

The logo for vibronet features the word "vibronet" in a blue, sans-serif font. The letter "o" is replaced by a circular icon with horizontal lines. The logo is enclosed in a red rectangular border, which is part of a larger red horizontal line that spans the width of the page.

## THE WATER SPECIALIST

CEREAL DAMPENING AND ONLINE CONTROL SYSTEMS

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# VIBRONET®

INNOVATIVE SYSTEMS FOR CEREALS, PULSES AND DRY BULK SOLIDS

## RAW MATERIAL CONTROL AND TREATMENT

<b>VIB-CHECKPOINT®</b>	<b>HL/KG</b>	online hectolitre weight measurement for granular bulk solids	<b>1</b>
<b>VIB-PROTEIN®</b>	<b>PROTEIN</b>	online protein measurement for granular and powdery bulk solids	<b>2</b>
<b>VIB-THERMOCABINET®</b>	<b>+°C</b>	heating system for cereals and granular bulk solids	<b>3</b>

## MOISTURE CONTROL AND WATER ADDITION

<b>VIB-MMS®</b>	<b>H<sub>2</sub>O · °C · HL</b>	online automatic moisture control and water dosage	<b>4</b>
<b>VIBRONET®</b>	<b>+ H<sub>2</sub>O</b>	patented cereal and pulse dampener for drastic temper time reduction	<b>6</b>
<b>VIB-SMC®</b>	<b>H<sub>2</sub>O · °C</b>	online temper time and water addition control for granules	<b>8</b>
<b>VIB-HUMIDIFIER®</b>	<b>+ H<sub>2</sub>O</b>	continuous water addition to flour, fine bran and powder	<b>9</b>

## WEIGHING

<b>VIB-SMW®</b>	<b>KG/H</b>	continuous scale for online flow metering of granules and powders	<b>10</b>
<b>VIB-TS®</b>	<b>KG/H</b>	volumetric throughput control intg. in VIB-MMS® mounted to vibronet®	<b>4</b>

## PROCESS CONTROL

<b>VIB-CC®</b>	<b>◀▶</b>	online colour and ash control for flour, fine bran and powders	<b>11</b>
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## INNOVATIONS FOR CEREAL AND PULSE CONDITIONING AND BULK SOLIDS PROCESSING SINCE 1992

vibronet®-Gräf GmbH & Co. KG Cereal Damping Systems stands for innovative high quality products for food and feed made in Germany. With its patented vibration damping system and complementary online control systems, vibronet® has been a pioneer in the field of research and advanced technologies for dramatically reduced temper times and simpler production processes since 1992. Based in the heart Germany, the vibronet® name stands for competence and product diversity made for millers and cereal processors all around the world.

To supplement its scientifically proven patented vibration dampening system, the company offers a coordinate range of systems for online process control:

- exact automatic moisture controllers and water dosage units
- precise continuous flow metering systems for granular or powdery bulk solids
- accurate online temperature, moisture, protein and specific weight control systems
- cereal and granular bulk solids heating cabinets
- intensive powder hydration mixers
- online colour control techniques for powdery bulk materials



## SUPERIOR FLAKES – HIGHER YIELD – MINIMAL TEMPER TIME VIBRONET® - ALWAYS ONE STEP AHEAD

Always one step ahead of global market requirements and trends, not just fulfilling our customers' expectations but to always go one step further - this is what we strive to do every day. We constantly work on innovative solutions, industrialize new technologies and develop existing ones further to be prepared for the production engineering demands of tomorrow. Continuous innovation, customer-oriented product development and outstanding service for our customers are what make vibronet® stand out.

In order to achieve optimum results, consulting and application technology services are our highest priority. Few other companies put as much effort into the development of individual solutions for their customers as we do. vibronet® does not offer off-the-shelf systems but integrated solutions tailored to individual requirements. At vibronet® we take time for our customers' questions and wishes. We always provide a thorough consultation, regardless of where our customer is situated worldwide. Whether it is production optimisation or the development of new products - vibronet® has gained decades of practical experience and knowledge in various industries worldwide which you can and should lucratively use for the success of your company.

Dipl.-Ing. Dieter Otto Gräf  
M.Sc. Engineering and Milling  
CTO  
Company Founder



# VIB-CHECKPOINT®

## ONLINE HECTOLITRE WEIGHT [KG/HL] CONTROL FOR GRAIN AND GRANULES



**VIB-CHECKPOINT®** is a precise continuous control system for hectolitre weight (specific weight/ test weight/ volume weight/ bulk density), temperature, moisture and protein (option) of all free flowing granulated materials such as cereals, pellets, etc. at raw material intake and for blending in the production process. The system works fully automated and guarantees laboratory results at online operating conditions.

### ADVANTAGES

- Precise automatic measurement of the test weight [kg/hl]
- Continuous quality registration
- Product quality improvement due to effective product monitoring
- Fully automatic optimization of product mix
- Easy process control
- Laboratory near results at online operating conditions

### APPLICATIONS

- Accurate adjustment of the roller mill grinding gap
- At grain and raw material intake or during production
- Automatic silo bin selection after the first cleaning process
- Process control during production
- Quality control during loading

### FUNCTION

Sensors measure the temperature and initial moisture content of the product. The hectolitre weight is measured batch wise within a fixed time interval. The microprocessor determines the current hectolitre value, as well as its average accumulated value based on this measurement and on the data from the temperature and moisture sensors. An integrated printer can print continuous lists [OPTION] as proof to ensure product traceability.

