

TRIME-GWs

IMKO
MICROMODULETECHNIK GMBH

Grain and product moisture measurement. Direct, representative, fast and precise with the most modern TDR technology.



TRIME®-GWs GUARANTEES YOU THE FOLLOWING:

- ✓ *direct measurement of moisture in the material*
- ✓ *continuous data logging concerning the moisture level*
- ✓ *optimum and precise process control throughout all cycles*
- ✓ *lower product value losses as the result of over- or under-drying*
- ✓ *savings in heating costs and power consumption*

DASTEC S.R.L.

Representantes / Distribuidores Exclusivos

🇦🇷 **Argentina**

Tel: (+54 11) 5352 2500

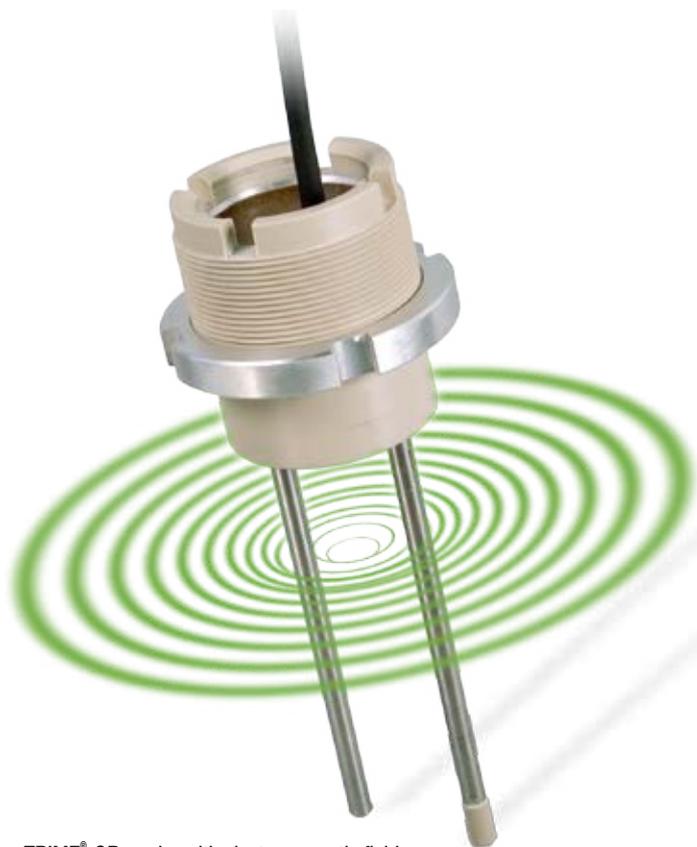
Email: info@dastecsrl.com.ar

Web: www.dastecsrl.com.ar

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TRIME®-GR probe with electromagnetic field

Over- or under-drying – mistakes that cost you money!

If you work with dryers then you know the problems all too well. Hand-operated dryers are difficult to control and they can produce unacceptable results that can cost you dearly: Time-consuming sampling, goods that are either too damp or too dry, expensive after-treatment - all of that costs you time and money. For the first time, the revolutionary TRIME®-TDR technique allows for precise, continuous measurements directly during the drying process – at temperatures of up to 127°C (260°F). And regardless of the type and composition of the product being dried, e.g., grains, plants for oil, legumes, foods, animal feed, wood shavings, powders, granules, etc.!

TRIME®-GWs is precise, quick and economical!

TRIME®-GWs monitors the water content and optimizes your process control.

With TRIME®-GWs you can directly control the product moisture even during the drying process without taking any samples!

Problematic, indirect measuring techniques, such as via extracted air or temperature, are now things of the past. TRIME®-GWs directly measures the water content of the product being dried regardless of the grade, temperature or mineral content of the goods being measured.

That way, you can continuously monitor the water content of the goods being dried and optimize the process control.



