CARBOLAC CO2 METERING IN DIARY

…qualitative and economic optimization in rennet cheese production

Carbon Dioxide (CO2) is a natural ingredient of milk and cheese that features very interesting characteristics.
Its application as an additive in cheese production is therefore highly effective and absolutely safe.
According to EU Guideline 95/2, Appendix 1, CO2 (E290) is permitted in the EU to be added to all foodstuffs as an additive without restriction.
A labeling obligation does not currently exist for the dairy applications presented.

Cost reduction as a result of:
Less microbial or annimal rennet addition at lowered pH (ca. -30% at –0.1 pH, -40% at –0.2 pH), less culture application, less washing water

More process safety as a result of:
Standardization, optimized pH value, higher anaerobic (prevention of harmful germs), stabilized protein structures (CO2 binds as hydrogen carbonate to casein structures).

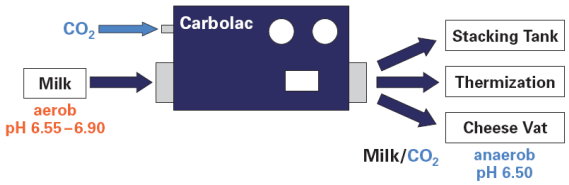
Shorter production times as a result of:
Shorter pre-ripening of cheese milk (protein swelling improved by CO2), more standardization – uniform production process in connection with the application of DVS cultures

Quality improvement as a result of:
Less dry matter variation (< + 0.5%), increased syneresis, firmer texture in the product with uniform water content in connection with the application of DVS cultures

Benefits:

- Cost reduction
- Process safety
- Process time redcuction
- Fully automatic gas pressure regulation with safe on & off switching
- Quality improvement
- CIP-capable as standard feature, no hygiene considerations
- Easy operation
- No electric energy supply necessary

Functional description:
The Carbolac technique can be applied to virtually all dairy facilities. It is compact, installation is easy and quickly done. Only a few prerequisites have to be taken into consideration.



Technical data:

Stainless steel design:	1.4571
CO2 metering:	0.05 to 4 g/l milk
Preliminary gas pressure:	> 6.5 bar
3 levels of milk flow performance:	M 10: up to 15 cbm/h M 60: up to 54 cbm/h M 80: up to 72 cbm/h
Dimensions (H x W x L):	150mm x 240mm x 100mm
Weight:	13 kg to 17 kg
Milk pressure:	1 bar to 10 bar
Milk line connections:	as desired
Inline metering:	with suction injector
Electrical connection:	none
Accessory:	Remote control Automatic control

STEINFURTH CUP CARBONATION TESTER

for user independent CO_2-measurement in beverage dispensing

Servicing and adjustment of draught systems for fountain beverages requires robust instruments for quick and accurate carbonation measurement
The Steinfurth Cup Carbonation Tester (CCT) combines very easy operation with the new, highly accurate and compact CO_2 manometer for simultaneous pressure and temperature measurement as well as CO_2 calculation.
This and the ergonomic, water resistant housing make the CCT a reliable service tool for fountain technicians.

BENEFITS:

- Easy operation
- Ergonomic design
- Perfect price to performances ratio
- Easy calibration
- Up to 3 individual CO2 calculations

OPERATION:

The cup is filled with fountain beverage and sealed with the measuring head. The instrument is manually shaken until equilibrium and the CO2 content automatically calculated.

TECHNICAL DATA:

Measuring range	0…10 g/l / 0…5 vol
Pressure range:	0 to 10 bar / 0 to 145 psi
Temperature range:	-5°C…25°C/23°F…77°F
Repeatability (CO_2):	± 0.1 VOL / ± 0.2 g/l
Resolution:	0.1 g/l

STEINFURTH®
Electromechanical Measuring Systems

Perfect CO_2 monitoring in beverage bottles and cans

CPA – Compact Package Analyzer as combination of CDA-MK6, Torque Tester TMS 4000/4010 and CPA-Scale

Continuous adaptation and improvement of the Steinfurth CO_2 tester technology to the individual customer needs worldwide combined with maximal process efficiency are the mayor keys for the perfect instrument solution.

The unique combination of optimal sample preparation, piercing system and measuring device saves not only the simply unnecessary purchase of several single purpose instruments, but also the process time and space in laboratory and at the filling line.

Furthermore the Steinfurth CO_2 tester considers all kind of package influences to the beverage, which for example are completely ignored by optical, or outside of the package executed CO_2 measuring methods. Additional interference factors that apply when transferring the liquid for measurement outside of the package can be completely ignored due to the direct measurement in the packaged beverage. A fully automatic measurement process with extreme precise results are just basic characteristics for nearly every Steinfurth measurement device – as always in combination with the high repeatability and very easy, user independent operation.

Flexible data interfaces assure an easy integration of the Steinfurth CO_2 testers in the existing quality management systems. Easy adaption to all packaging and closure types complete the perfect instrument solutions „Made in Germany“.

Benefits

- Reduced process time and costs by outsourcing of the QA from laboratory to the filling line
- Consideration of all package influences
- Combined evaluation of product and package quality
- Fully automatic, user independent measurement process
- Dynamic sample preparation (CDA)
- Perfectly adjustable to individual requirements and measurement standards & procedures
- Space-saving through All-In-One system concept (sample preparation and measurement)
- Suitable for all kind of packaging and closure types
- Very easy integration in existing quality control systems
- Very flexible documentation and PC connection possibilities
- Local service and support partner on every continent

STEINFURTH®
Electromechanical Measuring Systems

Steinfurth CO_2 Tester CDA-MK6

Automatic CO_2 measurement in bottles & cans

The **CDA-MK6** measures pressure and temperature simultaneously, calculates the CO_2 content and transfers the measuring results via data interface to the base unit. A dynamic sample preparation, low maintenance requirements and easiest calibration complement the high-precision measurement.

Technical specifications	CDA-MK 6
Application:	Beverages industry, Packaging Industry
Measuring results:	CO_2, Pressure, Temperature
Package type:	Bottles (PET & Glass), Cans
Usage:	Quality control, packaging testing
Extension into CPA:	Yes (ex-works on board)
Sample preparation:	Integrated & dynamic
Duration of measuring:	approx. 5 – 10 sec
Data output:	LCD, RS 232, USB, LAN
Power supply:	115 – 230V / 50 – 60 Hz
Accuracy (pressure):	± 0.02 bar (± 0.29 psi)
Accuracy (temperature):	± 0.3 °C (± 0.54 °F)
CO2 repeatability:	± 0.05 g/l (± 0.03 vol)
Max. pressure:	10 bar (145 PSI)
Measurement:	610mm x 500mm x 640mm
Weight:	ca. 20 kg (44 lbs)

Customized and medium optimal measuring procedures are ex-factory programmed and executed fully automatic. The flexibly programmable control unit transfers all parameters as test protocol to the internal memory, containing in detail CO_2 content, pressure, temperature, date, time, current test number, and the serial number of the instrument with the specific test sample code.

The base unit‘s integrated color touch screen shows all essential test results as perfectly visualized quality parameters for the operator.

In combination with the barcode scanner and customized configured data interface the CDA can be very fast and automatic setup for changing samples and operators - essential for most optimal process efficiency and safety. Pre-setup for the Steinfurth CPA-concept is complementarily available in every new instrument.

Operation:

The Steinfurth CDA works based on the physical law of Henry & Dalton. The packaged beverage is placed in the sample container and with closing of the measuring head automatically pierced. Measurement with integrated dynamic sample preparation are initiated by pressing the START button. The harmonic overhead tumbling of the sample delivers optimal physical equilibrium of the sample and assures perfect repeatability and accuracy of the measuring results.
Just after the state of equilibrium is reached the CO_2 content is automatically calculated and stored in the memory (available as digital fingerprint of the test with all recorded parameters for transfer to the PC or directly into the network).

STEINFURTH®
Electromechanical Measuring Systems

Steinfurth CO_2 Tester CO2MS-2

Semi-automatic CO_2 measurement

The **CO2MS-2** is equipped with a high precise digital manometer which displays the equilibrium pressure at the end of the shaking process. The temperature is measured subsequently with a thermometer and the carbon dioxide content calculated or read from a customized CO_2-chart.

Steinfurth CO_2 Tester CO2MS-1

Semi-automatic CO_2 measurement

The **CO2MS-1** is equipped with a precise analogue manometer which displays the equilibrium pressure at the end of the shaking process. The temperature is measured subsequently with a thermometer and the carbon dioxide content calculated or read from a customized CO_2-chart.

