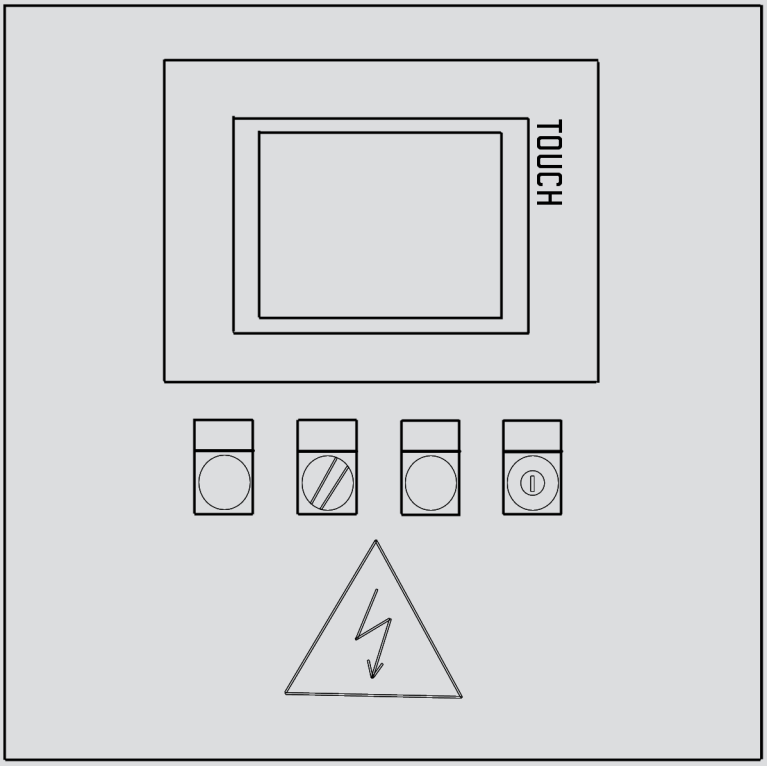
because it works

Operation manual

Flow Metering



Serial-No

_ _ _ _ _ _ _ _ _

CE

Translation of original operation manual
1305_DFM_en • ski

1.1 Foreword

Operating personnel should always have access to this User Guide!

Therefore the owner of the unit has to ensure that the person operating the unit always has an operating manual at his/her disposal in a language he/she understands!

Dear Customer!
We are delighted about your decision to buy one of our units.
The User Guide contains all the information required to operate this unit. However, further information is essential for safe operation:

Moreover the **Manufacturer's Regulations and Guidelines** for the application of coating or feeder materials are to be respected at all times.

In principle you should refrain from any work method that would affect the safety of WIWA® products and the operating personnel.

We wish you success and good results with this unit
WIWA® **Wilhelm Wagner GmbH & Co. KG.**

WIWA Wilhelm Wagner GmbH & Co. KG
Gewerbestraße 1-3 • 35633 Lahnau
Phone: +49 6441 609-0 • Fax: +49 6441 609-50

This User Guide is only valid in conjunction with the machine card which came with the User Guide when you purchased the unit. Please check that the type label data are identical with those on the machine card. In case of discrepancies, faulty composition of the User Guide or if the type label is **missing** please **notify** us immediately.
Note: We reserve the right to make changes to the contents. WIWA Wilhelm Wagner GmbH & Co. KG is not responsible for any errors in this documentation. Any liability for collateral damage arising in connection with delivery or use of this documentation is excluded, as far as is legally admissible.
Technical changes made to improve the product, and which are possibly not yet documented in this User Guide, are reserved for the manufacturer.

1.2 Table of Contents

2.1 Explanation of symbols

The notices and symbols used in this guide have the following meanings:

NOTICE
An information passage is indicated. You should pay particular attention when reading it.

WARNING
A potentially dangerous situation is indicated. Non-observance can lead to death or very serious injury.

VOLTAGE
A situation showing danger of explosion by electrostatic charge is indicated. It is imperative to comply with these notices.

WEAR PROTECTIVE GLOVES
Protective gloves with under-arm protection should be worn as protection from burns. It is imperative to comply with these notices.

FIRST AID
In case of injuries or accidents it is imperative to respect all the regulations indicated.

2.2 Notices on the machine

Appropriate information signs and symbols on the machine refer to possible danger areas and must be respected at all costs.

Information signs and symbols must not be removed from the unit.

Damaged and illegible information signs and symbols must be replaced immediately.

2.3 Dangers of the unit

This unit has been designed and manufactured taking into consideration all safety-related aspects. It meets the current engineering rules and the accepted accident prevention regulations.
The unit left the factory in flawless condition and a high standard of technical safety is guaranteed. Nevertheless, there are impending dangers which can arise from faulty operation or misuse:

- to body and life of the user or third party,
- to the unit and other valuable property of the owner,
- to efficient work with the machine.

All persons concerned with the installation, putting into operation, use, maintenance, repair and servicing of the unit must have read and understood the User Guide beforehand, especially the Safety regulations chapter.

Your safety is at stake! We recommend to the owner of this unit to obtain a written confirmation hereof. **In addition to this User Guide you should always heed the operating manual for the spraying system in which the flow rate measuring device has been installed.**
In principle you should refrain from any work method that would affect the safety of WIWA® products and the operating personnel.

2.4 Using the unit

The unit is used in multi-component systems to monitor appointed mixing ratios. In addition it is possible to determine the product flow and the applied material volume which is actually on the part to be coated.
The unit can be used for the precise measurement of fluids. Highest measuring precision is attained with a viscosity of ≥ 100 mm^2/s.
The measuring data can be printed out with an optional obtainable data reader.
Any other use is deemed to not be in accordance with regulations. The manufacturer's approval must be obtained before the WIWA® unit is used for any other purpose or with other materials, and therefore not in accordance with regulations, otherwise the warranty is null and void. You must adhere to the technical documentation and compliance with the compulsory operating, servicing and machine maintenance guidelines in order to achieve specified normal usage.
This unit has not been classified according to guideline 94/9/EC and the owner should therefore **not** operate it in explosion protection zones. You must make sure that the unit is adequately earthed, separately or in combination with the unit on which it is fitted (maximum resistance 10^6 Ω, earthing / equipotential bonding).
In closed systems or systems being pressurized, where aluminium or galvanized parts come into contact with the cleaning agent, dangerous chemical reactions can occur if you use 1,1,1 - trichloroethane, methylene chloride or other solvents which contain halogenated chlorinated hydrocarbons (CFCs). If you wish to use the aforementioned solvents or varnish and colours which contain them, we advise you to get in touch with the WIWA® customer service or directly with WIWA®.