### OPERATING PRINCIPLE

The system consist of a control panel with colour touch screen with easy menu guidance, as well as a stainless steel measuring section. The microprocessor determines and displays online:

- Hectolitre weight [kg/hl]
- Actual moisture [H<sub>2</sub>O%]
- Product temperature [°C]
- Protein [%] (optional)
- Minimum, maximum, mean value
- Limit value monitoring
- Integrated printer [OPTION]
- Registration of up to 200 fillings

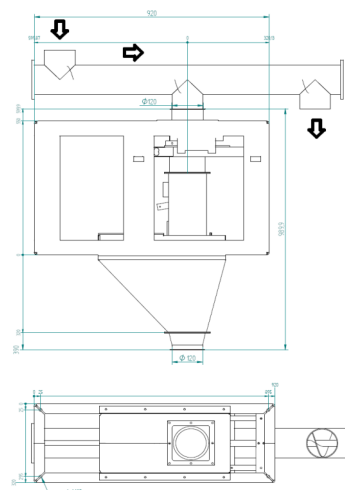
### OPTION

For complete inspection and process monitoring, install the system in combination with the online protein control system **VIB-PROTEIN®**

### TECHNICAL DATA\*

PRODUCTS	Free flowing cereals, grains pulses and granules
MEASURING RANGE	Product-specific calibration
VOLTAGE	120/230VAC, 50 – 60Hz
AIR PRESSURE	4 - 6 bar
VISUAL DISPLAY	Multi-lingual 6" colour touch screen menu-driven
ALARM CONNECTION	Potential-free contacts max. 230 V, 3A
ETHERNET/ PROFIBUS/ PROFINET	Optional
ANALOGUE OUTPUT	4 – 20 mA
DIMENSIONS MEASURING UNIT	LWH (mm)= 920 x 320 x 990
DIMENSIONS CONTROL PANEL	LWH (mm)= 500 x 210 x 500

\*Subject to modifications



# VIB-PROTEIN<sup>®</sup>

## ONLINE PROTEIN MEASUREMENT FOR CEREALS AND POWDERS



**VIB-Protein<sup>®</sup>** is an advanced Near Infrared (NIR) measurement system which continuously controls protein and moisture of grain and powder products during intake or production. Used in a wide variety of industrial processes, it provides off-line accuracy under on-line operating conditions.

- Continuous process and quality control
- Robust build and hygienic stainless steel design
- Ensures uniform product qualities
- Automated optimization of product mix
- Increased production efficiency

### ADVANTAGES

- Automatic online protein control for grain, pulses and powdery products (e.g. flour, fine bran, etc.)
- Laboratory-near results under online operating conditions
- Automated optimization of product mix
- Energy and raw material savings through more efficient blending
- Automatic evaluation at receiving section and selection of storage location
- Electronic discharge control of the bulk bins for automation of product mix
- Ensures uniform product quality
- Easy installation and simple retrofit

### STRUCTURE

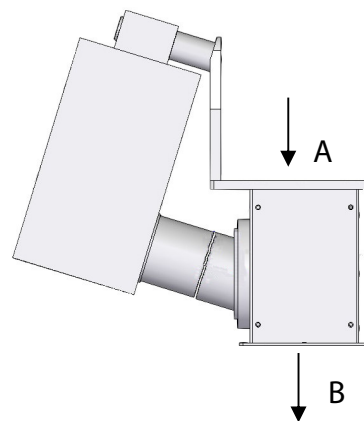
An online sampling system for grain and powders is installed in a bypass of the main production flow of free falling or pneumatically conveyed material. The measuring unit consists of a sensor mounted to a stainless-steel space saving measuring channel and an electronic evaluation unit.

### OPERATING PRINCIPLE

Several molecular bonds absorb near infrared light at a defined wavelength. The common bonds in proteins are N-H, in water O-H. The absorbance level at these specific wavelengths is proportional to the quantity of that constituent in the material. Filters within the measuring unit transmitter create a sequence of light pulses. These illuminate the product and the reflected light is collected by a detector. The electric signals generated by the detector are then processed to provide a value in percent or other engineering units that is proportional to the concentration of the measured constituent.

### OPTION

For complete inspection and process monitoring, install the system in combination with the online hectoliter weight control [kg/hl]: **VIB-CHECKPOINT<sup>®</sup>**



### TECHNICAL DATA\*

PRODUCTS	Free flowing granular and powdery material
MEASURED PARAMETERS	Up to 3 simultaneously : protein, water, fat
CALIBRATION	10 products standard, up to 50 on request
CAPACITY RANGE	≤ 12 tph / >12 tph installation in a bypass
MOISTURE RANGE	Min. 0.1% - max. 95%
AMBIENT TEMPERATURE	0-50°C (32-120°F); up to 80°C (160°F) with water or air cooling panel
ACCURACY	Moisture range: +/-0.1%* protein range: +/-0.3%*
POWER	90-260VAC, 50/60Hz, 40 Watts, 24VDC optional
OUTPUTS	4x 4-0mA and 0-10V (isolated), RS232, RS485
OPERATOR INTERFACE	For wall mounting, multi-language color touch screen LCD
OPTIONAL	Remote display, Ethernet TCP/IP, DeviceNet, Profibus, Modbus
DIMENSION [LxWxH] [mm]	Measuring unit : 600x 300x 770 / operator interface: 254x 165x 75

\*according to application

# VIB-THERMOCABINET®

## CEREAL HEATER FOR OPTIMUM PROCESSING TEMPERATURE



The **VIB-THERMOCABINET®** is engineered specifically for heating free flowing bulk solids such as cereal, grain, pulses, and granules. Grinding of cooled or cold cereals always means a loss in quality. By using the **VIB-THERMOCABINET®** the cereal temperature can be adjusted to an even temperature of approx.  $\pm 20^{\circ}\text{C}$  [ $\pm 68^{\circ}\text{F}$ ], thus achieving stable and good grinding results.