Using the TRIME® probes with malt

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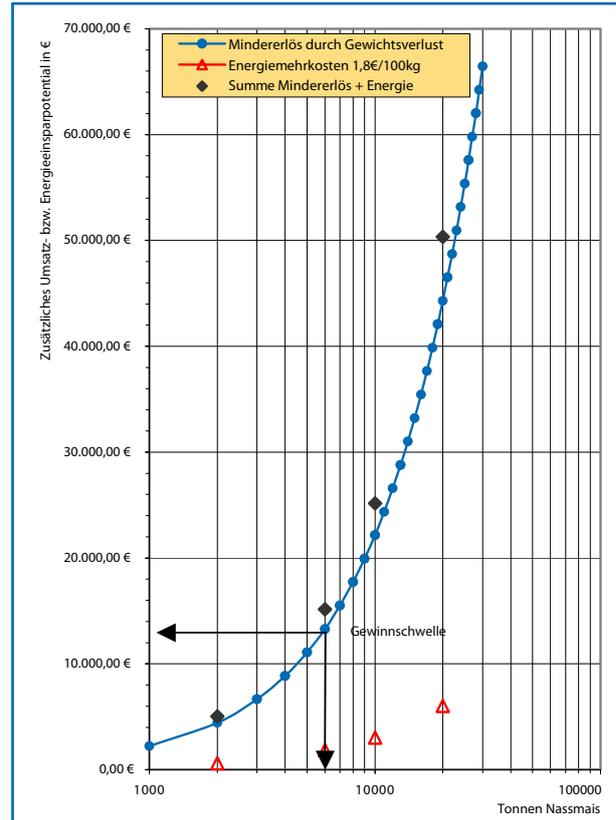
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Email: info@dastecsrl.com.ar

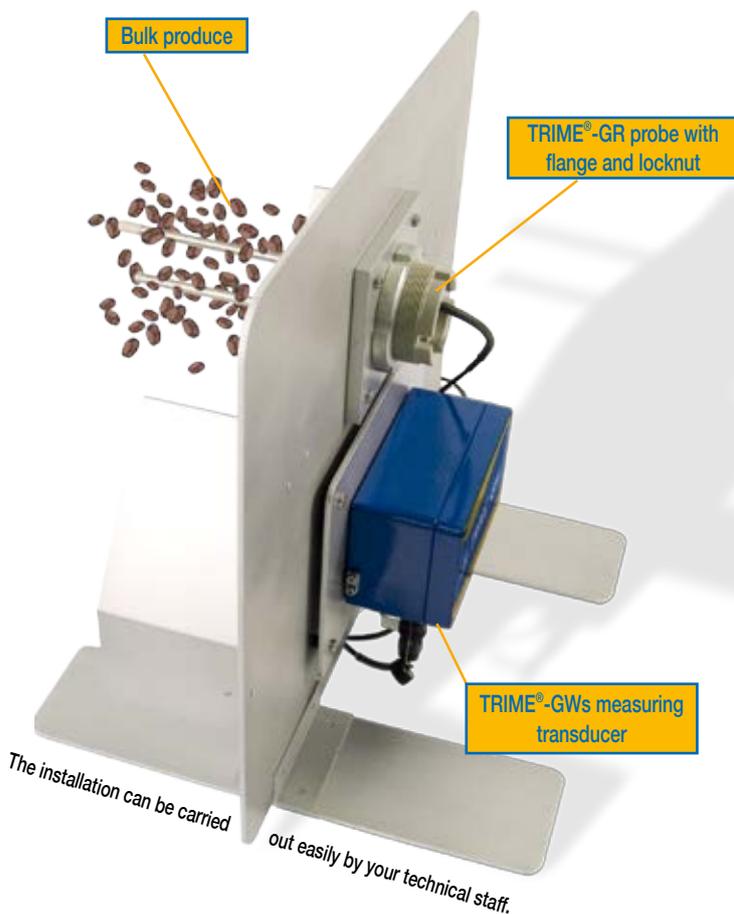
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The most modern TDR technology for inline measurement in the drying chamber.

The TRIME®-GWs sensors are used for inline measurement in the widest range of materials. The results will win you over! The improved process control optimizes the cycle times, saves energy, increases productivity and reduces the amount of real work. Constant, direct displays of product moisture in the dryer make the process transparent and the operation reliable! Time- and labor-intensive samplings previously associated with conventional measuring equipment are reduced to a minimum. Today, dryers are operated based only on TRIME®-GWs measured data.