2.5 Environment and installation location

Conversions and alterations
Unauthorized conversions or alterations should not be undertaken on safety grounds. Protective equipment should not be dismantled, converted or bypassed. Use of components which have not been manufactured or delivered by WIWA® renders any warranty null and void.
The unit should only be used within the prescriptive limits and machine parameters.

Dangers from accessories and spares
If original accessories and spares of WIWA® Wilhelm Wagner GmbH & Co. KG are used, usability with our units is guaranteed. It is, however, mandatory to respect the safety regulations of the accessories and spare parts. These safety regulations are found in the corresponding accessory user guides.
If foreign accessories or spare parts are used, WIWA® cannot guarantee the security of the entire system. Similarly liability is null and void for damages or injuries incurred through use of those accessories and spare parts.

Emissions
The unit operates noiselessly and without vibration.

Installation location
The unit is not suitable for installation in explosive areas. Only the sensor system (gear wheel sensor-flow measurement sensor) and the optionally obtainable external operating unit should be assembled on operating sites covered by explosion protection legislation.
The unit must be fixed securely to a wall or machine and protected from moisture.
There must be ample space for the operational controls and connections.
The connector for the flow meter, which is not explosion-protected, should only be connected in outside areas which fall under the explosion protection legislation, even if the accessory is explosion-protected.

Safety measures at the installation location
- ➤ The owner must protect the entire system by undertaking appropriate lightning protection measures.
- ➤ The applicable accident prevention regulations are to be strictly observed.

2.6 Danger sources

Since the WIWA® material flow meter can only be used with an appropriate spraying unit in high or low pressure processes and with the appropriate spraying accessories attached, the user guide of the particular spraying equipment used and of its accessories must be read and followed.
Improper operation can lead to serious injuries.

Respect and follow these regulations:

Please ensure that the mains plug is approved in accordance with the installation site for the particular explosion-protection zone. Plugs for this unit which have no explosion protection should only be employed outside areas which fall under the explosion protection regulations.

Warning!
When using in atmospheres containing solvents there is the danger that the power cable could become flawed or porous. Therefore the power cable must be checked at each start-up for externally visible damage. Never mend a power cable. Damaged power cables must always be completely replaced. This work must be carried out by a qualified person with electrotechnical training.

Warning!
Before connecting the unit to the mains supply, check whether the prescribed electrical data complies with that available at the installation site.

Caution!
Data for material appropriate for spraying must be kept in readiness.
Please respect the manufacturer's instructions regarding viscosity, processing temperature (ignition temperature) and mixing ratio, and adhere to them.

Warning!
Depending on the set spray temperature, the flow measuring sensor also can become very hot on the surface.
Only dismantle these components in cooled down condition and always wear the prescribed protective clothing and protective gloves.

Warning!
Check the unit and the entire system visually for leaks before every start-up or for any servicing, repair or cleaning. Never try to seal leakages on connections by hand or by wrapping fabric around them. In case of leakages, all pressure has to be immediately released from the entire system.

Defective parts must be replaced. Comply with the corresponding regulations in the user guide for the particular spraying unit and accessories.

Warning!
Before working (servicing / repair work / cleaning) on the unit, the entire spraying system must be switched off and depressurized!
To do this, take note of and follow the instruction manual for the spraying unit and accessories used.
Always disconnect the mains plug of the unit for this type of work.

Warning!
When material blockage or material hardening occurs in the spraying system, residual pressures can still be present despite pressure discharge.
Pay full attention to this when performing repair work.
Therefore please disconnect the screw fittings on the flow measuring sensor with particular care. For this purpose wear protective gloves and a pair of safety goggles.
We recommend that you cover screw fittings with a cloth when unscrewing and disconnecting them, in order to absorb any possible material spatter.

The maximum operating pressures specified by us are to be categorically maintained for all WIWA® parts (e.g. pumps, tubes, spray gun, safety valve, flow measuring sensor). At varying operating pressures the lowest value is always valid as the maximum admissible operating pressure for the entire system.
Example:

Pumps	up to 420 bar
Flow meter	up to 400 bar
Material hose	up to 600 bar
Spray gun	up to 500 bar

The maximum admissible operating pressure for the entire system is 400 bar.

Caution!
If the unit is used in outside areas, a lightning strike could be very dangerous for the user.
Never operate the unit during thunderstorms!

2.7 Operating personnel

Authorized operating personnel
Minors under 16 years of age must not operate this unit. The owner of the unit must ensure that the User Guide is available to the user and make sure that the user has read and understood it. Only after that should the user put the unit into operation. **We recommend to the owner of this unit to obtain a written confirmation hereof.** The person operating this unit is obliged to notify the owner of any modification of this unit which might affect its safety, as the owner is responsible for maintaining flawless function of this unit. All responsibilities for the various types of operation with this system must be clearly defined and respected. There must be no vagueness with regard to competences, as this might endanger user safety. The owner must therefore ensure that only authorized persons work with the unit. He shall be responsible towards a third party within the operating area of this system. The owner of this unit is obliged to frequently repeat instructions concerning the dangers and safety measures (minimum once a year, with minors twice a year).

Personal Protective Equipment

We would like to point out that the valid guidelines and stipulations depending on the work environment (mining, closed rooms, etc) must be respected in any case.

Always wear the appropriate protective gloves when working with heated materials.

Always wear the protective clothing stipulated, as solvent fumes and cleaning agent spillage cannot be entirely avoided.

2.8 Emergency procedures

Disconnect mains plugs! / Disconnect the power supply!

Leakages

Warning!
Under very high pressure, material escapes from leakages on the connections and the high-pressure hoses. This can lead to serious injuries to limbs or eyes.

- If system leakages occur, the complete system should be shut down and depressurized **immediately.**
- Never seal leakages with your hand or by wrapping fabric around them.
- Never mend material hoses.

Injuries

- Call a doctor in case of injury and inform him about the coating material and the solvent used (thinner).
- For this purpose, always keep the product safety data sheet (supplier or manufacturer address, their telephone number, material description and the material number) ready for the doctor.
- Keep a list of the local emergency telephone numbers at hand.
- Familiarize yourself with first aid measures.

Fires

- Read and put into operation the stipulations for fire alarm and escape routes displayed at the installation site.
- Only use the extinguishing substances stipulated by the material manufacturer.