### ADVANTAGES

- Higher total yield
- More light-coloured flour
- Lower mineral contents
- Better grinding properties
- Uniform end product granulation
- No additional adjustment of conditioning time
- Optimal water absorption and water distribution in the kernel
- Compensation of batch temperature differences

### FUNCTION

The **VIB-THERMOCABINET®** is integrated into the normal cleaning diagram and is directly installed in front of the vibration dampening system **vibronet®**. It can be connected to a normal heating system using hot water. Due to the vertical modular design, the free flowing cereal or granule slowly passes downward by gravity between a series of vertical heat exchange boxes. Hot water as heat transfer media flows through the boxes to heat the material by conduction. The multiple outlet discharge creates uniform product velocity through the heater and regulates the product flow rate.

### STRUCTURE

- Inlet element with built-in sensor for monitoring the discharge unit
- Modular construction, number of segments according to capacity
- Control panel with frequency converter
- Base frame with multiple outlet
- Discharge unit with discharge screw conveyor

### SLOW AND CONTROLLED PRODUCT FLOW

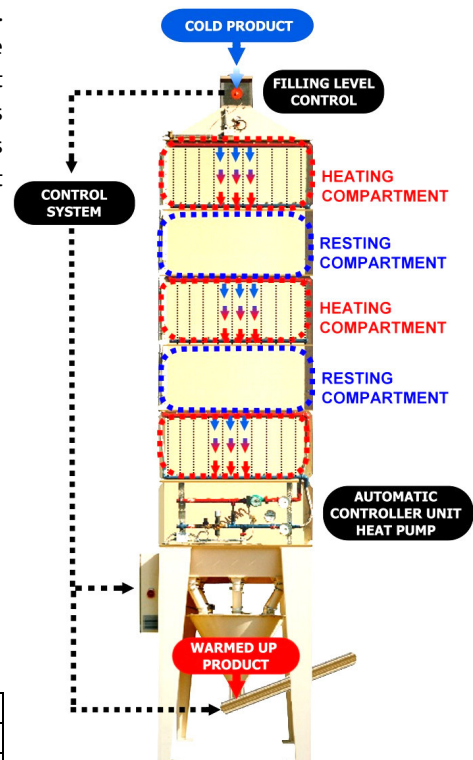
### INDIRECT HEATING FOR UNIFORM FINAL PRODUCT

### VERTICAL DESIGN FOR GRAVITY FLOW THROUGH SYSTEM

### TECHNICAL DATA\*

PRODUCTS	free flowing cereals, grains pulses and granules
ENERGY CONSUMPTION	approx. 8 kW / t / h
HOT WATER SUPPLY	90°C / 194°F
DIMENSIONS HEATING COMPARTMENT	LWH [mm] 1,200 x 1,000 x 595
DIMENSIONS RESTING COMPARTMENT	LWH [mm] 1,200 x 1,000 x 595
DIMENSIONS SUBSTRUCTUR	H [mm] 1,985 with multi-outlet
DIMENSIONS INLET	H [mm] 590
DIMENSIONS CONTROL PANEL	LWH [mm] 210x760x760

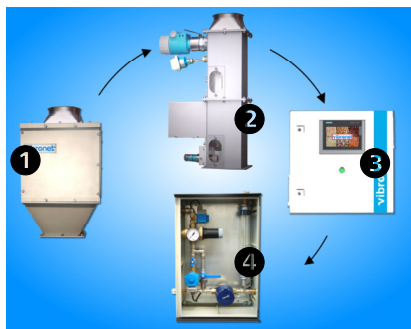
\*Subject to modifications





# VIB-MMS<sup>®</sup>

## ONLINE AUTOMATIC MOISTURE CONTROL AND WATER DOSAGE



**VIB-MMS<sup>®</sup> is an automatic moisture control and water dosage system for all free flowing cereals and pulses to ensure a constant moisture level in grain and end products for optimal plant performance. Optional is an integrated continuous flow metering system for throughput measurement. The system consists of four modular robust components: scale, moisture measuring section, control panel, and water dosage unit.**

### ADVANTAGES

- Accurate detection of initial moisture content
- Precise automatic water dosage
- Exact hectoliter weight (specific weight/test weight) measurement
- Rigorous flow metering of throughput rate
- Compact and robust design
- All dry and free flowing cereals and granular products

### FUNCTION

#### 1 [KG/H] THROUGHPUT MEASUREMENT = VIB-SMW<sup>®</sup> OR VIB-TS<sup>®</sup>

The **VIB-SMW<sup>®</sup>** throughput control is an exact and very robust build continuous stainless steel flow meter for up to 50tph with a high measurement accuracy of  $\pm 0.2\%$ \*. The unit has a very low overall height and is practically maintenance-free due to no mechanical moved parts.

The volumetric throughput control **VIB-TS<sup>®</sup>** is a space saving and economic alternative if mounted together with a vibration dampener **vibronet<sup>®</sup>**. The sensor is mounted directly at the discharge unit of the dampener for a volumetric throughput measurement and requires no extra space or maintenance.

#### 2 [H<sub>2</sub>O%] MOISTURE MEASUREMENT = VIB-MEASURING UNIT

The stainless steel measuring channel is of very compact and robust built. It continuously measures the initial product parameters moisture [%], temperature [°C] and hectolitre weight (bulk density) [kg/hl] of all free flowing granular material such as e.g. cereals, pulses, etc. It is installed in front of the vibration dampener\* or any other dampening system.