Technical specifications	CO_2 Tester CO2MS-2	CO_2 Tester CO2MS-1
Application:	Beverages Industry, Packaging Industry	
Measuring results:	Pressure	
Package type:	Bottles (PET & Glass), cans	
Usage:	Quality control, packaging testing	
Extension into CPA:	Not possible due to missing PC interface	
Sample preparation:	Time-controlled: 15 – 60 sec	
Measurement time:	Time-controlled: 60 – 180 sec	
Data output:	LCD	Analogue display
Power supply:	115 - 230V / 50 - 60 Hz	
Accuracy (pressure):	± 0.05 bar (± 0.73 psi)	
Accuracy (temperature):	Manually with a thermometer	
CO_2 repeatability:	± 0.1 g/l (± 0.5 vol)	
Max. pressure:	10 bar (145 PSI)	6 bar (standard)
Measurement:	610mm x 500mm x 640mm	
Weight:	approx. 20 kg (44 lbs)	

OST - Optical Shelf-Life Tester

Non-Destructive Co2 Testing on Packages

Lower precision and higher vulnerability of optical Co2 measurement methods prohibit their primary use for analysis of carbon-dioxide packed beverages. The new OST (Steinfurth Optical Shelf Life Tester) combines the non destructive functionality of the optical measurement with another precise measuring method delivering on this way a new interesting application fort his technology.
The optical Method is used for resource saving process monitoring and the high precise measurement (Steinfurth CDA) for system calibration and accurate measurement of the true carbon-dioxide content. With this setup the number of samples needed for Co2 shelf-life monitoring can be dramatically reduced and the most optimal process timing for accurate measurement estimated. With the exclusive combination of sample preparation and optical measurement (including the automatic measurement of the bottle neck diameter) in only one device Steinfurth OST is the most perfect solution for non-destructive and storage room saving shelf life analysis in packed beverages.

Operation:

The complete batch of test samples is measured in the OST. Following one of the samples is tested in Steinfurth CDA. All Samples are tested in defined, regular time sequences and only when measuring differences are recognized additionally tested in the CDA.

Benefits:

- non-destructive CO2 measurement
- dramatic reduction of stored samples
- flexible programmable test procedures
- User independent, automatic operation
- Low maintenance requirements
- Easy, intuitive operation
- New testing possibilities
- Automatic measurement of the neck diameter

Technical Data:

Packaging type:	Glass or PET bottles
Pressure range:	0,5 – 8 bar
Repeatability:	+/- 0,15 g/l
Power supply:	115 - 230 VAC , 50 -60 Hz
Operating temperature:	+5°C - +35°C
Time per measurement:	ca. 5 Sec.

STEINFURTH AFTI - Load Cell Set

…for perfect load monitoring in packaging testing

Accurate monitoring of the load force is an important procedure in many areas of packaging testing. The AFTI load cell set is perfectly designed to be used in combination with the Steinfurth Sport Closure Test Devices (Rotational Tester and Tension Side Load Tester).

The AFTI set is including all essential accessory required for easy load force monitoring. It comprises of the programmable handheld device, 200 N load cell, power supply and the protection case. All readings are shown on a large LCD display and can be also downloaded to the PC.

BENEFITS:

- Easy operation
- High accuracy
- Flexible adaptation to many test applications
- Flexible programming
- Robust construction
- Compact size

OPERATION:

The required settings for the force readings and units have to be chosen and the load cell connected with the handheld device. The AFTI load cell has to be screwed following the user manual to the Sport Closure test apparatus. The handheld device has to be placed by-side of the load machine to be well visible during the test procedure.

TECHNICAL DATA:

Load cell range:	200 N
Accuracy:	0.1% FS
Data output:	RS 232
Operating Temperature:	10 – 35 deg C
Power supply:	9V / 100 mA
Electrical power:	230/115V (50/60 Hz)
Humidity protection:	IP 54

STEINFURTH AUTO-SAMPLER 380C

…Automatic pressurized multiple beverage sampling

Routine sampling from beverage containers for analytical purposes may result in considerable strain for additional laboratory work. While sampling consists of a few simple movements, these have to be attentively performed and often every few minutes interrupt other tasks that require full concentration. Especially if great numbers of samples must be taken and the main analytical work is already semi-automated, manual operation of a sampling device poses an additional work time (= costs).
The Steinfurth Auto-Sampler AS 380C offers high efficient integration of measuring devices requiring beverage sampling with automatic multiple sampling from up to 12 containers.

BENEFITS:

- Easy automatic operation and loading
- Cost effective multiple sampling/measurement
- Integration of stand alone measuring instruments to automatic operated “Mini Lab”
- Automatic adaptation to different container sizes
- Time (= cost) reduction on QC operations
- Optional automatic sample scanning and data transfer to the LIMS

OPERATION:

The containers are conveyed to an automatic piercing device which pierces the bottle closure or the can and lowers a sampling probe into the liquid through which the sample is fed to the analyzer connected to the Auto Sampler. A certain sampling pressure is maintained all the time and prevents the sample from foaming or CO_2 loss.
A safety cabinet protects the user from injury hazards due to moving parts and from glass fragments, if a bottle bursts.
The Auto-Sampler AS 380C is able communicate with analyzers like the Steinfurth Foam Stability Tester or flow through instruments (for CO2, O2, density…) via the Steinfurth Interface, synchronising automatic sampling and measuring.

TECHNICAL DATA:

Max. Container size:	∅ 110 mm x 380 mm
Container types:	Glass bottles and cans / PET bottles
Power supply:	230 or 115 VAC
Compressed air supply:	7 bars / 101.5psi

STEINFURTH BOTTLE PRESSURE TESTER

...Ergonomic manual pressure measurement in packages

The Steinfurth Bottle Pressure Tester is easily ergonomic attached to glass bottles with crown closures or PET bottles. It pierces the closure, and the internal pressure can be read from the digital or analogue pressure gauge.

BENEFITS:

- Direct readings of the internal pressure
- Digital or analogue pressure gauge
- Easy operation (single-handed)
- Exchangeable adapters for many bottle types

PET bottle

Crown closure

OPERATION:

The Bottle Piercing Device is equipped with an adapter, which is slipped underneath the crown closure or the PET neck ring. At the same time, it aligns the device on the closure. By single-handed operation of a handle, the device is clamped onto the closure. By this, the closure is pierced by a hollow needle.
The internal pressure can be read from the pressure gauge. The Bottle Piercing Device is available with an analogue as well as with a digital pressure gauge.

TECHNICAL DATA:

Pressure range:	0…6 bar / 0...87 PSI (analogue) 0...8 bar / 0...116 PSI (digital)
Pressure accuracy:	1% FS (analogue) 0.1% FS (digital)

Bottle Weight & Capacity Tester

…The automatic fill volume measuring system for bottles and cans

The Bottle Weight & Capacity Tester (BWCT) measures the volumes of bottles and cans quickly and reliably. It can handle bottles and cans of all usual shapes and dimensions. The BWCT automatically positions the specimens, measures the empty weight, collects the total volume and measures the weight at fill point before emptying the specimen bottle or can.
The water is reused, and the water temperature is monitored in order to take density into account.

Advantages:

- Quick and accurate measuring of fill volume
- Automatic feeding of up to 15 samples
- User-independent measuring
- Easily operable touch-screen user interface
- LIMS interface
- Easy calibration
- Automatic emptying
- Ethernet connection
- Water saving design

Technical data:

Measuring range:	20…4300 g (gross)
Container types:	Glass, PET, cans
Container heights:	100…380 mm
Container diameters:	45…125 mm
Fill point (below brim):	0…90 mm
Accuracy:	+/- 0.04 g
Resolution:	0.01g
Vertical positioning acc.:	+/- 25 µm
Max. no. of samples:	15

CARBOFLOT

…perfect wine must pre-clarification by flotation

Must pre-clarification via sedimentation before fermentation require extreme long waiting times (usually more than 24 hours)

The principal of must flotation speed up significantly the waiting period and help to optimize the transfer timing from wine most to wine fermentation.

BENEFITS:

- Quick return of investment
- Low maintenance requirements
- Easy installation and operation
- High efficiency
- Automatic fuctioning
- Significant time saving potential

OPERATION:

The must is passed through the Carboflot system accumulated with air or nitrogen and pumped into the tank. The gas bubbles move all non fluid particles form to the top surface of the tank. The clear wine, ready for fermentation (usually no filtration necessary) can be pumped out into the fermentation tank.

