming the added amount of water, the BT-7000 will run the mixer automatically through its mixing cycle.

In the course of the programming mode, the BT-7000 creates and automatically stores in its memory a "tuning curve", which will be typical for this particular concrete formulation. For any following concrete batch of the stored recipe, the amount of water will be accordingly calculated and correctly metered into the mixer.

BT-7000

Water Batching Computer

The "Tuning Curve"

The distinct advantage of the Bikotronic Water Batching Control System BT-7000 is the creation of the "tuning curve". Every time we enter a new recipe, the system will create automatically a recipe specific "tuning curve". This ensures the highest possible accuracy for the preparation of each concrete mix. Since recipe specific "tuning curves" are automatically created and saved by the BT-7000, the operator does not need to edit or calibrate these curves by using complicated water/cement ratio calculations.

Temperature Measurement

Typically, the amount of water to be added, to achieve a specific concrete property specification is based on a normal ambient temperature of approximately 20 °C (68 °F).

To maintain the desired concrete quality at above normal temperatures, the BT-7000 not only measures the moisture content of the dry concrete mix, it also measures the temperature of the dry concrete mix. Temperature deviations are recognized and the amount of water added is adjusted in accordance to a temperature curve, which is stored in the background of the programme. This feature ensures the correct moisture content in the concrete, even at elevated product temperatures.

Remote Maintenance

To help the customer with the troubleshooting of his mixing formulation and for the transfer of programme updates, a Bikotronic technician can access the BT-7000 remotely via a modem and the internet.

Control Connection and Specifications

The BT-7000 can be integrated into any batching control system. It is available as a 19" 4RU slide-in unit, as a hard box for mounting on mounting plates or as a common desktop computer unit.

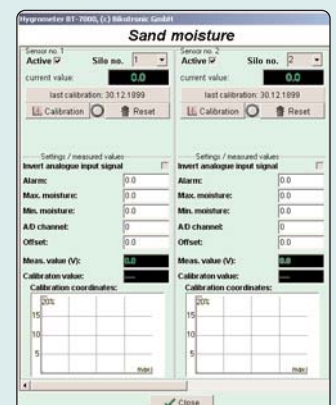
One BT-7000 for 4 Mixers

With the BT-7000 we can control up to 4 water dosing units of 4 mixers, operating at the same time, each preparing a different formulation.

Integrated Sand Moisture Measurement

A sand moisture measurement with up to 8 sensors can be integrated into the BT-7000.

The sand moisture values are then displayed directly in the BT-7000.





Mixer



Temperature Sensor



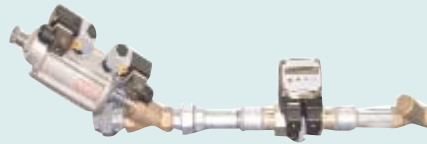
Microwave Sensor



Water Batching Computer
BT-7000



Water Scale



Water Dosing Unit

Microwave Sensors

General Information

Bikotronic Microwave Sensors have been developed in cooperation with the Chair of High Frequency Engineering Department at the Technical Faculty of the Christian-Albrecht-University in Kiel, Germany. Under laboratory conditions, the measurement accuracy of the Bikotronic Microwave Sensor is better than 0.1 %.

Linearity

The complete linearity of the Bikotronic Microwave Sensor provides precise measurements with very dry concrete as well as very wet concrete.

Temperature Stability

Bikotronic Microwave Sensors for the installation in mixers are heat-resistant up to 60 °C (140 °F). This ensures that the measured value remains stable, even under higher temperatures.

Microwave Sensor for Pan Mixers Type 6 and for Mixers with Rotating Mixing Pan, Conical Mixers, Single and Twin-Shaft Mixers Type 7

Measurement frequency:
433 MHz

Measurement area:
All consistency areas

Temperature area:
0 to + 60 °C

Installation size sensor:
Type 6: diameter 105 mm, length 100 mm
Type 7: diameter 90 mm, length 80 mm

Installation size mounting fixture:
Type 6: diameter 150 mm, height 35 mm
Type 7: diameter 122 mm, height 30 mm



Wear

Our microwave sensors are extremely wear resistant.

The ceramic measuring field is 10 mm thick and protected against lateral damage through a hardened shell. The microwave sensor is also equipped with a wear head which can be exchanged by the customer.

Mixer with Rotating Mixing Pan

Bikotronic offers two designs of microwave sensors for the use in mixers with a rotating mixing pan:

- The type 7 is mounted in the wall scraper.
- The type 8 is suspended from the dust hood via a mounting bracket.

A temperature probe is integrated in both types of microwave sensor for rotating mixing pans.

Microwave Sensor for Mixers with Rotating Mixing Pan Type 8

Measurement frequency:
433 MHz

Measurement area:
All consistency areas

Temperature area:
0 to + 60 °C

Installation size sensor:
Depending on the mixer
Maximum length including
mounting attachment 1.20 m

Installation size mounting fixture:
Depending on the mixer



BT-7000

Water Batching Computer

Constant Concrete Quality

High Volume Products

High volume products, such as paving stones or concrete pipes, are products manufactured at short mixing times. The concrete has to have a good mould filling behaviour.

The finished product has to have always the same height, a homogeneous, closed and clean surface. These requirements can be achieved by installing a Bikotronic Water Batching Control System.

Low Slump Concrete

The increase in the costs of raw materials and energy, forces more and more concrete producers to automate their batch plant. The demand for high quality concrete products in a very competitive market makes the addition of a Water Batching Control System inevitable.

Hardscape Concrete Products

To prevent cracks in the final product the moisture content of the concrete core is very important. A constant moisture content also guarantees the optimal filling of the forms and ensures easy de-forming of the blocks and bricks.

Lightweight Concrete

With the Bikotronic Microwave Sensor Technology, the accuracy of the measured moisture content has been significantly improved for the preparation of LECA light weight concrete, Pumice light weight concrete, and Lava light weight concrete.

Self Compacting Concrete (SCC)

For Self Setting or Self Compacting Concrete the accurate addition of water is of utmost importance to enable the Self Setting or Self Compacting Concrete to flow into complex hollow spaces by encasing completely the reinforcement, at the same time ventilating and levelling itself with segregation.

Value Added Specialty Products

More and more concrete plants create a niche for their specialty products, such as concrete products with special effects, using granite, basalt or granulate. In order to obtain always the same effect after further refining of the product, such as panning out or brushing of the surface, the concrete has to have always the same moisture content.

Recycling Water Scale

Water which is polluted with cement and chemicals must not be channelled to the sewers. We have developed a concept which renders it possible to re-use slightly or strongly polluted recycling water.

In order to process recycling water with a density of more than 1.1 it is necessary to measure the content of solids. For this, we have integrated a volume measurement into the recycling water scale which makes it possible to determine the solids content through the weight/volume difference (patented). The recycling water scale has a coarse / fine discharge closure which allows to dose more precisely.



Temperature Sensor

To determine the temperature of the mixing material.

Installation size sensor:
Diameter 74 mm, length 47 mm
Installation size mounting fixture:
Diameter 83 mm, length 50 mm
Temperature area:
0 up to +80 °C



Water Dosing Unit

For dosing the water into the mixer, including coarse and fine valve, dirt trap and volume flow measuring turbine.

Available sizes:
DN 25, DN 40, DN 50



BT-7000

Water Batching Computer