#### 3 [+/-] DATA PROCESSING = VIB-MICROPROCESSOR

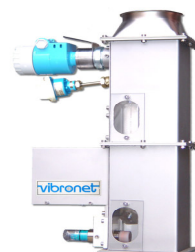
The control panel with color touch screen powered by SIEMENS has an easy menu guidance and calculates the necessary water addition to reach the desired target moisture. Display and calculation of (amongst others):

- |  |  |
|--|--|
| ▪ Currently selected product [10 products]             | ▪ Throughput [kg/h]                          |
| ▪ Actual Moisture /Target Moisture [H <sub>2</sub> O%] | ▪ Throughput Counter: Pre-set and Totalizing |
| ▪ Actual Water/ Target Water [l/h]                     | ▪ Alarm/Pre-Alarm Status with Delay Time     |
| ▪ Actual Hectolitre Weight [kg/hl]                     | ▪ 72h Graphic Visualization                  |
| ▪ Actual Product Temperature [°C]                      | ▪ Analogue Output /Impulse Output            |
| ▪ Totalising Counter Actual Water [m <sup>3</sup> ]    | ▪ Automatic and Manual Operation             |

#### 4 [+H<sub>2</sub>O] WATER ADDITION = VIB-WATER DOSAGE

The water dosage cabinet doses the precisely calculated liquid quantity directly into the vibration dampener **vibronet<sup>®</sup>** or any other dampening system. Operable in automatic or manual mode. Available with integrated heating and in PVC version. For water and water with soluble additives. Available also as a manual water dosage unit without housing **VIB-ECONO<sup>®</sup>**.

When mounted together with a **vibronet** dampener **vibronet<sup>®</sup>**, the water dosage is mounted space saving into the water distribution cabinet of the dampener.



\*All specified accuracies are related to the full scale reading at calibrated flow rate.



## TECHNICAL DATA\*

PRODUCTS	Dry, cleaned, free flowing cereals, pulses and granules
WATER ADDITION	- Water, water with soluble additives - Constant, filtered
DESIGN MEASURING UNIT	- Robust stainless steel - Rhino Hyde or stainless steel wear protection - Version I. capacity ≤ 12.5tph [basis: dry, cleaned wheat] - Version II. capacity ≤ 1 tph [basis: dry, cleaned wheat] [for larger throughputs: installation in a bypass]
DESIGN WATER DOSAGE CABINET	- Stainless steel cabinet - ½" / ¾" / 1" connection [according to l/h] - For automatic or manual water dosage - Capacity according to customer requirement
DESIGN CONTROL PANEL	- Cabinet for wall mounting powered by Siemens, painted RAL 9003 - Colour touch screen, menu-driven, multi-lingual - Potential-free contacts, max. 230 V, 3A - Analogue output 4 -20 mA / Impulse output - Ethernet/Profinet interface
MEASUREMENT RANGE	Product-specific calibration, 10 products
TEMPERATURE RANGE	0- 55°C
WATER CONNECTION	min. 3-4 bar operating pressure [according to l/h]
DIMENSION MEASURING UNIT [LWH] [mm]	Version I : 180 x 410 x 614 Version II : 180 x 410 x 555
DIMENSIONS CONTROL PANEL [LWH] [mm]	600 x 210 x 600
DIMENSIONS WATER DOSAGE [LWH] [mm]	400 x 200 x 600 [Standard Version]
DIMENSIONS THROUGHPUT CONTROL [LWH] [mm] [OPTION]	VIB-SMW®: ≤ 12.5 tph: 350 x 350 x 490 ≤ 25 tph: 530 x 388 x 607 ≤ 50 tph: 536 x 586 x 1.251 VIB-TS®: Mounted directly to vibronet® discharge unit at no extra space
WEIGHT [INCL. CONTROL PANEL]	approx. 60 kg
OPERATING VOLTAGE	120/230V, 50-60Hz
CONNECTED LOAD	0.3 kW
CABLE LENGTH	5 m [longer cable upon request]
OPTIONS	- ATEX zone 22 - Stainless steel wear protection - Water dosage integrated in vibronet® vibration dampener water cabinet - Equipped for water with corrosive additives - Integrated heating - Integrated fine water filter/ backwash water filter - Profibus, Ethernet/Profinet for remote control [others on request] - Integrated throughput measurement VIB-TS®/VIB-SMW® - Integrated temper time control VIB-SMC®

\*Subject to error and technical modification

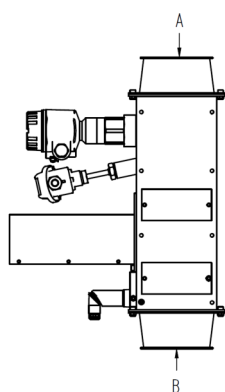


Fig.1: VIB-MMS® measuring unit

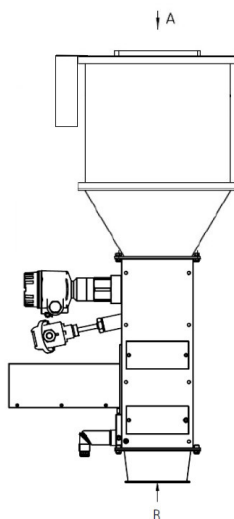


Fig.2: VIB-MMS® measuring unit with continuous scale VIB-SMW®

# vibronet®

## PATENTED CEREAL DAMPENING SYSTEM FOR DRASTIC TEMPER TIME REDUCTION



### THE END OF TEMPER TIME

The vibration dampener vibronet® vertical dampening system to drastically reduce cereal temper time, energy cost and bacteria count to an absolute minimum. The system offers a very energy-efficient cereal preparation with any water-soluble liquid.

### APPLICATIONS

- Preparation of cereals (wheat, rye, barley, oats, corn, spelled, malt, etc.)
- Preparation of pulses (cocoa, coffee, etc.)
- Before steaming, cooking or Infrared-Micronizing
- Optimal uniform humidification before flaking
- Addition of seed treatment or fertilizer, etc.
- Addition of water-soluble additives: fungicides, insecticides, etc.