2.9 Operating the unit

Setup work, maintenance, servicing and repair work
Before starting this work:

- Switch off the unit.
- Depressurize the unit and the entire system. Pay attention to the residual pressure in the system.
- Only clean the unit externally. Do not use any cleaning agents that contain solvents.

Activity	Qualification of personnel
Setup work	instructed user
Maintenance work	instructed user
Cleaning work	instructed user
Servicing work	personnel trained by WIWA® customer service
Repair work	personnel trained by WIWA® customer service

- Check complete system function after conclusion of the work.

2.10 Transporting the unit and additional components

- Before transporting the flow measuring sensor please clean it with cleaning agents recommended by the material manufacturer.
  Note: Cleaning is effected through cleaning the spraying system.
- Disconnect the entire system power supply, even for short transport distances.
- Disconnect the mains plug.
- Disconnect the cable connections on the flow measuring sensor.
- Assemble the parts or fittings dismantled for transport purposes before start up and in compliance with the intended use of the system.

The flow meter comprises:
- Control cabinet,
- Gear-type flow measuring sensor,
- External operating unit (optional),
- Data read-out device (optional),
- Connecting elements.

On the unit display is used to enter the following data for each component:
- Mixing,
- permissible delay,
- tolerance,
- K-factor.

During automatic mode the actually available mix is monitored. As soon as this value exceeds or falls short of the admissible tolerances for delay and and deviation for the previously entered target value, the spraying system is automatically shut off.
This error is indicated by an audible signal and a light signal.

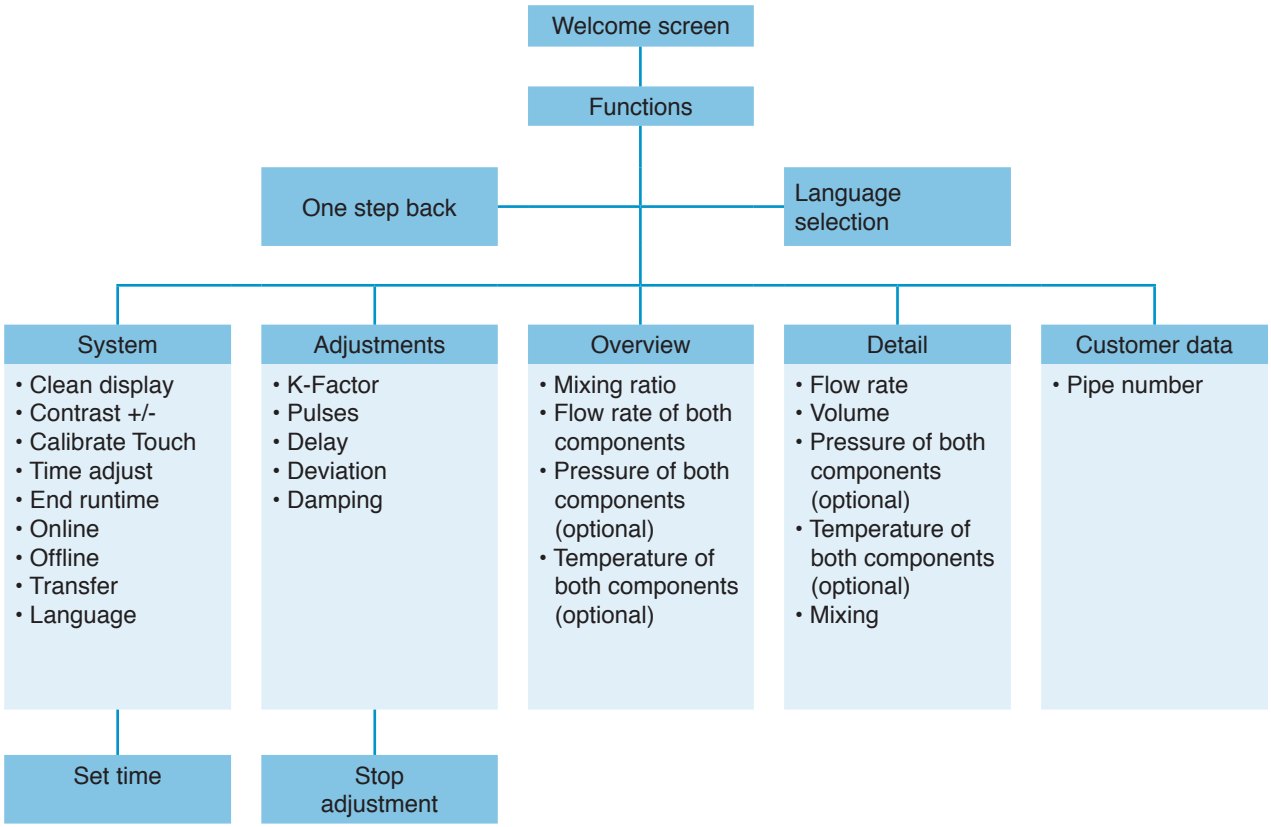
The minimum and maximum product flow of both components can be archived with the optionally obtainable data reader.

Control cabinet and external operating unit

Position	Description	
1	Operating panel / Display	Display and input of the selected data (pulses and flow rate as well as individual components)
2	Illuminated pushbutton (red)	Error detector and buzzer acknowledgement only when in automatic mode
3	Selector switch (green)	Manual or automatic mode
	Manual mode	➤ Switch position left ➤ no illuminated display ➤ Monitoring not activated ➤ Spraying system does not shut down when error occurs
	Automatic mode	➤ Switch position right ➤ illuminated display green ➤ Monitoring is activated ➤ Spraying system shuts down when error occurs
4	RESET button	The interim values are reset Hold down the button for longer than 1 sec: Volume and pulses of the respective batch are reset
5	Key switch (optional)	Switchover of operation internally/externally Switch position ➤ **internally**: external operating unit deactivated ➤ **externally**: switches 2, 3 and 4 on the control cabinet deactivated, only acknowledging of the buzzer is possible

3.1 Operating panel / Display

OVERVIEW OF CONTROL SCREENS



WELCOME SCREEN (Figure 3.1)

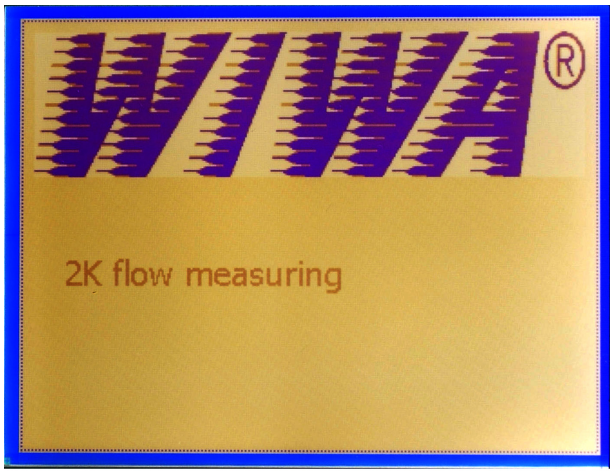


Figure 3.1

➤ After switching on the unit the welcome page is shown on the touch screen display.
You can select any setting and input entries by pressing the screen surface and then the choice you want.