TECHNICAL DATA:

Process time:	2 – 3 hours
Output performance:	2.000 - 27500 l/h (520 – 7200 gal/h)
Operating pressure:	5-8 bar / 72-116 PSI
Dimensions (LxHxD) in mm: inch:	1200 x 1800 x 800 47 x 71 x 32
Voltage:	400V / 50 Hz
Power consumption:	4 – 15 kW

CARBOFRESH®

…perfect CO2 dosage in wine

Carbon dioxide is known as one of the major refreshing and taste impacting ingredients of wine (beer or soft drinks).

Effective adjustment of the carbonation level (carbonation for white and rose wines, or CO2 reduction for red wines) is an important process step in adjustment & production of the optimal wine quality.

Quality improvement in white and rosé wines

The unique incorporation of fine carbon dioxide bubbles lends freshness and lightness to the flavour and body of wines. Even with dense and voluminous wines, it imparts aromas. The subtle carbon dioxide bubbles make white and rosé wines fresher, livelier and aromatic.

De-carbonation and CO2 adjustment in red wines

Excess and disturbing carbon dioxide can be removed from red wines. Instead of charging with carbon dioxide, plain nitrogen is used. The Carbofresh® processor makes it easy to adjust the optimal content of carbon dioxide in wines. The wine is simply passed through the system and coveyed unpressurized into the tank.

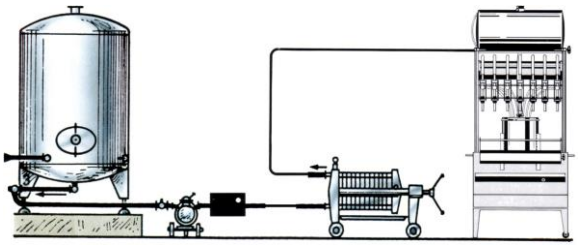
The device works purely pneumatically and doesn't need any electric energy supply. The desired carbon dioxide concentration is set directly at the device itself. If product flow drops below a minimum flow rate, the device is automatically deactivated. When the product flow increases, carbonation is activated again.

BENEFITS:

- Quick return of investment
- Low maintenance requirements
- Accuracy and consistency of product quality
- Easy installation and operation
- No electrical connections or control modules
- High efficiency
- Automatic activation / deactivation

OPERATION:

A feed pump (not included) presses the beverage through a built-in venturi injector, where the desired amount of CO_2 is added. The CO_2 bubbles dissolve in the downstream mixing stage.



TECHNICAL DATA:

Flow rate: (depending on injector size)	1.000 - 30.000 l/h (265 – 7833 gal/h)
CO_2 concentration: (continuously variable, temperature-dependent)	0-1.8 g/l / 0-0.8 vol
Required feed pump pressure:	≥ 6 bar / 87 PSI
Maximum operating pressure:	7 bar / 102 PSI
CO_2 supply pressure:	7 bar / 102 PSI
Dimensions (LxHxD) in mm: inch:	300 x 160 x 100 11.8 x 6.3 x 3.9
Pressure loss:	approx. 0.7–2.0 bar (10 – 29 psi)

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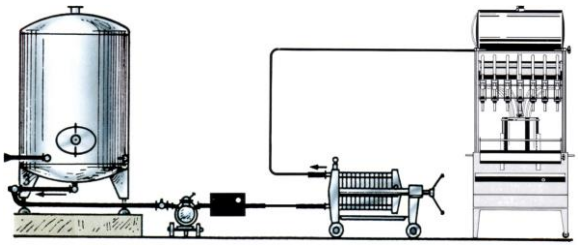

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STEINFURTH®
Electromechanical Measuring Systems

STEINFURTH CPA CONCEPT
Compact Package Analyzer

Integrated monitoring of beverage and package quality

Carbon dioxide, opening torque, brix and fill level are parameters that significantly affect the product quality of beverages recognized by the consumer. A continuous monitoring of these is therefore essential to ensure a constant and repeatable quality of bottled products. The Steinfurth Compact Package Analyzer (CPA) as a Mini-Lab concept optimizes dramatically the workflow in the modern quality control (replacing or extending the so far mostly decentralized and inefficient monitoring of these parameters).

The heart of the Steinfurth CPA concept is the “Master”, an instrument which acts as the control center for all other devices linked with it (“Slaves”). The “Slaves” which can also be existing devices from other manufacturers need as their only requirement a serial data interface.

Global sample and procedure adjustments for the complete Mini-Lab can be executed via the control panel of the CPA Master module. This can be done automatically via barcode scanner, or manually via the integrated touch screen. Subsequently the measurement results of all linked devices are collected and stored on the hard drive of the Master. A central transfer of the measurement data is enabled at any time (via Ethernet interface directly into a PC network).

The CPA concept develops its maximal benefits with outsourcing of the quality control test operations to the production line. Especially Steinfurth instruments integrated to the at the line operated Mini-Lab convince with their robust construction and automatic, extremely easy and user independent operation.

STEINFURTH®
Electromechanical Measuring Systems

Steinfurth „Master“ & „Slave“ Modules integrated to the CPA concept

Steinfurth® CDA-MK6/CO2MS-3V the globally established carbon dioxide measuring systems combine optimal sample preparation, measurement and result analysis in single All-in-One instrument. By consideration of all packaging influences on the beverage quality the system delivers very precise results in shortest possible time. Via serial interface any automatic Steinfurth CO_2 tester can be simply integrated to the CPA as a “Slave”.

The automatic torque tester **Steinfurth® TMS 4000/4010** is designed to analyze the opening performances of all kinds of screw-caps. The TMS 4000/4010 also measures automatically the for the 1881 closures important closing angle. With its very easy, intuitive operation via touchscreen or barcode scanner every measurement is user independent and executable directly at the production line.
Every TMS 4000 / 4010 is delivered ex-works with complementary Master functionality on board).

For Brix measurement Steinfurth recommends the Maselli LR02 refractometer. The sapphire prism, durable LED-light source, high resolution CCD-Sensor and easiest operation guarantee high accurate and user independent measurement results. The Maselli LR02 as well as other types of measurement instruments with data interface (for example Maselli DR-10 and brix meter from other manufacturers) are easy adaptable to the Steinfurth CPA concept.

Steinfurth® FLB 3400 completes as precise lab scale the range of instruments integrated to the CPA. It measures the fill level by taking tara weight and density into account. The unique inductive load sensor is overload protected and robust enough to be used directly at the production line. Of course, also scales other manufacturers can be easy integrated to the CPA concept.

Benefits

- Customer specific instrument combination (new and existing devices adaptable)
- Automatic sample specific program and tolerance adjustment (via barcode scanner)
- User independent, automatic functionality and flexible configuration of all linked instruments
- Integrated optimal sample preparation
- Designed for operation directly at the production line
- Maximal reduction of process times
- Combined and centralized monitoring of beverage and packaging quality
- Easiest operation via color touch screen
- Data transfer via integrated FTP-Server; CAN-bus, or serial interface (RS 232)
- Robust construction and integration in customized QA software setup
- Operation by line personnel (no lab skills required)

STEINFURTH CAN PRESSURE TESTER (CPT)

for ergonomic manual pressure measurement in cans

The Steinfurth Can Pressure Tester is easily ergonomic attached to beverage cans. It pierces eccentric the top lid of the can (for proper piercing outside of the pull ring area). The internal headspace can pressure can be read from the digital or analogue pressure gauge attached to the CPT piercing mechanic.

BENEFITS:

- Direct readings of the internal pressure
- Digital or analogue pressure gauge
- Easy operation (single-handed)
- Exchangeable adapters for customized can types

OPERATION:

The Can Pressure Tester is equipped with an adaptor, which is slipped underneath seaming ring on the can. At the same time, it aligns the piercing needle with the seal on the top lid of the can. By single-handed movement of the piercing handle, the device is clamped onto the can. By this, the top lid of the can is pierced by a hollow needle.
The internal pressure can be read from the pressure gauge. The Can Pressure Tester is available with an analogue as well as with a digital pressure gauge.