### ADVANTAGES [scientifically proven\*\*]

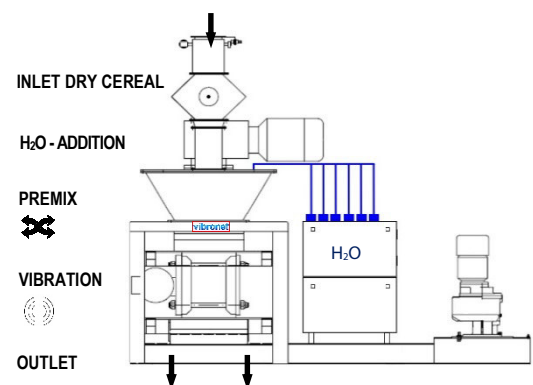
- **Drastic temper time reduction: Maximum 2 – 9 hours \***
- **Radical reduction of energy consumption:  $\pm 0.2$  kW / ton/ hour only**
- **12% water addition in one pass through the machine \***
- **More hygiene: Less bacterial growth due to low temper time and vertical Clean-Design**
- **$\pm 1.6\%$  more yield on bright flours \***
- **$\pm 1\%$  more total yield \***
- **Uniform water penetration through entire kernel hull due to water film**
- **Uniform wetting even of the kernel crease [ $\triangle \frac{1}{6}$  of the kernel surface]**
- **Optimal separation of hull and endosperm**
- **Higher yields on middlings and semolina**
- **Addition of water soluble additives and liquids**
- **Gentle conditioning: No breakage abrasion**
- **Lower construction cost: Less silos and transport elements**
- **More flexibility: Easy short-term changes in grain mix**
- **No changes in milling diagram or grinding properties**
- **Temperature increase of the dampened product in winter times**
- **Very low maintenance and wear**

\* Depending on cereal type and installation    \*\* Federal Institute of Research MRI, Detmold, Germany

### THE MAGIC VIBRONET® PRINCIPLE

vibronet® consists of the mechanic part with product inlet, premixing unit, water distribution unit, vibration channel, and product discharge, as well as the integral control panel.

- I.) A premixing unit mixes a metered quantity of water with the dry and cleaned product. The grain/water blend experiences a gentle mixing action that prevents kernel damage or abrasion.
- II.) The grain/water mix continuously passes through a vibrated channel according to the patented vibronet® principle. The high vibration energy eliminates the surface tension of the water molecules so that a film of water can cover the entire kernel surface and enter fast and evenly.
- III.) A specially designed discharge element ensures that the machine is continuously self-emptied.



## MORE PROFIT AND FLEXIBILITY WITH VIBRONET® [comparison vibronet® to conventional dampeners (here: 300t/d flour mill) ]

	CONVENTIONAL DAMPENERS	VIBRONET® DAMPENER
TEMPER TIME REDUCTION	12 – 72 h*	2 – 9 h*
YIELD INCREASE	No yield increase	± 1.6 %* more white flour ± 1 %* more total yield
COST FOR CAPACITY INCREASE	- Many silo bins - Many transport elements	- Less silo bins - Less transport elements
MORE HYGIENE	- Higher bacteria count - Long temper times - Non-self-cleaning horizontal /inclined design	- Low bacteria count - Short temper times - Self-cleaning vertical design
TIME SAVINGS IN PRODUCTION	- Change of mix after ~24 h	- Quick change of product mix
COST FOR MAINTENANCE /YEAR	- High maintenance and wear - Wear parts ± € 3.600* <sup>1</sup>	- Very low maintenance and wear - Wear parts ± € 370* <sup>1</sup>
COST OF ENERGY /YEAR	~11 kW/h 95.040 kW x € 0.20* <sup>1</sup> = € 19.008	~ 2.5 kW/h 21.600 kW x € 0.20* <sup>1</sup> = € 4.320

\* Results may vary according to product type and installation    \*<sup>1</sup> Assumed market rate