FUNCTIONS (Figure 3.2)

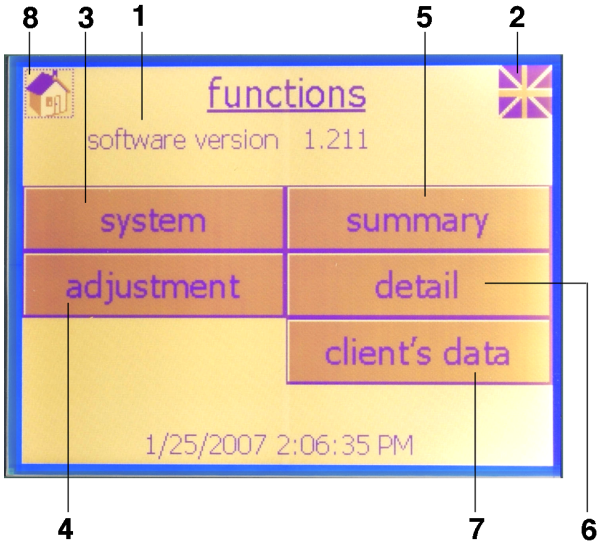


Figure 3.2

Position	Description
1	current software version
2	Language selection
3	Go to the SYSTEM screen display
4	Go to the ADJUSTMENT screen display
5	Go to the OVERVIEW screen display
6	Go to the CUSTOMER DATA screen display
7	Go to the CUSTOMER DATA screen display
8	One step back

LANGUAGE SELECTION (Figure 3.3)

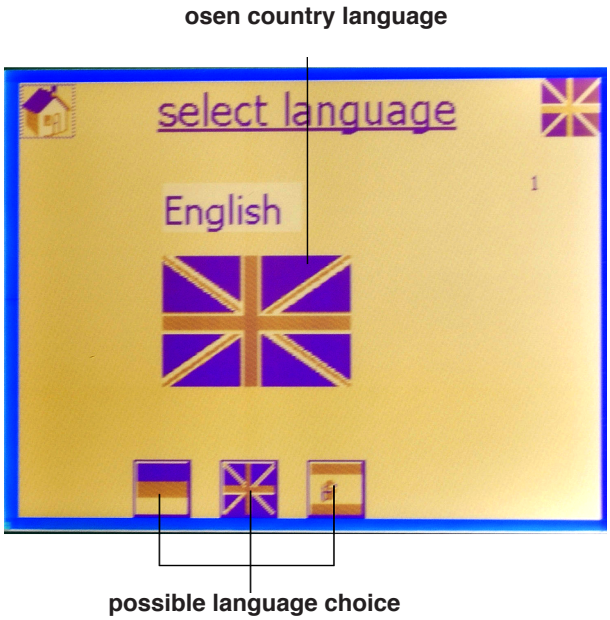


Figure 3.3

- The large country flag display indicates the chosen country language (Figure 3.3).
- You can select your appropriate language by pressing one of the small flag images.

SYSTEM (Figure 3.4)

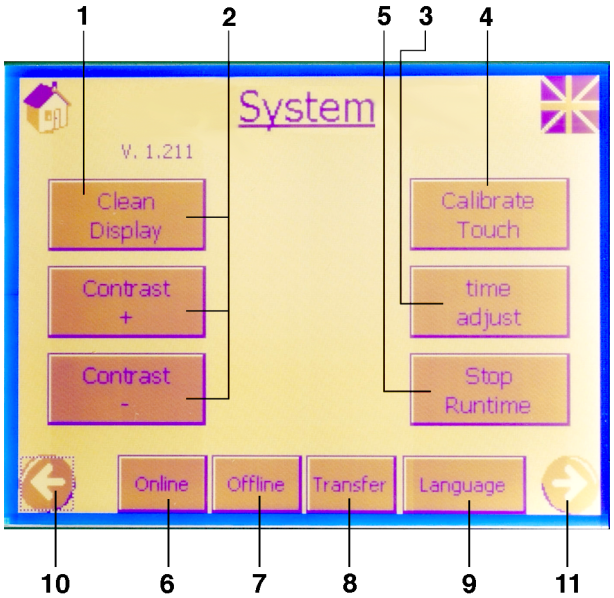


Figure 3.4

Position	Description
1	Clean display ➤ before cleaning the display press on the control panel ➤ all other Touch functions are deactivated for a short time (ca. 1 min)
2	Contrast + / - To adapt the screen display to the local light conditions
3	Set time before starting work, to ensure precise log-ging of the test results
4 - 9	for service adjustments only to be operated by qualified personnel
10 + 11	not in use

SET TIME (Figure 3.5)

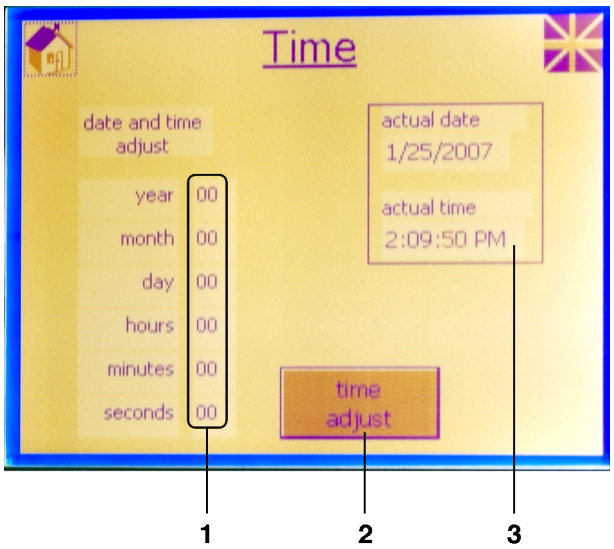


Figure 3.5

Position	Description
1	Change the Year/Month/Day/Hours/Minutes/Seconds ➤ press the appropriate button
2	Set time ➤ To transfer the appointed data into the control system
3	actual values for time and date in the control system