TECHNICAL DATA:

Pressure range:	0…6 bars / 0...87 PSI (analogue) -1...10 bars / 0...145 PSI (digital) -1...3 bars / 0...43.5 PSI (digital)
Pressure accuracy:	1% FS (analogue) 0.1% FS (digital)

CLOSURE TESTER (CT V6)

Test Environment for combined Proper Application and Top Load Vent Test

Resistance against interior pressure should be tested frequently, but at least when a new closure design is to be introduced. The Steinfurth Closure Tester gives you the opportunity to safely perform and observe this test under water in a stable plastic tank.
The second function of the Closure Tester is the so-called Top Load Vent Test. This means testing the resistance against leaking while a strong vertical force is applied to the closure, thus simulating the stacking of the containers (bottles or cans) in trays. This test, too, is performed under water in a tank. You'll need the Steinfurth IPPS for both of these tests.

BENEFITS:

- Two important testing methods combined in one device
- Leakages are visible as air bubbles
- Define specimen temperature by heated water
- Stable polycarbonate container
- Supports for glass bottle necks, PET preforms and PET bottles
- Centering weight for bottles
- Safety interlocks

OPERATION:

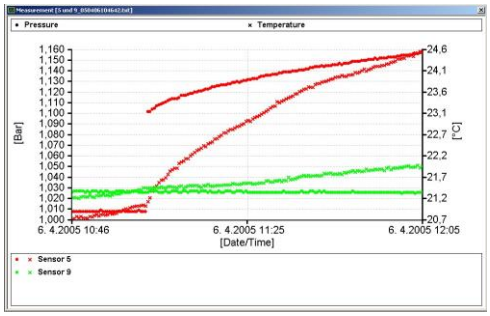
PAT: Testing pressure is applied to the specimen closure, which is on the original container (or parts thereof), under water and in the tank. The behaviour of the closure (Leakages, popping off or other failures) can be safely observed from outside.
TLVT: A vertical force is applied to the container by a pneumatic cylinder. The behaviour of the container (Leakages, cracks, collapsing) can be safely observed from outside.

TECHNICAL DATA:

Pressure range TLVT:	0…10 bar / 0…145 psi
Pressure range PAT:	0…16 bar / 0…232 psi
Tank dimensions:	∅ 140 mm x 500 mm ∅ 5.5" x 19.7"
Max. Force (TLVT):	1256 N (approx. 282 lbf)
Media:	Neutral gases

STEINFURTH DH-Pressure Transmitter

…for continuous pressure monitoring on packages



The Steinfurth pressure transmitter system type DH is a means to measure and record absolute pressures inside closed PET bottles over a long period of time.

BENEFITS:

- Standardised ISBT test for Sport Closures
- Repeatable results at any load machine
- Simulation of human jaw
- Easy adaptation to any load machine
- Safety protected clamping mechanism
- Pressure controlled operation of the jaw mechanism

OPERATION:

The pressure transmitters can be screwed onto PET bottle necks instead of a closure. They are normally fitted with MCA-1 thread adapters but can be retrofitted with wide-neck adapters, too. Each one has an internal address number by which it is accessed by the PC software.

TECHNICAL DATA:

Pressure range: 0...10 bar (abs)
Channels: 2
Absolute pressure
Temperature of pressure sensor
Sampling rate: 10 s...86400 s
Protection class: IP 67 (transmitters)
IP 54 (hub/supply)

System components:

- Multiplexer cabinet
- Transmitter hub
- A number of pressure transmitters
- PC software “Pressure Transmitter”

STEINFURTH DIGI MANO

Digital manometer for high precise pressure monitoring

Pressure is one of the mostly monitored physical values in many industrial applications (especially in the beverage industry). The value of pressure describes the physical pressure and can be used additionally for calculation of weight, flow, load, fluid deep and many other parameters. The need of robust, precise and flexible programmable pressure monitoring indicates the development of the microprocessor controlled Steinfurth DIGI MANO.

BENEFITS:

- high accuracy
- robust, waterprotected housing
- energy saving electronic device
- autark functioning
- food grade sensor membrane
- flexible programming
- selectable measuring units
- stabile, temperature compensated calibration
- long live battery
- simple one-button operation

OPERATION:

The DIGI MANO can be simple screwed on every process place. The front membrane guarantees headspace-free pressure transmission.
Customer specific programming makes possible to calculate and display of many pressure based measuring parameters.

TECHNICAL DATA:

Measuring range:	0 to 10 bar (typical)
Resolution:	10 mbar
Accuracy:	0.1% FS (at 20 °C)
	0.2 %FS (0…50°C)
Temperature compensation:	0 to 50°C
Area temperature:	-10 to 60°C
Humidity protection:	IP 65
Material of housing:	Polyamide 12
Pressure connection:	G¼ (other on request)
Weight:	ca. 250 g
Battery:	3.6V Lith. or 3V CR 2430
Additional outputs:	RS 232 (optional)

STEINFURTH DIGI VACU …

...for precise manual pressure &vacuum monitoring

Pressure is one of the mostly monitored physical values in many industrial applications (especially in the beverage industry). The value of pressure describes the physical pressure and can be used additionally for calculation of weight, flow, load, fluid deep and many other parameters.
The Steinfurth DIGI VACU is a high accurate, ergonomic digital vacuum tester for monitoring of the vacuum pressure in beverage or food packages.

BENEFITS:

- high accuracy
- robust, waterprotected housing
- energy saving electronic device
- intergrted piercing needle
- food grade sensor membrane
- flexible programming
- selectable measuring units
- stabile, temperature compensated calibration
- long-live battery
- simple one-button operation

OPERATION:

The DIGI VACU can be simple pierced on every beverage or food package. The front membrane guarantees headspace-free pressure transmission.
The measured value is shown on the LCD and can be optionally memorized and transferred to the PC.

TECHNICAL DATA:

Measuring range:	-1…2bar/-14.5…29PSI -1…10bar/-14.5…145PSI
Resolution:	10 mbar
Accuracy:	0.1% FS
Temperature compensation:	0 to 50°C
Area temperature:	-10 to 60°C
Humidity protection:	IP 65
Material of housing:	Polyamide 12
Pressure connection:	G¼ (other on request)
Weight:	ca. 250 g
Battery:	3,6V Lithium
Battery life:	> 200 days
Additional outputs:	RS 232 (optional)

STEINFURTH Drop Cart Tester

…Standardized drop tests on beverage cans

The Drop / CART Tester is a testing device designed to support two different beverage can stability tests: Drop Test and Can Abuse Resistance Test (CART). The Drop test includes repeated dropping of a specimen can onto a plain anvil plate from ever increasing heights. CART includes repeated dropping of a specimen can onto an anvil plate different from that used for the drop test, but from a fixed height.

BENEFITS:

- Based on ISBT test for cans
- Repeatable results at any test place
- Easy drop height adjustment
- Automatic stepwise change of drop height
- Easy adjustment for different can diameter
- Usable for cans and aluminium bottles

OPERATION:

The Drop/CART Tester retracts a support on which the can rests. The can will then fall down, guided by a set of parallel steel rods. These can be adjusted to fit the can. The retraction movement is triggered by pressing the green button (marked “Release”) on top of the valve cabinet. One or two seconds later, the support will extend again.

TECHNICAL DATA:

Pressure supply: 4 bar (58psi) to 10 bar (145psi)
System components:

- Concentric anvil plate for drop test
- Eccentric anvil plate for drop test

Drop height: 60mm …300 mm
Can diameter: 45mm … 70 mm

Thermometer DTM Special

Precise temperature measuring

Product Details	Specification
Industry	Beverages, Food Industry, Pharmacy, Packaging Industry
Employment	Measuring
Measurement Categories	Temperature
Objects	Liquids
System	No

Advantages

- automatic self test
- low energy consumption
- high precision electronic
- high-grade temperature sensor (T90 = 4sec)
- Min/Max-memory

Technical Data

- measuring range: - 5 … 35° C
- accuracy: better than +/- 0.03°C +/- 1 digit
- resolution: 0,01°C
- battery life: approx. 2000 h

FOAM STABILITY TESTER

...for perfect automatic foam stability testing

Foam stability is an important beer quality parameter. Measuring foam stability, however, has been so far either laborious or inaccurate – or both.
The demand for an accurate and user-/location-independent stability measurement device led to the development of the automatic Steinfurth Foam Stability Tester.