## TECHNICAL DATA<sup>\*2</sup>

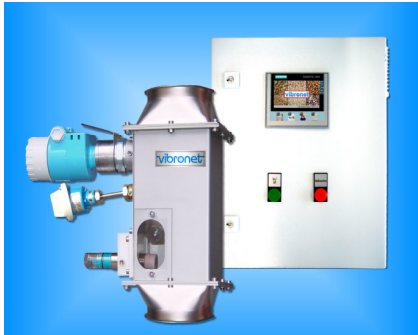
VIBRONET® TYPE	V5	V10	V15	V25	V40	V50
CAPACITY [BASIS: DRY, CLEANED WHEAT] [T/H]	Max. 5	Max. 10	Max. 15	Max. 25	Max. 40	Max. 50
DIMENSION MACHINE [MM] [LxWxH]	1438 x 720 x 1595	1750 x 720 x 1613	2100 x 918x 1763	2100 x 918 x 2058	2370 x 1225 x 2186	3150 x 1225 x 2226
DIMENSION CONTROL PANEL [MM] [LxWxH]	800 x 300 x 1000	800 x 300 x 1000	800 x 300 x 1000	800 x 30 x 1000	800 x 300 x 1000	800 x 300 x 1000
WEIGHT MACHINE [KG]	~550	~610	~870	~1040	~1560	~1760
WEIGHT CONTROL PANEL [KG]	~70					
CONNECTED LOAD	4.2kW, 9.2A	4.8kW, 10.5A	9.3kW, 17.2A	11.5kW, 21.1A	16kW, 29.2A	18.5 kW, 33A
PREMIXER MOTOR [KW]	2.2	2.2	5.5	5.5	7.5	7.5
VIBRATION MOTOR(S) [KW]	0.65	2 x 0.65	1 x 2.2	2 x 2.2	2 x 3.3	2 x 3.3
DISCHARGE MOTOR [KW]	0.55	0.55	0.55	0.55	0.55	1.1
ACTUAL POWER CONSUMPTION [KW/T/H]	± 0.2	± 0.2	± 0.2	± 0.2	± 0.2	± 0.2
CONTROL VOLTAGE [VDC]	24					
STANDARD OPERATING VOLTAGE	European standard [CE]: 380-480V, 50/60Hz, L1/L2/L3/PE [or V/Hz according to customer specifications]					
STANDARD CABLE LENGTH [M]	5 [longer cable upon request]					
MACHINE DESIGN	<ul style="list-style-type: none"> <li>- Machine in carbon steel painted RAL 9003</li> <li>- Product inlet and discharge in stainless steel</li> <li>- Pre-cabled with pluggable cables</li> </ul>					
CONTROL PANEL	<ul style="list-style-type: none"> <li>- Powered by Siemens, painted RAL 9003</li> <li>- Colour touch screen, menu-driven, multi-lingual</li> <li>- For wall mounting</li> </ul>					
WATER PRESSURE [BAR] [MINIMUM OPERATING PRESSURE AT WATER CABINET ENTRY]	Min. 2.5 – 4	Min. 2.5 – 4	Min. 2.5 – 4	Min. 4 – 5	Min. 5 – 6	Min. 5 – 6
WATER PRESSURE WITH INTEGRATED VIB-MMS® WATER DOSAGE [BAR] [MINIMUM OPERATING PRESSURE AT WATER CABINET ENTRY]	Min. 3 – 5	Min. 3 – 5	Min. 3 – 5	Min. 5 – 6	Min. 6 – 8	Min. 6 – 8
WATER ADDITION QUANTITY [L/H]	Customizable according to customer need					
WATER QUALITY	<ul style="list-style-type: none"> <li>- Water, water with soluble additives</li> <li>- Constant, without fluctuations</li> <li>- Filtered, free of impurities</li> <li>- Cold water (no hot water allowed)</li> </ul>					
WATER FILTER	Minimum 90 µm directly in front of the machine water distribution cabinet entry					
WATER CONNECTION	At the machine water distribution unit [*connection size according to l/h added]					
AIR PRESSURE [BAR]	Min. 3-4, max. 8	Min. 3-4, max. 8	Min. 4-6, max. 8	Min. 4-6, max. 8	Min. 4-6, max. 8	Min. 4-6, max. 8
AIR PRESSURE QUANTITY [L/M]	Min. 200-300					
AIR PRESSURE QUALITY	Constant, oil-, fat- and water-free					
AIR PRESSURE CONNECTION	At the machine water distribution unit, 8mm [OD]					

<sup>\*2</sup> Subject to modification

<b>OPTION: VIBRONET® '4-IN-1'</b> <b>I. PATENTED CEREAL DAMPING</b> <b>II. THROUGHPUT MEASUREMENT</b> <b>III. AUTOMATIC WATER DOSAGE</b> <b>IV. TEMPER TIME CONTROL</b>	<b>ALL INTEGRATED IN ONE MACHINE</b> <b>= SPACE SAVING + TROUBLE-FREE OPERATION</b> <b>= SAVINGS ON INSTALLATION AND INVESTMENT</b> <b>= GUARANTEED EXACT WATER ADDITION AND UNIFORM PRODUCT MOISTURE</b> VIBRONET® WITH : VIB-SMW®/ VIB-TS® Integrated online throughput measurement [kg/h] VIB-MMS® Integrated automatic or manual water dosage [l/h] VIB-SMC® Integrated online temper time and water addition control [%]
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# VIB-SMC®

## ONLINE TEMPER TIME AND WATER ADDITION CONTROL



**VIB-SMC®** is an easy and compact continuous control system to determine the surface moisture of gravimetrically conveyed free-flowing granular bulk materials such as e.g. cereals (wheat, rye, rice, maize, etc.) just before the first production process. It replaces old-fashioned manual methods such as biting and touching the grain with online automatic control.

The **VIB-SMC®** allows just-in-time reaction by controlling:

- penetration depth of the dampening water at constant grain moisture
- optimal water addition directly before the first production step
- optimal temper time  $\triangleq$  maximum flexibility of the outer bran layer

### ADVANTAGES

- Precise control of surface moisture content
- Prompt detection of irregularities in water addition and temper time
- Quick registration of changes in product mix
- Early identification of changes at the cleaning machines
- Guarantee for uniform end products and optimum yields
- Maintenance free due to no moving mechanical parts

### APPLICATIONS

#### MILLING

- Surface moisture control after the temper time at B1
- Control of optimum and equal water addition
- Control of optimum temper time

#### DRYING PROCESS

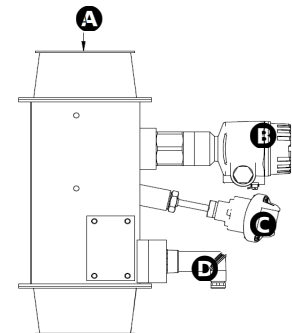
- Surface moisture control in front of and after drying processes

#### EXTRUSION

- Surface moisture control before processing

#### CEREAL HANDLING

- HACCP control point in front of packing / loading process
- Control during shifting of product between silos
- Control during unloading/discharging process



- A** Product inlet
- B** Moisture sensor
- C** Temperature sensor
- D** Product flow sensor

### STRUCTURE

**VIB-SMC®** consists of a compact stainless steel measuring unit and a multilingual control panel with touch screen.

### FUNCTION

Sensors measure dielectric constant (conductivity) and temperature of the product. These measured values are assigned a corresponding surface moisture value. An integrated temperature compensation equalizes temperature fluctuations.