ADJUSTMENTS (Figure 3.6)

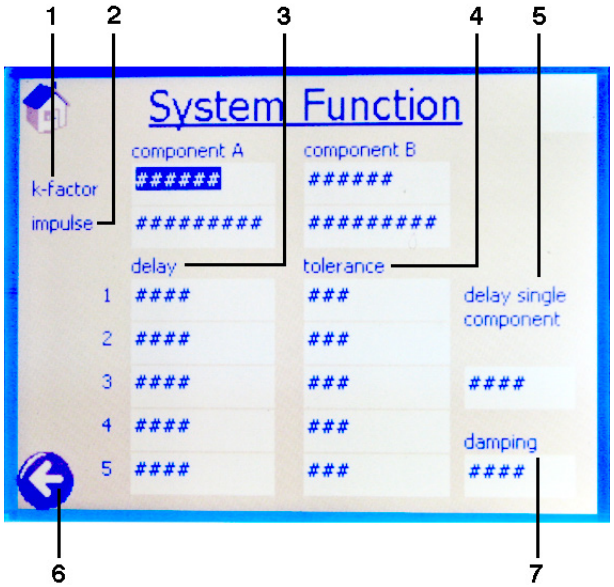


Figure 3.6

Position	Description
1	Displays and input of K-Factors for both components
2	Displays the pulses for both components
3	Display and input of the alarm delay with the time base 10 ms
4	Display and input of the deviation in %
5	Display and input of the single component delay with the time base 10 ms
6	Go to the STOP ADJUSTMENT screen display
7	Display and input of damping for the mixing ratio display in 10 ms steps

STOP ADJUSTMENT (Figure 3.7)

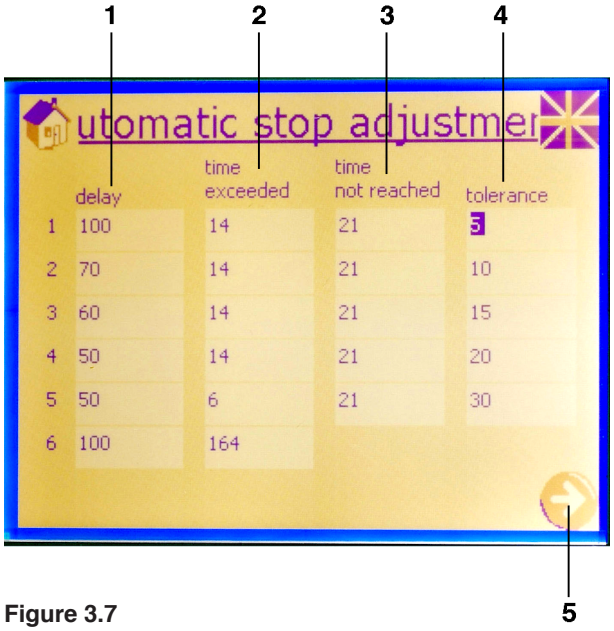


Figure 3.7

Position	Description
1	Display and input of the delay with the time base 10 ms
2	Displays the time exceeded with the time base 10 ms
3	Displays the time not reached with the time base 10 ms
4	Display and input of the deviation in %
5	Go to the ADJUSTMENTS screen display (actual adjustments)

OVERVIEW (Figure 3.8)

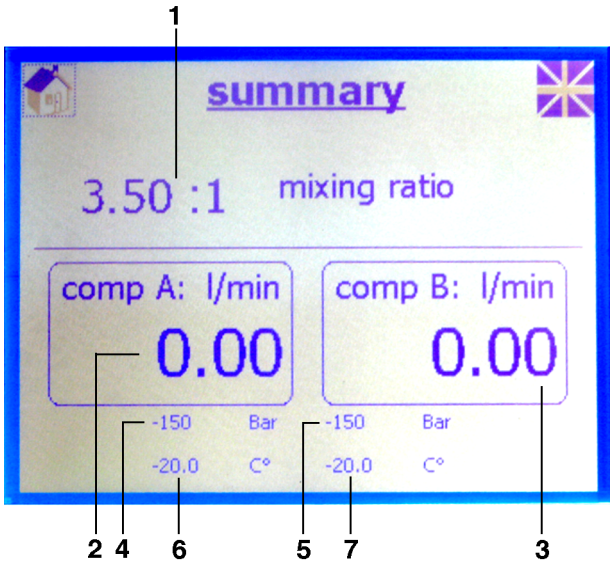


Figure 3.8

Position	Description
1	Display and input of the mixing ratio (ACTUAL/TARGET)
2	Displays the flow rate Component "A"
3	Displays the flow rate Component "B"
4	Pressure reading (optional) Component "A"
5	Pressure reading (optional) Component "B"
6	Temperature reading (optional) Component "A"
7	Temperature reading (optional) Component "B"

DETAIL (Figure 3.9)

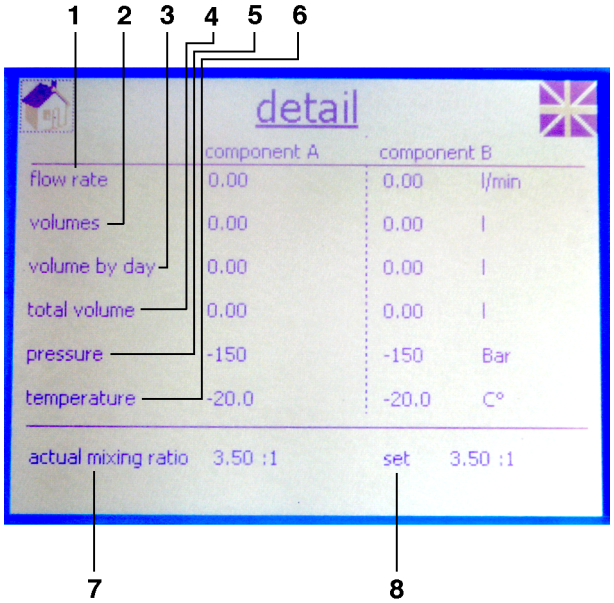


Figure 3.9

Position	Description
1	Displays the actual flow rate for each component
2	Displays the applied material volume per pipe for each component ➤ Metering only occurs in automatic mode ➤ Value is set to "Zero" with the Reset button (hold down the button for at least 1 second)
3	Displays the applied material volume per day ➤ Value automatically resets daily at start of work
4	Displays the total material volume processed by the system
5	Pressure reading for each component (optional)
6	Temperature reading for each component (optional)
7	Displays the actual available mixing ratio
8	Display and input of the required mixing ratio