BENEFITS:

- Good reproducability
- Results comparable to Ross & Clark
- Automatic sampling
- Automatic rinse
- Simple operation
- User independent
- Constant absolute pressure – location / ambient pressure independent measuring (optional)
- Suitable for all beer sorts
- Optoelectronic detection
- Precise dosing
- Simple cleaning

OPERATION:

The container (bottle or can) with the beer to be measured is connected to the Steinfurth Foam Stability Tester, using a sampling device. The beer is moved into the FST by CO_2 pressure. The pressure is such that the beer doesn't degasify inside the container.
The beer is ejected into the glass cylinder through a nozzle, converting it into foam. Foam stability is calculated from the timing of the passing of the beer / foam boundary along some optical sensors.
Before every measuring, the cylinder is rinsed automatically. It is possible to start an automatic series of several consecutive and independent measurings from the same container.

TECHNICAL DATA:

Container type:	Bottle or can
Duration of 1 measuring:	approx. 5 minutes
Data output:	LC display 2 lines with 20 characters
Interface:	RS 232 (PC or printer)
Power supply:	230/115VAC
Rinse fluid:	Tap water
CO_2 supply pressure:	4.5 bars (65psi)

Universal PET Holder

…Simple test adaptation of bottle necks and closures

The PET bottle finish fixture is a means for pressure testing closures on finishes of existing PET bottles if a preform isn't available for that purpose. It is designed for use inside the safety tank of the Steinfurth Closure Tester V4. It is made entirely of stainless steel and other water-resistant materials.

BENEFITS:

- Wide range of standard adapters inclusive
- Easy change between bottle finishes
- Flexible usage in different Steinfurth testers
- Easy vacuum and pressure test on closures
  Quick connection to pressure source

OPERATION:

The universal PET holder system, consisting of a set of bottle adapters and pairs of half rings, allows the use with a large variety of bottle finishes. The system fits also to the PET bottle finish fixture for vacuum tests and the Steinfurth OPT test bottle. The system is designed to withstand internal pressures up to 16 bar / 232 psi

TECHNICAL DATA:

Max. pressure 16 bar / 232 psi

Available bottle finish adapter (in mm):
26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, other on request

ICS 210

New generation of inline carbonation for wine refreshing

Carbon dioxide is known as one of the major refreshing and taste impacting ingredients of wine (beer or soft drinks).

Effective adjustment of the carbonation level (carbonation for white and rose wines, or CO2 reduction for red wines) is an important process step in adjustment & production of the optimal wine quality.

Quality improvement in white and rosé wines

The unique incorporation of fine carbon dioxide bubbles lends freshness and lightness to the flavour and body of wines. Even with dense and voluminous wines, it imparts aromas. The subtle carbon dioxide bubbles make white and rosé wines fresher, livelier and aromatic.

De-carbonation and CO2 adjustment in red wines

Excess and disturbing carbon dioxide can be removed from red wines. Instead of charging with carbon dioxide, plain nitrogen is used. The new designed ICS 210 carbonator makes it easy to adjust the optimal content of carbon dioxide in wines. The wine is simply passed through the system and conveyed unpressurized into the tank.

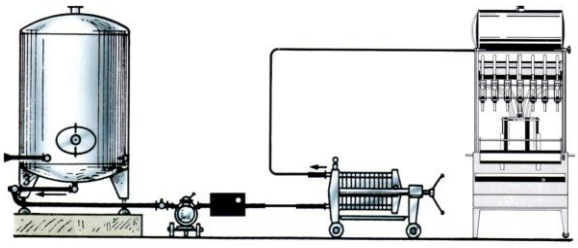
The device works purely pneumatically and doesn't need any electric energy supply. The desired carbon dioxide concentration is set directly at the device itself. If product flow drops below a minimum flow rate, the device is automatically deactivated. When the product flow increases, carbonation is activated again.

BENEFITS:

- Quick return of investment
- Low maintenance requirements
- Easy exchangeable service module on board
- Accuracy and consistency of product quality
- Easy installation and operation
- Wide range of flow rates covered with one system
- High efficiency
- CIP compatible

OPERATION:

A feed pump (not included) presses the beverage through a built-in Venturi injector, where the desired amount of CO_2 is added. The CO_2 bubbles dissolve in the downstream mixing stage.



TECHNICAL DATA:

Flow rate: (depending on injector size)	700 - 12.500 l/h (185 – 3302 gal/h)
CO_2 concentration: (continuously variable, temperature-dependent)	0-6.0 g/l / 0-3.0 vol
Required feed pump pressure:	≥ 2-3 bar/29-44 PSI
Maximum operating pressure:	6 bar / 87 PSI
CO_2 supply pressure:	7 bar / 102 PSI
Dimensions (LxHxD) in mm: inch:	270 x 190 x 160 10.6 x 7.5 x 6.3
Pressure loss:	approx. 0.7–2.0 bar (10 – 29 psi)

ICS 610 INLINE CARBONATION SYSTEM …

…for reliable and efficient small scale inline carbonation

Especially for production of small batches, carbonation systems can be the major expense factor. The ICS 610 with its perfect price to performances ratio is an optimal solution for this application. The carbonation system is built directly into the beverage line and driven by the beverage flow automatically injecting the carbon dioxide to the beverage.
The ICS 610 is designed especially for spritzers, sparkling wines, table waters, beer and mixed beverages. The most remarkable feature of the device is the automatic, extremely accurate and reliable injection of the carbon dioxide in the beverages.

Each ICS 610 is designed customized for the user specifications. It can be placed directly before the filler (requiring a small buffer tank) or, better, between two tanks. (The target tank must be pressurized for the CO_2 to stay dissolved.)
The rated diameter can be chosen individually, as well as the pipe connections.
The device works purely pneumatically and don't require any additional electric energy supply. The desired carbon dioxide concentration is set directly at the device itself. If product flow falls below a minimum flow rate, the carbonation is automatically deactivated. When the product flow increases to the minimum flow rate, the carbonation starts again.
The ICS 610 is made of high-grade materials which are approved by food and beverage industry standards. The device is designed for CIP.

BENEFITS:

- Customer-specific rated diameter and pipe connectors of device and mixing stage
- Perfect price/performances ratio
- Reliable precise carbonation
- Designed for CIP
- Carbonation driven by the product flow
- Easy, automatic operation
- Carbonation, De-carbonation and oxygen removal
- No electric energy supply necessary

OPERATION:

A feed pump (not included) presses the beverage through a built-in Venturi pipe where the desired amount of CO_2 is injected. The CO_2 gas dissolves smoothly in the downstream mixing stage.
Within operating range, CO_2 dosing is largely independent of the product flow rate.

TECHNICAL DATA:

Flow rate: (depending on injector size)	1,000 – 16,000 l/h (265 – 4225 gal/h)
CO_2 concentration: (continuously variable, temperature-dependent)	0 - 6 g/l / 0 – 3 vol
Required feed pump pressure:	≥ 6 bar / 87 PSI
Maximum operating pressure:	10 bar / 145 PSI
CO_2 supply pressure:	10 bar / 145 PSI
Dimensions (HxWxD) in mm: inch:	150 x 295 x 100 5.9 x 11.6 x 3.9
Dimension of mixing stage [mm]: [inch]:	∅ 80 x 210 ∅ 3.2 x 8.3
Rated diameter:	DN 40 or DN 50
Pressure loss:	approx. 3–3.5 bar (43 – 50 psi)
Minimum flow rate:	approx. 2/3 x rated flow

STEINFURTH Ball Impact Tester

…for standardised, ISBT conform ball impact test on bottle closures

The Steinfurth Ball Impact Tester allows standardized impact tests for bottle closures. The bottle to be tested is held in a box, which can be swung from a horizontal to a vertical position in steps of 5 degrees.

BENEFITS:

- Standardised ISBT test for Sport Closures
- Repeatable results at any test place
- Suitable for any type of bottle closures
- Adjustable for glass and PET bottles
- Easy change of the drop pipe
- Safety protected closed impact chamber
- Adjustable impact angles and heights
- Adjustable impact point
- Bottle neck holder based on the Steinfurth Universal PET Holder

OPERATION:

The impact weight, mostly a steel ball with defined mass and diameter, is manually dropped through a drop pipe. The kinetic energy of the impact is defined by the length of the pipe and the mass of the weight. The drop pipe can be adjusted to select the desired target point.