Profitability curve for corn at 126 Euro/t and impeded under-drying of 2%.



Reduce your drying costs with the measuring system of the future!

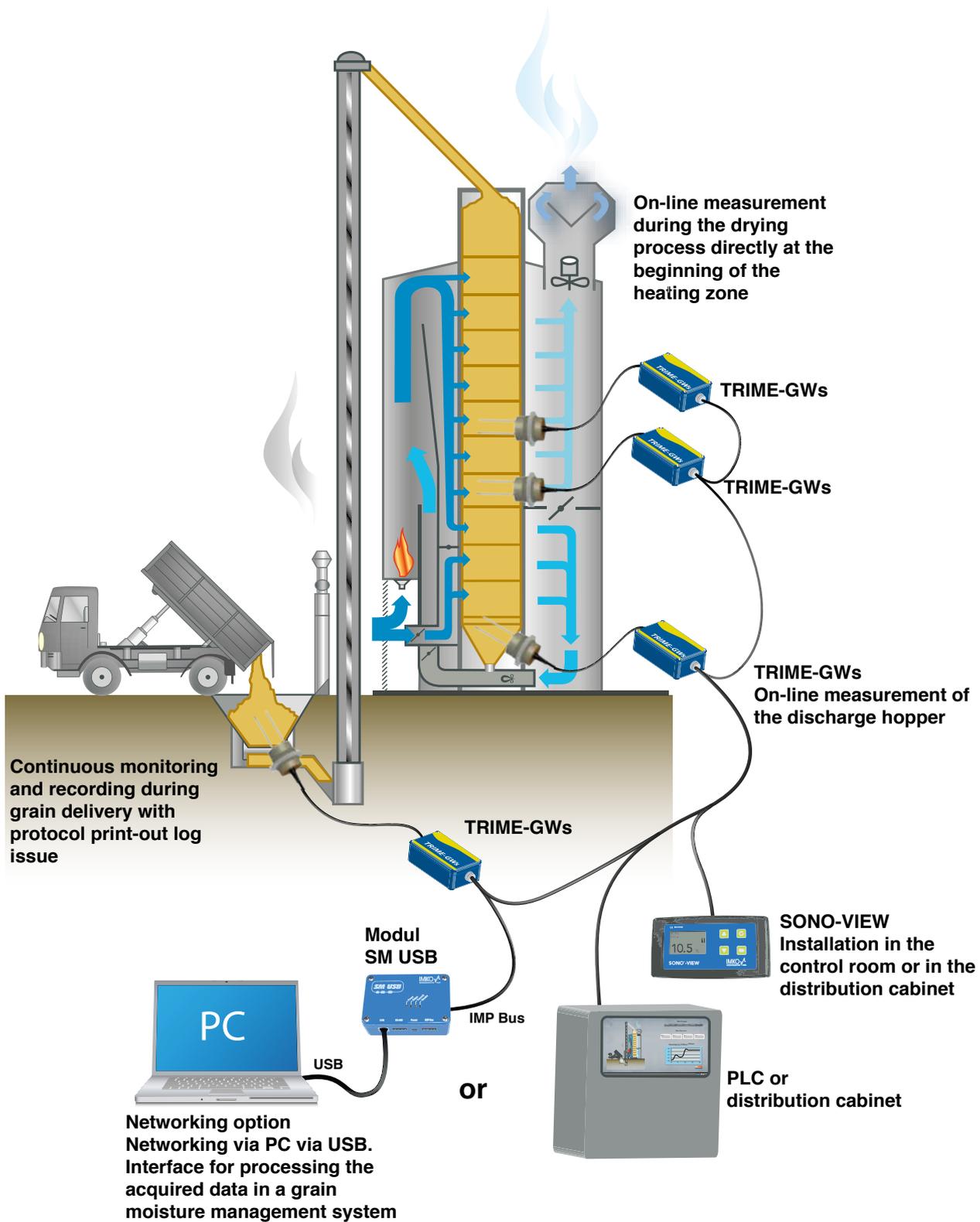
Whether it's a continuous/roof dryer, float dryer, feed-and-turn drier or a belt dryer - TRIME®-GWs with rod, surface or wedge probes is your inspection window for every dryer! Thanks to the trouble-free connection to the programmable logic controller (PLC) or the limiting value switch, it is possible to have an automatic operation free of any problems. Considerable savings and work-reducing potential in operation that also provide security!