CUSTOMER DATA (Figure 3.10)

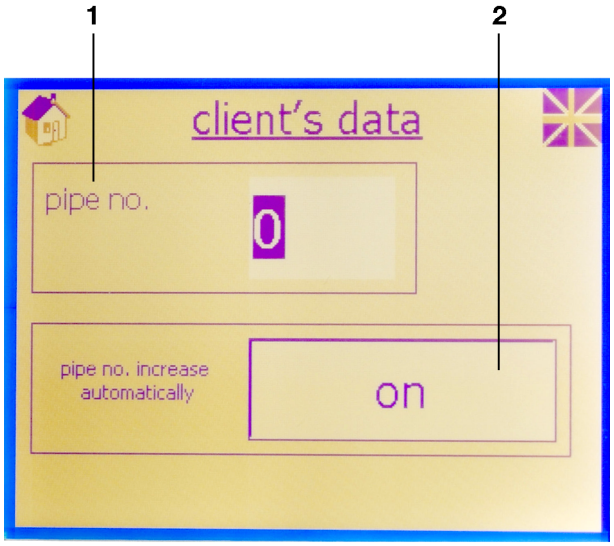


Figure 3.10

Position	Description
1	Display and input of the pipe number
2	Automatic metering of pipe numbers ➤ Metering activated: ON The pipe number automatically increases by 1 when resetting the volume. ➤ Metering deactivated: NO The pipe number must be entered manually.

3.2 Connections on the control cabinet

Figure 3.11

Position	Description
1	Electrical connection
2	Connection of gear-type flow measuring sensors A+B
3	Connection of data read-out device (optional)
4	Buzzer connection

3.3 Gear-type flow measuring sensor

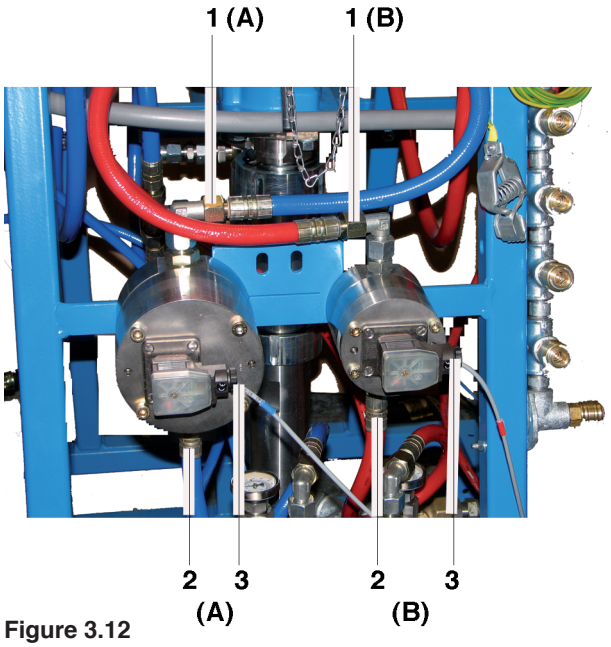


Figure 3.12

Position	Description
1 (A)+(B)	Material hose connection Connection high pressure filter - sensor
2 (A)+(B)	Material hose connection Connection sensor - mixing unit
3 (A)+(B)	Pick-up / cable connection to the control cabinet

4.1 Installation and preparation

The material flow meter can only be operated in conjunction with a spraying system. Respect and follow the regulations in the operating manual for the spraying system and the spraying accessories used.

- Decommission the spraying system to which the flow meter should be connected.
- Depressurize the spraying system.
- Attach the control cabinet firmly to a wall with 4 screws, or directly onto the spraying system. Use the appropriate installation material for the condition of the wall.
- Pay attention to the explosion protection zones!
- All operating elements must be easily accessible.
- Fit the flow measuring sensor between the high pressure filter and the mixing unit of the spraying system. Pay attention to the separate manual for the sensor.
- Tighten all hose connections securely.

Subsequent installation work should only be carried out by persons with electrotechnical training:

- Connect the sensor cables of both components in the control cabinet and to the appropriate pick-up of the gear-type sensor.

Make sure the correct components are assigned by checking against the enclosed wiring diagram.

- If the spraying unit is not grounded, connect an appropriate grounding cable for the flow meter and the item to be coated.
- Before connecting the unit to the mains supply, check whether the prescribed electrical data complies with that available at the installation site.
- Connect the electric cable to the mains supply.

4.2 Initial cleaning

After assembly, this unit was factory tested for flawless function by means of a test substance. In order to avoid the coating material being affected by any residues in the flow measurement sensor, the entire system must be rinsed first with cleaning agent.

- Set the selector switch on the control cabinet to "Manual".
- Undertake the cleaning according to the user guide for the spraying system.

4.3 Pressure control

Risk of injury!
Spraying systems work with high pressures. Material escaping under pressure from connector plugs and leakages can lead to serious bodily injuries and damage to property. Therefore check all material connections and tubes for leak tightness.

- Check pressures as specified in the user guide for the spraying system.
- Check whether all system components are sealed.

Respect the maximum admissible operating pressures for all accessories. At varied operating pressures the lowest value is valid as the maximum admissible operating pressure (see example in Chapter 2.6).

5.1 Preparing the system

1. Connect the unit

- Connect the flow meter as specified in the chapter "Putting into operation".
- Set the selector switch to manual mode.

2. Put the spraying system into operation

- Put the spraying system into operation according to the relevant operation manual.
- Measure all components volumetrically.

NOTE ON VOLUMETRIC MEASUREMENT:

- Adjust to a low pressure for the volumetric measurement (approximately 20 bar).
  Normally it is quite sufficient to run the feed pumps (if present) without having to use the system's pneumatic motor. Check whether you reach the desired pressure during operation.
- The volumetric measurement serves only to determine the characteristics for the flow meter. It does **not** serve to directly check the mixing ratio.
- Open the ball valve completely during volumetric measurement. This minimizes the wear of the ball valve.
- The quantity of the volumetric measurement is irrelevant, however it is recommended to measure a larger quantity volumetrically (approximately 0.8 - 1l, depending on the size of the measuring cup). The calculated factor is thereby more exact, since more readings are available for the unit.
- A template copy of the measurement report for determining desired factors can be found in the Appendix.