TECHNICAL DATA:

Drop height:: adjustable (see test procedure)
Weight of the impact weight: variable based on test procedure

System components:

- Safety Protected cabinet
- Bottle holder
- Drop pipe
- Impact weights (balls or bullets possible)
- Holder for spare pipes, impact weights and tools

IPPS-INTERACTIVELY PROGRAMMABLE PRESSURE SEQUENCER VERSION: MEASURE & SWITCH

Automatic generation and monitoring of pressure sequences in the package testing

Package testing often requires defined pressure sequences. The IPPS can be programmed with up to 99 different pressure sequences. The programming can be done by the operator; special knowledge isn't necessary. Once programmed, the pressure sequences can be selected and activated. The duration of a sequence can vary from seconds to months. Repetitions are also possible.
The IPPS M+S offer additionally the possibility of pressure monitoring and switching of the outlet valves with the possibility to set warnings in case of pressure monitoring outside of specification.

BENEFITS:

- Time saving via automatic operation
- Operator independent pressure generation
- Defined pressure sequence with linear or step transitions
- Simple implementation of standard tests
- Automatic pressure and valve monitoring
- Interactive programming
- Menu-based user interface
- Water separator (for tests with gushing liquids)

OPERATION:

The container to be tested is connected to one of the pressure output connectors. Pressure follows the programmed sequence.

TECHNICAL DATA:

Output pressure:	0 to 10 bar (0 to 145psi) 0 to 16 bar (0 to 230psi)
Input pressure:	12/18 bar (174/261 psi)
Resolution:	0.1 bar (1.45 psi)
Min. step duration:	1 sec.
Media:	Neutral gases

IPPS-INTERACTIVELY PROGRAMMABLE PRESSURE SEQUENCER

Automatic generation of pressure sequences during package testing

Package testing often requires defined pressure sequences. The IPPS can be programmed with up to 99 different pressure sequences. The programming can be done by the user; special knowledge isn't necessary. Once programmed, the pressure sequences can be selected and activated. The duration of a sequence can vary from seconds to months.

BENEFITS:

- Defined pressure sequence with linear or step transitions
- Simple implementation of standard tests
- Interactive programming
- Menu-based user interface
- 10 pressure output connectors
- Numerical keyboard
- Water separator (for tests with gushing liquids)
- Pressure monitoring (optional - with MS version)

OPERATION:

The container to be tested is connected to one of the pressure output connectors. Pressure follows the programmed sequence.

TECHNICAL DATA:

Output pressure:	0 to 10 bar (0 to 145psi) 0 to 16 bar (0 to 230psi)
Input pressure:	up to 12/18 bar (174/261 psi)
Resolution:	0.1 bar (1.45 psi)
Min. step duration:	1 sec.
Media:	Neutral gases

STEINFURTH CO_2 TANK & KEG TESTER

for user independent CO_2-measurement on a tank or KEG

Checking of the CO_2 content at different process steps is essential to verify the quality of the final product. The Steinfurth Tank & KEG Tester can be connected to a tank of the product line or KEG for easy product sampling.
The System combines easy operation with the new, highly accurate and compact CO_2 manometer for simultaneous pressure and temperature measurement and automatic CO_2 calculation. The instrument is designed as price competitive alternative to the existing CO2 testers for tank & KEG measurement and with the ergonomic, water resistant housing a reliable tool for innovative brewers.

BENEFITS:

- Perfect price to performances ratio
- Controlled operator independent operation
- Easy calibration/validation
- Easy cleaning and sanitation
- Automatic CO_2 calculation
- Working with up to 3 individual CO_2 formulae

OPERATION:

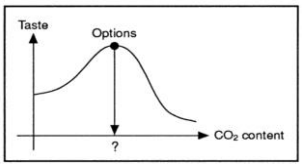
The instrument is connected to the a tank or KEG by a tube and filled with the product. After disconnecting the instrument from the tube the measurement is made by shaking and snifting. The measurement is operated controlled by the CO2 Mano.

TECHNICAL DATA:

Measuring range	0…10 g/l / 0…5 vol
Pressure range:	0 to 10 bar / 0 to 145 psi
Temperature range:	-5°C…25°C/23°F…77°F
Repeatability (CO_2):	± 0.1 VOL / ± 0.2 g/l
Resolution:	0.1 g/l

LCS 710 P LABORATORY CARBONATION SYSTEM

Precise lab scale carbonation in single beverage samples



The quality enhancing properties of carbon dioxide are widely known within the beverage industry. Each beverage has its own specific content of carbon dioxide which taste and flavour are optimally developed.

Until now it has been complicated, requiring a lot of time & money to produce beverage samples with individual CO_2 content.

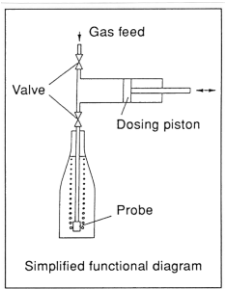
The LCS 710 P carbonates individual beverage samples with exactly pre-defined CO_2 content. This unit makes it possible to re-produce, easily & quickly samples for analysis.

The versatility of different carbonation settings helps to develop beverage samples for “sensoric” testing, what ensures that customer receive optimally created products.

BENEFITS:

- Cost savings during beverage development
- Simple adjustment for different bottle sizes
- Fully automatic function / Menu-driven input of bottle size and CO_2 value
- Automatically secured safety cage
- Very good repeatability of results
- Double dosing speed selectable
- High accuracy also with PET bottles and cans ***PET and Can Holder are optional accessory***
- Automatic head space purging with CO2 gas
- Reduced foaming of the beverage samples
- Optimized automatic cleaning program
- Low maintenance effort by of automatic lubrication

OPERATION:



Simplified functional diagram

An injection probe is pushed into the test bottle.
To start, a pressure of approximately 6 bar is generated within the bottle. Two defined snift phases are used to remove the air (or other gases) from the package headspace.Through a dosing piston an exact pre-defined quantity of CO_2 will be added to the liquid.
Un-dissolved CO_2 will be “re-dosed” until it is absorbed completely by the liquid.

TECHNICAL DATA:

Bottle size (other on request):
Glass: up to 360mm height/100 mm diameter
PET: up to 330mm height/90 mm diameter
Dosing capacity: 0 to 10 g/l
(depending on temperature and solubility)
Accuracy: +/- 0.1 g/l
Max. Bottle pres.: 7 bar
Power supply: 230V / 50 Hz (115V / 60 Hz)
Dimensions: 560 x 610 x 280 (W x H x D)
Weight: 33 kg

LMS(TM) LASER MEASUREMENT SYSTEM

…The all-in-one measurement system for package dimensions and fill height

The Laser Measurement System LMS(TM) performs dimensional analysis on containers of various shapes and sizes, quickly and accurately. The LMS(™) scans single-serve packages, large volume packages, and everything in between.

Benefits:

- Quickly and accurately analyze of packages
- Virtually operator independent
- Intuitive, easy to use software
- Memory function of frequently tested container
- Flexible format of the data output
- Easy calibration
- Measures most empty and filled bottles
- Easy operation
- Integrated auto-feeder for higher capacity
- Integrated fill height measurement (optional)

Advanced Software and Scan routines:

- Min/max diameter within height range
- Major/Minor Axis measurement of non-round containers
- Overall height
- Determines perpendicularity

Functional description:

In addition to standard scanning functions, the LMS(TM) searches a region of the bottle, finds the smallest or largest diameter in that region, and scans the container at that specific location.
The Instrument is an excellent system for comparison data before and after the package is processed.

Technical data:

<u>Laser Micrometer:</u>	
Measuring Range:	1.0 to 180 mm 0.03937 to 7.086 in
Measuring Accuracy:	+/- 10 µm (+/- 0.0004 in)
Resolution:	+/- 1.2 µm (+/- 0.00004 in)
Laser Light Source:	Visible Red Semiconductor (670 nm), 1 output, Class 2
<u>Positioning System:</u>	
Vertical Travel:	381 mm (15 in)
Vertical Resolution:	+/- 2.5 µm (+/- 0.0001 in)
Rotary Travel:	360°
Rotary Resolution:	+/- 0.005°
Auto-feeder Capacity:	12 containers
Safety Feature:	safety shield & laser curtain
Fill Height Measurement:	optional

Rotech Inspection Keg

This is a brewery standard keg fitted with sensors and a data logger. It is an essential tool for every brewery with a keg filling line, large or small. Send it through the line as normal; transfer data to PC or laptop; look at the results on screen and see exactly what is happening *inside the keg* during every cycle of washing, disinfection, filling.

Without this information, it is almost impossible to know if disinfection treatment is adequate (temperature + contact time + steam quality) – or even if all air has been purged from the keg. Are there any filling or gas-balance problems? – see why; and how to fix.