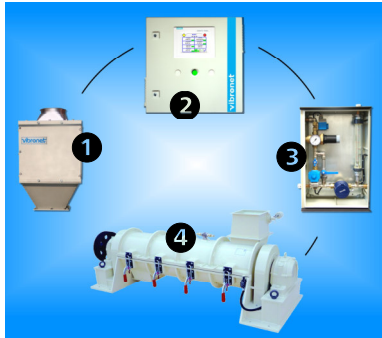
### TECHNICAL DATA\*

PRODUCTS	Free flowing cereal, pulses, granular bulk materials
CAPACITY RANGE	$\leq 12$ tph [basis: wheat] / $> 12$ tph installation in a bypass
MEASUREMENT RANGE	Product-specific calibration
TEMPERATURE RANGE	0- 55°C
POWER SUPPLY	110-230 VAC, 50/60 Hz
VISUAL DISPLAY	Touch screen with function keys, menu-driven
ALARM CONNECTION	2 relay 230 V, 3 A
INTERFACES	0(4) -20 mA, Ethernet
PROFIBUS, ETHERNET/PROFINET FERNWARTUNG	Optional
DIMENSIONS MEASURING UNIT	LWH (mm)= 180 x 390 x 419
DIMENSIONS CONTROL PANEL	LWH (mm)= 400 x 210 x 500

\*Subject to error and technical modification

# VIB-HUMIDIFIER<sup>®</sup>

## CONTINUOUS WATER ADDITION TO FLOUR, FINE BRAN AND POWDER



The **VIB-HUMIDIFIER<sup>®</sup>** intensive mixer and moisture improvement system guarantees optimal and homogeneous final product moisture in flour, fine bran, powders or finely granulated products. It can add up to 5% water in one pass and adds value and extra profit to the final product by compensating for the loss of moisture during processing. The system can be upgraded with the **VIB-NIR<sup>®</sup>** with online powder sampler for fully automatic flour/powder moisture control.

The **VIB-HUMIDIFIER<sup>®</sup>** is composed of four modular components:

- ❶ [t/h] Throughput Control **VIB-SMW<sup>®</sup>** [Option]
- ❷ [+/-] Data Processing **VIB-MICROPROCESSOR<sup>®</sup>**
- ❸ [H<sub>2</sub>O] Water Dosage **VIB-DOSAGE<sup>®</sup>**
- ❹ [↻] Intensive Mixer **VIB-HUMIDIFIER<sup>®</sup>**

### ADVANTAGES

- Liquid addition of up to 5% \* [according to product]
- Reduction of moisture loss during production
- Uniform end products at constant and optimal moisture level
- Improved product flowability and reduction of fine dust
- Less condensation in machines and transport elements
- Addition of water-soluble additives
- More hygiene - Less total bacterial count
- Higher total yield due to drier milling possible
- Reduction of temper time possible
- Capacity increase possible

### APPLICATIONS

- All free-flowing powdery and finely granulated dry material (flour, fine bran, etc.)
- To increase flexibility and hygiene in the production process
- To increase profit through moisture addition before bagging

### FUNCTION

The flow meter [option] measures the exact throughput. The desired liquid addition is preset in the microprocessor that computes the amount to be added based on the measured flow. The dosing unit doses the liquid directly into the mixer. After the firm components have been fed into the mixer the liquid components are directly introduced into the mixers' ring layer by means of one or two component nozzles. The high peripheral speed of the mixer of up to 30m/s forces the product into a concentric ring layer, in which a strong mixing intensity is reached due to the large speed difference between mixing tools, mixing property and mixer wall.

### MAIN FEATURES

- Compact robust design with easy-to-clean mixing room
- Mixing chamber, shaft and tools made of hygienic stainless steel

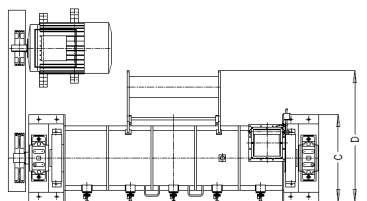
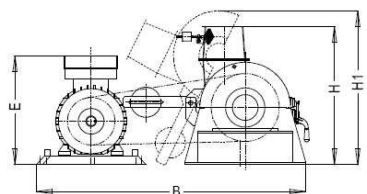
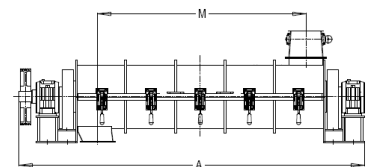
### TECHNICAL DATA\*

Type	Dimensions							
	M	A	B*	C	D	E*	H	H1
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
IM 400	1195	2345	1800	800	1150	510	867	860
IM 500	1695	2845	1800	800	1200	620	917	1020
IM 700	2165	3345	1800	800	1350	755	1120	1320

Type	Inside diameter	Volume	nominated rotation speed*	Driving power	Throughput	Weight
	(mm)	(dm <sup>3</sup> )	(1/min)	(kW)	(dm <sup>3</sup> /h)	(kg)
IM 400	400	165	1250	22	10000	955
IM 500	500	350	1050	37	16000	1150
IM 700	700	900	850	55	50000	1850

\*Motor and throughput are diversely according to application

We reserve the right to make technical modifications.



# VIB-SMW<sup>®</sup>

## CONTINUOUS SCALE FOR THROUGHPUT CONTROL OF GRANULES AND POWDERS



The **VIB-SMW<sup>®</sup>** is an easy accurate continuous scale for all dry free flowing bulk solids and powders up to 50 tph. A very low overall height ensures a space saving easy installation. The system consists of a hygienic and robust stainless steel measuring section and an electronic evaluation unit.

The scale is practically maintenance-free due to no free moving mechanical parts. The double and direct measured force allows highest measurement accuracy of up to 0.2%\* independent of variable product streams or flow capacities.