The right TRIME® probe for every application

The TRIME® probe series offers optimal probe designs for many different applications. Every probe also has an integrated temperature sensor, thus offering the option of measuring material temperature.

	<p>The standard GR probe can be installed up to a depth of 150 mm directly in the grain dryer's wall. At temperatures of up to 127°C and a measuring volume of approximately 2 liters, the GR probe offers optimal conditions for all materials that can be easily poured. With the temperature sensor attached to the tip of the rod, you can easily measure the correct temperature directly in the goods.</p> <p>The body of the probe is made of temperature-stable PEEK plastic which has been approved for use with food products. It thus guarantees the trouble-free operation of the moisture probe under the most extreme environmental conditions.</p>
<p>Standard GR-Sonde</p>	<p>Probe dimensions GR: Ø 70mm, Höhe 75mm; Rod dimensions: Ø 8mm, Length: 150mm</p> <p>Also available as a special version GRr probe for abrasive solids such as paddy (rice).</p>
	<p>Due to their wedge-shaped designs, the WS2 probe can be inserted directly into the material to be measured without any significant compaction occurring.</p> <p>The wedge-shaped probe can be used wherever medium-to-high moisture levels or high conductivity and high mineral contents are expected in the materials being measured. For instance, in malt houses and malt-extracting plants.</p>
<p>Wedge-shaped probe WS2</p>	<p>Probe dimensions WS2: 70 x 105 x 26mm, Rod dimensions: Ø 10mm, Length: 150mm</p>
	<p>The GS1 and GS2 surface probes are especially suitable for applications in which an optimal flow of material has to be guaranteed, and where rods could have a negative influence. The dripping property of the goods being measured (e.g., flour, middlings, wood shavings, etc.) is unaffected by the surface probes.</p> <p>The large measuring volume of the GS1 guarantees precise measuring results, even with goods that are very difficult to measure, such as wood shavings with a density of < 0,2 g/cm³.</p> <p>Belt dryers constitute another area in which the surface probe is widely used.</p>
<p>Oberflächensonde GS1 / GS2 (The illustration shows GS1)</p>	<p>Probe dimensions GS1: 280 x 70 x 40mm Probe dimensions GS2: 250 x 40 x 30mm</p>

Installation example of a drying plant

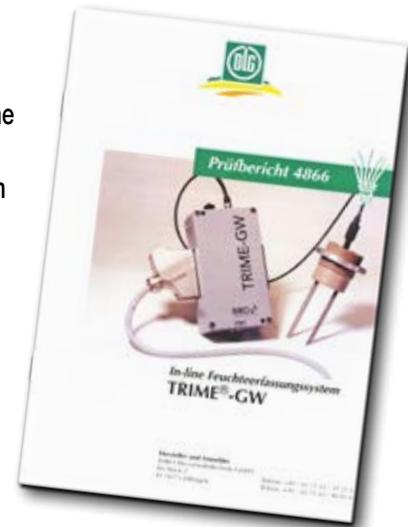


Tested and approved by the DLG

Tests of the TRIME®-TDR method conducted by DLG (Deutsche Landwirtschaftliche Gesellschaft – German Agricultural Society) have delivered convincing results. According to statements made by companies and DLG, the TRIME®-GWs system finally enables a precise drying process!