The Rotech Keg *removes all doubt or questions*. Its powerful friendly software instantly shows the quality and effectiveness of keg disinfection, and any other problems or opportunities for process improvement.

The record from the Rotech Keg is a positive statement of quality – essential for many ISO9002 procedures and HACCP responsibilities.

Technical Data:

In-keg parameters: Temperatures, pressure, clamp status; plus options
Logging frequency: Programmable, 0.5 seconds standard
Memory: Non-volatile, capacity 2-3 hours (at 0.5 sec.)
Battery: 2 years typical (at 0.5 sec. rate)
Data transfer: Non-contact infra-red

Benefits:

- Uses a standard brewery keg (any size or type)
- Extremely easy to use – single button operation, no loose parts
- Powerful Windows™-based software with many dedicated keg-line features – makes analysis simple
- On-screen checks for key parameters – see immediately if out of range – no process knowledge needed
- Removes all guesswork, line can be optimised with complete confidence
- Backed by over 15 years keg line experience Used by virtually all major Groups worldwide

Data Reader

PRESSURE CALIBRATOR TS 92.4

Mobile, precise manometer and pressure calibration

The pressure calibrator is used for precise monitoring and adjustment of pressure gauges and transmitters. It is equipped with a precision manometer. A fine adjusting screw and a valve complete this portable device.

BENEFITS:

- Precise pressure generation
- Digital precision manometer
- Integrated pressure pump
- Easy operation
- Fine adjusting screw
- Portable
- Battery operated
- Three versions with several pressure ranges

OPERATION:

The pressure gauge to be checked is connected direct ly to the quick coupling of the calibrator. After closing the valve, the pressure can be increased by the hand pump and decreased by the valve. Small changes can be made by the fine adjusting screw.

TECHNICAL DATA:

Low pressure calibrator

Air pump: up to 10 bar / 145psi
Vacuum pump: down to -850 mbar / -12.3psi
Pressure range: -1…2 bar / -14.5…29psi
-1…10 bar / -14.5…145psi

Medium pressure calibrator

Integrated hand pump
Pressure range: -1…10 bar / -14.5…145psi
-1…20 bar / -14.5…290psi
-1…25 bar / -14.5…362.5psi

High pressure calibrator

Pre-compression pump
Screw compressor for pressurizing and fine adjustment
Oil reservoir
Pressure range: 0…200 bars / 0…2900psi
0…350 bars / 0…5075psi
0…700 bars / 0…10150psi

All calibrators

Accuracy: 0.1% FS, within 0…50°C / 32…122°F
Resolution: 7400 steps (0.014% FS)
Battery life: approx. ½ year, permanent operation
Displays: Pressure, temperature, time, unit
Memory: 946 readings (optional 8114)
Interface: RS 232

OPENING PERFORMANCE TESTER 180

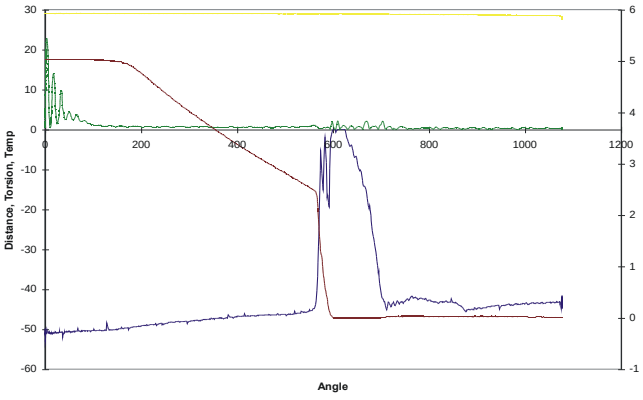
…Standardised automatic testing of bottle closures and finishes

The OPT 180 opens a bottle closure with adjusted repeatable speed on the original thread finish. Meanwhile, it records torque, rotation angle, vertical movement, pressure and temperature. The OPT doesn't exert any vertical force on the closure, making a possible blow-off-effect clearly visible. The recorded data is transferred to the PC and evaluated for standardised opening performance conditions.

BENEFITS:

- Test on original bottle thread
- Test with original beverage possible
- Adjustable gas volume and headspace pressure
- Reproducible procedures and testing results
- Simultaneous recording of torque, rotation angle, vertical movement, pressure and temperature
- Closing mode with defined torque
- Simple blow-off detection
- Programmable test parameters
- Safety door

Opening Performance



For beverage filler and closure manufacturer, the opening performance of twist closures is an important quality parameter.

OPERATION:

A cut preform or bottle neck ist fitted to a test bottle. The gas volume is adjusted by filling the bottle. The OPT 180 closes the bottle, pressurizes the test bottle and opens the closure after a short period of time.

TECHNICAL DATA:

Opening revolutions:	≤ 180 rpm
Torque:	0...50 in-lbs
Pressure:	-1...9 bar (-14.5...130 psi)
Temperature:	-5...95 °C (23...203°F)
Vertical movement:	0...80 mm
Scanning speed:	100 Hz
Ambient temperature:	0...40°C (32...104°F)

Orange Bottle - Torque checking bottle

for easy verification of torque measuring systems

Orange Bottle with hexagonal head

DESCRIPTION:

The Orange Bottle is used to verify the operational repeatability of torque measuring instruments. This bottle is constructed with high energy permanent magnets and is pre set at the factory to a customer specified torque of between 5 to 15 inlbs. Each Orange Bottle is labeled with its exact torque rating and repeats to an accuracy of +/- 0.2 in-lbs.

ADVANTAGES:

- High reproducibility
- Quick verification of the system
- Delivered with customer specified cap
- Set to customer specific torque value

OPERATION:

The Orange Bottle can be used instead of a real bottle for torque measuring. The value from the torque instrument can be compared with the Orange Bottle and should be in range of the deviation.

TECHNICAL DATA:

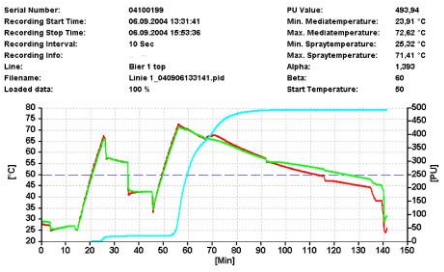
Accuracy:	+/- 0.2 in-lbs
Height:	200 mm (approx.)
Diameter:	68 mm (approx.)
Weight:	1.5 kg (approx.)

STEINFURTH PASTCONTROL

Precise pasteurization monitoring

For producers of pasteurised beverages, pasteurisation monitoring is essential. Insufficient pasteurisation results in microbiologically impact product charges; if pasteurisation is carried too far, taste is affected. Therefore, an accurate measuring of pasteurising units on a regular base can't be neglected.

The Steinfurth PastControl system simplifies this task. The safe and simple operation requires only a short instruction to the operation personnel. The PU value can be read from the PU monitor's display directly at the pasteuriser line.
The complete evaluation of the measured data is done at the PC. Clearly structured software offers graphical display as well as clearly arranged data storage. All measuring data files include a time stamp and a line ID code, so that all measurement data can be traced back. An unlimited number of loggers can be used.



BENEFITS:

- Single or dual channel temperature measuring
- Standard and special probe sizes available, can be fitted to various containers (bottle or can), using adapters
- Exact positioning of probe tip
- Simple operation and handling
- Small base space preserves thermal influence of surrounding containers
- Storage memory for up to 255 recordings (flexible partitioning, e.g. 250 recordings with 180 minutes each at 5 seconds interval)
- Programmable PU parameters
- Programmable measuring interval
- Programmable line ID
- Display of PU value and peak temperatures directly at the line
- Graphical evaluation and data storage on the PC
- Password protected parameters

OPERATION:

The Steinfurth PastControl system for cans and bottles consists of a temperature logger, the PU monitor for the line and an interface and software for the PC as well as the necessary adapters.
The logger is fitted to the original container and moved through the tunnel pasteuriser with it. Meanwhile, the temperature at the selected (coldest) spot inside the container is measured and recorded. Optionally, the spray temperature is recorded, too (Dual channel version).
When the logger has left the tunnel pasteuriser, it is fitted to the PU monitor, and the number of pasteurising units (PU) can be read from the PU monitor's display. Afterwards, the logger can be started again and is ready for the next recording. The previous recordings remain in the logger's memory and can be evaluated later.