3. Carrying out unit adjustments

The material flow rate is affected by the size of the pump, the mixing ratio and the specific material properties of all components.
When performing volumetric measurements the specific material properties must be considered in the pulse count before beginning the spraying operation.

Calibrate the flow meter:

- before the first measurement,
- after any change of material,
- after cleaning the spraying system,
- after all servicing and repair work.

Step	Figure No.	Description
1.		Completely restore all volume and pulse readings (hold down the RESET button for at least 1 second)
2.		Measure all components volumetrically (see note about volumetric measurement) Follow the instructions in the operating manual for the spraying unit!
3.	3.6 Pos. 2	Recall the component pulses
4.		Determine the pulse count (K-Factor, IMP/l) for each component $K = \frac{\text{xxxx (IMP)}}{\text{Volumetric measurement capacity (l)} \cdot 4}$
5.	3.6 Pos. 1	Enter the K-Factors for each component
6.	3.9	Enter the desired mixing ratio
7.	3.6 Pos. 3 + 4 + 5	Enter delays[1] with the time base 10 ms and permissible alarm deviations[2]
8.	3.7 Pos. 2 + 3	Enter the damping value for the mixing ratio in 10 ms steps Caution! No damping at "0"
9.		Set the selector switch on the control cabinet to "AUTOMATIC"

1) **Delay:** during this time incorrect mixing is allowed
   - Enter the specification values as required (empirical values)
2) **Alarm deviation:** permitted deviation from the entered target value
   - Take value 1 from the data sheet of the material manufacturer,
   - Enter specification values 2, 3, 4, and 5 as required (empirical values)

- **The greater the values for delay and deviation, the greater the authorised mixing inaccuracy!**
- **All values above zero input!**

5.2 Retrieving test readings

Exceeding or falling below of the mix / STOP ADJUSTMENT (Figure 3.7)

The diagnostic values are updated only in AUTOMATIC MODE and reset immediately with the RESET button.

- In the STOP ADJUSTMENT screen display the metering deviations for each delay are recorded.
  The readings of value 6. refer only to single component processing.
- If the length of the maximum alarm deviation is not to be tolerated, the delays (Figure 3.7, Pos. 1) and the tolerances (Figure 3.7, Pos. 4) can be corrected directly on this screen.

FLOW RATE / DETAIL (Figure 3.9)

- In the DETAIL screen display the consumed material volume - processed by the system per pipe / per day / in total - is shown.
- The current mixing ratio is changeable by entering a new target value.

Information and quantity of pipe numbers / CLIENT'S DATA (Figure 3.10)

- In the CUSTOMER DATA screen display the quantity of coated pipes can be read.
- Activate the metering automatism as needed.

5.3 Error

If a metering error occurs during coating work in automatic mode, this will be indicated on the display with a warning triangle (Figure 5.3.1).
In addition an audible signal will sound and the error indicator light on the control cabinet flashes red.

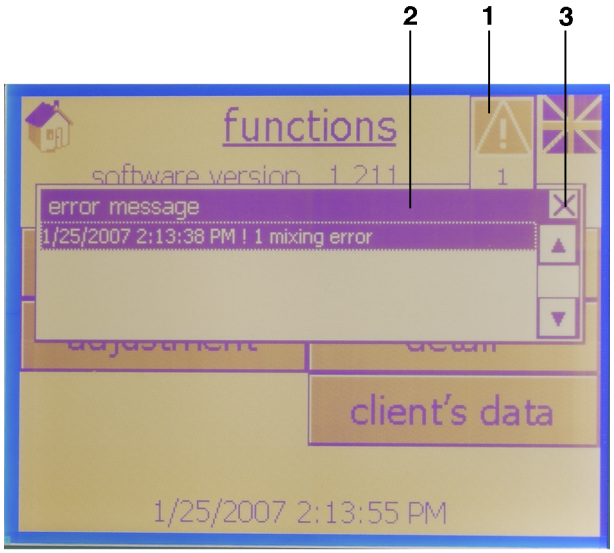


Figure 5.3.1

Position	Description
1	Warning triangle - Caution! Error!
2	Error message - information on the type of error
3	Close the error indicator window

- Press the symbol on the screen to find out more detailed information about the error.
- Acknowledge the resulting error report:
  - Press the red illuminated button to stop the buzzer.
  - Close the error message window on the display by clicking on the cross in the upper right corner of the window.

    The error message symbol automatically disappears when the error has been eliminated.
  - Change to manual mode to acknowledge the error on the control cabinet and then press the ERROR button.

Switch back to automatic mode after eliminating the error, so that the monitoring is activated again.

5.4 Shut-down

Also observe and follow the separate user guide for the gear-type sensors and the operating manual for the spraying unit used.

- Disconnect the mains plug on the unit.

5.5 Cleaning

- Only clean the control cabinet externally with a slightly damp cloth. Use only cleaning agents that are solvent-free.
- Operate the CLEAN DISPLAY option on the SYSTEM screen display (Figure 3.4) before cleaning the display, so that no settings are changed.
- Clean the flow measuring sensor during the spraying system rinsing procedure.
  Observe and follow the separate user guide for the gear-type sensor for this.

5.6 Servicing

- To guarantee exact test readings, the gear-type sensors must be checked regularly.
  - Check the default values used for pulse and volume of both components with the test readings.
  - The default values must be in the admissible tolerance range (see table).
  - Clean the sensors in case of deviations, or replace them.

- The servicing interval is dependent on the condition of the material (e.g. abrasiveness and viscosity).
  We recommend carrying out servicing
  - once a month
  - immediately if there is a mixing ratio error

Admissible tolerance ranges

Difference*	Remedy
> 100 - 300	Sensor is stiff ➤ Clean or replace sensor
> 50 < 100	Repeat measurement more often: ➤ According to the trend of the measured values ➤ Remedy as for < 50 and >100
< 50	Repeat measurements regularly Cause of fault: ➤ Slow wearing of the sensors ➤ Clogging of the sensors

*) The stated values are reference values and strongly dependent on coating material and the sensors used!