DLG test results:

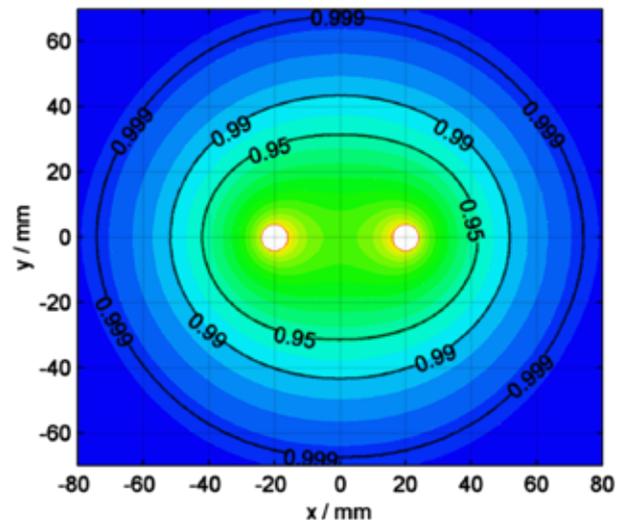
“The system is suitable for continuous (inline) measurement of the moisture content of grains, rape-seed, sunflowers, corn and other agricultural cereals. It can be employed in a control system, e.g. for a dryer, to measure the moisture content as a controlled variable.”



TRIME®-TDR compared to other measuring techniques

Compared to capacitive measuring techniques, microwave-measuring techniques, infrared-measuring techniques or resistance methods, the TRIME®-TDR technology is considerably more independent of the type of grain, temperature of the goods being measured and ion conductivity. However, the low temperature dependency is compensated for with the aid of additional kernel temperature measurement in the probe.

The volume of goods being measured of between 1 and 2 liters is completely penetrated with the TRIME® technique. You therefore are supplied not only with data about the near-surface-level moisture (e.g. as with reflective infrared measuring techniques). You also are given the water content of the unmilled whole grain. Even time-consuming and error-prone bypass constructions, as the more expensive microwave techniques or transmissive infrared techniques require, are eliminated with the TRIME® systems. The modular technology allows you to expand the system at a later date without any great expense. In addition, the TRIME® technology is extremely variable in terms of probe design and therefore can accommodate many different applications.



The illustration shows the measuring field of the standard GR probe. The extensive distribution of the measuring field of up to 95% (green area) delivers optimal measuring results.

Renowned companies place their trust in the TRIME®-TDR technology

ANHEUSER  BUSCH

Anheuser-Busch Breweries (USA), malting houses

- TRIME®-GW became factory standard
- Approxim. 180 systems



Stela Laxhuber GmbH & Co. KG (Germany), cereal drying

- TRIME®-GW became standard for dryer automatic control FRA450
- Approxim. 280 systems



Proctor & Gamble (USA)

- coffee drying



Nidera (Argentina)

- sunflower & soja drying



AB Liros (Sweden)

- cereal drying
- standard option in Liros dryer control systems

Our technical edge is your advantage!

Technical Data:	
Power supply:	10V..24V DC
Power:	2,5W
Measuring range:	
Probe GR, WS2, GS1, GS2	0..45 Gew.% gravimetric, based on wet mass
Probe WS3	0..70 Gew.% gravimetric, based on wet mass
Standard deviation:	range 0..20 Gew.%: ± 0,3 Gew.% range 20..45 Gew.%: ± 0,5 Gew.% range 45..70 Gew.%: ± 1,0 Gew.%
Repeating accuracy:	± 0,1%
Transducer temperature range:	-10°C..60°C advanced temperature range on request!
Probe temperature range:	0..127°C; short-time up to 150°C
Measurement interval:	0,5s with internal averaging from 5s...20min.
Interface:	IMP232 MICRONET and RS485
Analog output:	0/4...20mA = 0 .. 100% grav. moisture 0/4...20mA = 0 .. 100°C (max. working resistance: 500 Ω)
Probe cable-length:	standard 2,5m
Case:	weatherproof, robust aluminium diecast IP65
Probe body:	waterproof sealed PEEK IP68



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 Argentina

Tel: (+54 11) 5352 2500

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Web: www.dastecsrl.com.ar

 Uruguay www.dastecsrl.com.uy

 Paraguay www.dastecsrl.com.py

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A triumphial technology



Silver Medal Innovation Award
1999 of the DLG
(German Agricultural Society)



Innovation Award of the State
of Baden-Württemberg



certified by the DLG
(German Agricultural Society)

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