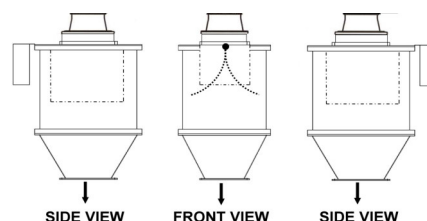
### ADVANTAGES

- Precise flow metering and process control
- Accurate double-direct impact weighing
- Independent of flow rate, product form or density
- Space saving low overall height
- Low maintenance – no movable parts
- Hygienic and robust stainless steel construction
- Gentle to the product – no breakage or abrasion
- For free flowing granular as well as powdery material

### FUNCTION

The control panel with color touch screen for wall mounting can be installed independent from the measuring section.

- Throughput [kg/h]
- Counter for Pre-selection and Totalizing, resettable, with alarms
- Limit value control with delay timer (Min/Max)
- Graphic registration up to 72h
- Analogue output 0(4)-20mA
- Impulse output
- Potential-free contacts



VIB-SMW<sup>®</sup> ≤25tph

### INSTALLATION

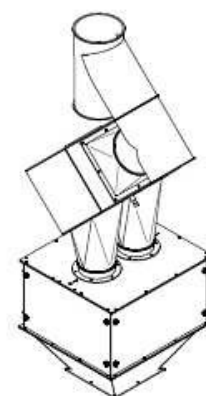
All parameters are factory preset. The measuring unit is mounted vibration-free under a product flow speed brake directly into the product stream.

### TECHNICAL DATA\*\*

PRODUCTS	All free flowing dry granular and powdery material
CAPACITY RANGE	0 – 50 tons per hour
MEASUREMENT RANGE	Product-specific calibration, up to 15 products
POWER SUPPLY	120-230 VAC, 50/60 Hz
DISPLAY	Color touch screen
ALARM CONNECTION	Potential-free contacts max. 230 V, 3A
ANALOGUE OUTPUT	0(4) -20 mA
IMPULSE OUTPUT	Customer specific calibration
ETHERNET/PROFINET, PROFIBUS	Optional
DIMENSIONS MEASURING UNIT	$< 1.0 \text{ t/h: LWH (mm)} = 245 \times 245 \times 490$ $\leq 12.5 \text{ t/h: LWH (mm)} = 333 \times 333 \times 480$ $\geq 25.0 \text{ t/h: LWH (mm)} = 530 \times 380 \times 607$ $\leq 50.0 \text{ t/h: LWH (mm)} = 536 \times 586 \times 1,251$
DIMENSION CONTROL PANEL	LWH (mm) = 400 x 210 x 500 [for wall mounting]

\*\*Subject to modification.

\* All specified accuracies are related to the full-scale reading at calibrated flow rate.



VIB-SMW<sup>®</sup> 50 tph

# VIB-CC<sup>®</sup>

## ONLINE COLOR AND ASH CONTROL FOR FLOUR AND POWDERY PRODUCTS



The **VIB-CC<sup>®</sup>** is an easy and fast tool to continuously control the contrast value (brightness/ash) of flour, semolina, middlings, fine bran, and powders. The system operates according to the principle of the Pekar-method of visual comparison. Colour and thus quality deviations are immediately indicated during production and allow quick adjustments for optimal final products.

As the brightness of flour and bran corresponds to a certain degree with their mineral content (=ash), the system helps to determine any deviation from the desired ash value immediately.

### ADVANTAGES

- Easy and effective monitoring of the production processes
- Simple calibration to the ash content of various products
- Continuous quality registration over 72 hours
- Immediate identification of maladjusted passages
- Optimal and uniform end product quality
- Laboratory-near results at online operating conditions
- Quick retrofit in existing diagrams

### APPLICATION

- Automatic control of the colour and contrast value (brightness) of flour, bran, fine bran and powders
- Control of light and dark flours
- Monitoring of the fine bran to immediately detect errors in the grinding process
- Quality control before packaging and loading
- Ideal for online monitoring of light-off processes

### FUNCTION

With the **VIB-CC<sup>®</sup>** both final products, such as e.g. flour or fine bran, and other important passages can be easily supervised. All millstream flours are monitored on a continuous basis and each product checked for conformity with the desired ash/brightness values. Any conceivable deviation from the preset figures and desired brightness are detected immediately. Adjustable alarm limits are monitored as upper and lower limits, evaluated and transmitted to an alarm signal or an SPS. The measured values are displayed in linear graphs.

### INSTALLATION

The **VIB-CC<sup>®</sup>** can be easily fitted into any new or existing piping system. The measuring system consists of a measuring unit and a control panel for wall mounting with touch screen. A compressed air connection (2-4 bars) is required.

### TECHNICAL DATA\*

MEASURING RANGE	Product specific calibration
POWER SUPPLY	110-230 VAC, 50/60 Hz
OPERATION DISPLAY	Color touch screen, menu driven, multi-lingual
INTERFACE	MPI, RS 232/ 485, 20 mA, Ethernet
POTENTIAL FREE CONTACTS	Max. 230 V, 3A
ANALOGUE OUTPUT	Optional
PROFIBUS, MODBUS, ETHERNET/PROFINET	Optional
DIMENSIONS MEASURING UNIT	LWH (mm)= 250 x 300 x 230 mm
DIMENSIONS CONTROL PANEL	LWH (mm)= 200 x 150 x 300 mm

\* Subject to error and modification



INNOVATIONS FOR CEREAL AND PULSE CONDITIONING  
AND BULK SOLIDS PROCESSING SINCE 1992

Change your production process and optimize cost and time management with the patented vibration dampener vibronet® and our innovative process and quality control systems. If you need further assistance or have any questions related to our systems and their practical use in your process, please do not hesitate to contact our team of experts using the contact details below.

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