Inspection of the gear-type sensors

Step	Figure No.	Description
1.		➤ Heat up the material (processing temperature) ➤ Ventilate the system by circulating the material ➤ Operate the system with **low** air input pressure: max. 4 DH/min
2.	3.8 or 3.9 3.6	Stop circulation ➤ No flow of material through the gear-type sensors ➤ Cessation of impulses
3.		RESET button: zeroise impulses ➤ Hold down the button for longer than 1 sec: Volume and pulses of the respective batch are reset
4.		➤ Place empty and clean containers under each check valve ➤ Open check valve (lever down). **Caution!** Material can squirt out ➤ Fill the container and close the check valve
5.	3.6	Read the pulses of both components and record these in the template (see Appendix)
6.		Read the volumes in the containers and record these in the template (see Appendix)
7.		Calculate the pulses per litre and record in the template (see Appendix) $K = \frac{\text{xxxx (IMP)}}{\text{Volumetric measurement capacity (l)} \cdot 4}$
8.		Repeat steps 3- 7, 3 - 4 times
9.		Generate the average value from the calculated pulses
10.		Establish the differential between the pulses used and the calculated average values
11.	3.6	Input impulses after cleaning or replacement of sensors

6.1 Technical data

For the entire flow meter:

Operating voltage:	230 V / 50 HZ
Control voltage:	24 V DC
Rated current:	2 A
max. pre-fuse:	16 A

for the individual measuring sensors:

Measurement range:	Component A: 0,3-60 l/min
	Component B: 0.16-16 l/min

6.2 Reference to other documentation

If internet access is available, you can retrieve other documentation on particular flow meter components from the internet.
For this go to the following page:

http://support.automation.siemens.com

Now enter the product-specific ID number in the upper right search field.
Thereafter you can view or download a PDF file of the relevant instructions.

Siemens components inside the flow measuring device:

Product description	Product ID Number
CPU (control system)	1109582
TP177 MICRO (Display)	21086325
Power supply unit	11755097

6.3 Measurement report on monitoring of the gear-type sensors

Minute taker: _____

Date: _____

Component A					
Charge-No. _____					
Material description _____					
Sensor					
Type _____					
Serial No. _____					
	1. Measurement	2. Measurement	3. Measurement	4. Measurement	5. Measurement
F6 - pulses read					
Volumes read (measuring cup)					
Pulses calculated K-factor = (IMP, read) / (Volumes, read) x 4					
Sum of calculated pulses					
Establish mean value mean value = (total, IMP) / no. of measurements					
Pulses used					
NEW pulses adjusted (if necessary)					

Notices:

Sign: _____

Seite 2 - Measurement report on monitoring of the gear-type sensors

Minute taker: _____

Date: _____

Component B					
Charge-No. _____					
Material description _____					
Sensor					
Type _____					
Serial No. _____					
	1. Measurement	2. Measurement	3. Measurement	4. Measurement	5. Measurement
F6 - pulses read					
Volumes read (measuring cup)					
Pulses calculated K-factor = (IMP, read) / (Volumes, read) x 4					
Sum of calculated pulses					
Establish mean value mean value = (total, IMP) / no. of measurements					
Pulses used					
NEW pulses adjusted (if necessary)					

Notices:

Sign: _____

because it works

Headquarter and production

WIWA Wilhelm Wagner GmbH & Co. KG
Gewerbestr. 1-3
35633 Lahnau, Germany

Tel.: +49 6441 609-0
Fax +49 6441 609-50

E-Mail: info@wiwa.de
Homepage: www.wiwa.de

WIWA partnership in USA

WIWA LP
107 N. Main St.
P.O. Box 398, Alger, OH 45812

Tel.: +1 (419) 757-0141
Fax: +1 (419) 549-5173
Toll Free: +1(855) 757-0141

E-Mail: jwold@wiwalp.com
Homepage: www.wiwalp.com

WIWA subsidiary in China

WIWA Taicang Co., Ltd.
Building A of Huaxin Industrial Park
No.11 East Qingdao Road, Taicang City
Jiangsu Province 215400, P.R.China

Tel.: +86 512-5354 8858
Fax: +86 512-5354 8859

E-Mail: info@wiwa-china.com
Homepage: www.wiwa-china.com

WWW.WIWA.DE

Your contacts throughout the world

Michel Laksander
Sales Representative
France

2 Bis rue de léglise
F-02240 Brissy Hamegicourt, France

Tel.: +33 32 36 21 120
Mobil: +33 63 70 19 297

E-Mail: laksander@orange.fr

Wolfgang Pucken
Sales Director
North of Germany, Israel, Hungary, Romania, Turkey, Poland, Malta, India, Pakistan, Africa, Morocco

Frankenstraße 37
53359 Rheinbach-Oberdrees, Germany

Mobil: +49 173 5432559
Tel.: +49 2226 12708
Fax: +49 2226 13973

Robert Jansen
Sales Director
Finland, Sweden, Norway, Denmark, Scotland, England, Holland, Belgium, France, Spain/Portugal, Italy, Croatia, Greece, Czech Republic, Slovakia, Slovenia, Luxembourg, Bulgaria, Egypt, Libya, Dubai, Abu Dhabi, Catar, Bahrain, Kuwait, Saudi Arabia, Iran, Oman

Rietgans 38
3752 KH Bunschoten, Netherlands

Mobil: +31 6 18 88 40 97
Tel.: +31 33 494 69 81
Fax: +31 33 494 75 83

E-Mail: rob.wiwa@gmail.com

Otto Dietrich
Sales Director
Russia, Ukraine, Belarus, Moldavia, Lithuania, Latvia, Estonia, Azerbaijan, Georgia, Armenia, Kazakhstan, Uzbekistan, Kyrgyzstan, Turkmenistan, Tajikistan

Lindenhof 6
56154 Boppard, Germany

Mobil: +49 160 1574385
Tel.: +49 6742 899336
Fax: +49 6742 899337

E-Mail: o_dietrich@wiwa.de

John Berry
Sales Director
Mexiko, Mittelamerika
Callejon del Arrastradero 204
Col. Ocotepec, Morelos
Cuernavaca, 62220, Mexico

Mobil: +52-777-289-4275
Tel./Fax: +52-1-777-323-9931

E-Mail: j_berry@wiwa.com

Esteban Restrepo
Sales
Chile, Kolumbien, Ecuador, Peru

Mobil: +57-321-2858501 or +57-300-467-7887
Tel.: +57-1-466-2345

E-Mail: e_restrepo@wiwa.com

JK Tan
Sales Director
Korea, Japan, Australia, South East Asia

Mobil: +6012 223 7706
Tel./Fax: +603 8024 7706

E-Mail: jktan@wiwa.com