TECHNICAL DATA:

Container type:	Bottle or can
Channels:	1 (Cold spot) or 2 (Cold spot and spray)
Memory:	540672 measurings (1 channel) 2 x 270336 measurings (2 channel)
Interval:	programmable (1 s … 24 h)
Measuring range:	-5°C … 80°C (32°F … 176°F) (-5°C…105°C / 23°F…221°F opt.)
Accuracy:	+/- 0.1 °C (+/- 0.18°F)

Rotational Sport Closure Tester

…for standardised safety tests on sport closures

The Rotation Tester for Sport Closures (RTSC) is an appliance designed for use on an automatic tensile testing machine. It consists of a preform fixture mounted to a wheel, a bite mechanism with integrated adjustment fixture and a safety coupling. The purpose of this device is the simulation of a human attempting to open the spout cap of a sports closure, especially with his or her teeth.

BENEFITS:

- Standardised ISBT test for Sport Closures
- Repeatable results at any load machine
- Simulation of human jaw
- Easy adaptation to any load machine

OPERATION:

The design of the clamp assembly complies with ISBT physical performance testing methods #102 and #103. It simulates a human (infant) jaw with teeth. The bite force is set by shifting a weight along a threaded rod. It can be measured using a standard load cell.

With the specimen preform with closure in place, the closure is rotated around the position of the clamped spout, possibly resulting in completely removing or damaging the spout cap.

TECHNICAL DATA:

Bite force (max.):	141 N / 31.7 lbf
Specimen diameter:	30 mm / 1.2 in
Preform diameter:	15...27 mm / 0.6...1.2 in
Load cell capacity:	200 N / 45 lbf

STEINFURTH SAMPLER

Ergonomic and safe beverage sampling on bottles and cans

The Steinfurth Sampler pierces and pressurizes PET and glass bottles and cans. Piercing is performed pneumatically, so there is no need for great manual forces. The Steinfurth Sampler is suitable for gas analyses (e.g. oxygen, CO_2…) and foam stability measurements.

BENEFITS:

- Automatic piercing system
- Safety cabinet
- Easy operation
- Rugged design
- Adjustable piercing force
- Adjustable pressure

OPERATION:

Place the bottle or can on the pressure plate. Adjust the yoke, if not already done, and close the cabinet door. Then switch on the piercing mechanism – the bottle is lifted against the yoke and the bottle closure will be pierced. Lower the standpipe into the bottle, and switch on the pressure.

TECHNICAL DATA:

Pressure range:	0…6 bar / 0…87 psi
Max. Bottle diameter:	120 mm / 4.7”
Max. Bottle height:	340 mm / 13.4”

(Other dimensions on request)

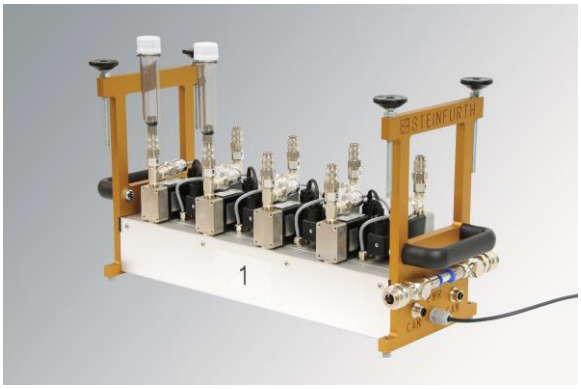
IPPS IM (ESCT - TESTER)

for automatic simulation of the Environmental Stress Crack Test on plastic closures

Wherever beverage packages are made or used, pressure and leak tests are a vital part of quality control. The Steinfurth IPPS-IM is a powerful tool for testing pressure resistance and sealing properties of closures under adverse conditions such as elevated temperatures or exposure to chemicals. The IPPS-IM performs the so-called “Leak Test” (Environmental Stress Crack Test on Closures). Up to 72 samples can be tested simultaneously.

Operation:

The samples consist of closures screwed onto PET preforms featuring the original threads. Before any test, these PET preforms must be fitted with special pneumatic quick couplings. The sample preforms are fitted to the work benches with their closures on top. First, the IPPS-IM pressurizes the samples with a defined testing pressure, after which a shut-off valve isolates the sample from the pressure source. Afterwards, the pressure inside each sample is constantly monitored and recorded. If the pressure inside a sample drops under a defined limit (permitted pressure drop), the sample will be re-pressurized by the shut-off valve opening for a short period, after which it will be isolated again.



Benefits:

- Defined pressure generation with linear passages or defined pressure jumps
- Easy implementation of standard tests
- Automated pressure monitoring
- Flexible programing
- Menu driven operation
- Pressure outlet with water separators
- Full color graphical touch screen
- Measuring data export over Ethernet-connection and FTP-Server

Technical Data:

Pressure range:	0…10 bars
Pressure source:	12 bar
Number of samples:	1-72 (up to 9 benches)
Resolution:	0.1 bar
Media:	neutral gases

SF-TorqTraQ® Torque Measuring System

…Ergonomic hand-held torque measurement

In the food & beverage industry, the opening torque of bottles and other containers with twist-off closures is an important quality parameter and vital for customer satisfaction.
The ***TorqTraQ***® device serves both of these needs in an easy-to-use, cost effective, and reliable package.
The ***TorqTraQ***® device uses specifically designed chucks which positively engage the closure. This unique design eliminates the variability of manually gripping closures and improves measurement reliability.

BENEFITS:

- Compact & Lightweight
- Ergonomic Design
- Reliable Test Measurement
- Water Resistant
- Capper Setup Feature

OPERATION:

The container is hold firmly in one hand and the ***TorqTraQ***® device in the other. The chuck is carefully placed over the closure and hold perpendicular to the closure and turn firmly counter-clockwise to remove the closure. Measuring the closing torque is also possible.

TECHNICAL DATA:

Measuring range:	2 … 50 in-lbs, (Application & Removal)
Accuracy:	±0.5% F.S.
Resolution:	0.1 in-lb
Units of measure:	in-lb, ft-lb, in-oz, Nm (selectable)
Alarm thresholds:	adjustable (1 to 50 in-lb)
Internal memory:	250 samples
Interface:	USB
Protection class:	IP 54
Temperature range:	0 to 50°C (32 to 120 °F)
Continuous operation:	> 5 Hrs.

STEINFURTH Shoulder Cart Tester

…Standardized shoulder impact tests on beverage cans

The Shoulder Cart Tester is a testing device designed to support the Can Abuse Resistance Test. The device includes repeated dropping of a specimen weight onto a beverage can. The device includes the can holder for optimal adjusted position during the test and height adjustable impact mechanism with release button.

BENEFITS:

- Based on ISBT test for cans
- Repeatable results at any test place
- Easy drop height adjustment
- Easy adjustment for different can diameter
- Usable for cans and aluminium bottles
- Easy operation

OPERATION:

The Shoulder Cart Tester retracts a support on which the can rests. The impact weight is released and falls down, guided by a pair of parallel steel rods. The movement of the standardized impact weight is triggered by pressing the release button on top of the device

TECHNICAL DATA:

System components:

- Can holder apparatus
- Adjustable impact weight holder
- Drop height gauge

Flow through Spout Tester…

…Standardised flow measurement on sport closures

The Spout Flow Meter is a means for comparing (and measuring) the flow resistance of so-called “sport closures”.

BENEFITS:

- Standardised test for Sport Closures
- Repeatable results at any test place
- Measurement inclusive bottle finish
  Adaptation of the bottle finishes using the Steinfurth Universal PET Holder Set

OPERATION:

As a parameter for flow properties, the standardized test that includes the use of the Spout Flow Meter yields the time needed for the free outflow of 1 litre of water from a vertically mounted plastic pipe with an internal diameter of 74 mm through the sport closure (spout down), with a minimum water level of 150 mm above the bottom end of the closed spout.Flow time is measured manually, using a stop watch

TECHNICAL DATA:

Weight:	7.5 kg
Dimensions (L x W x H):	250 x 250 x 800 mm

Necessary test items:
► Spout Flow Meter with sport closure attached
► Beaker (minimum volume: 2000 ml)
► Stop watch or lab timer

STEINFURTH SWART

Standardized Side Wall Abuse Resistance Test on cans

The industry trend in direction less expensive but still high efficient packaging forces manufactures during development of new packages to challenge the limit of materials used.

Instruments used in packaging evaluation and beverage bottling process have to delivers possibly automated testing solutions for these needs.

In case of the side wall abuse resistance test a manual, not standardised controlling of the quality of the cans is no longer accurate enough to recognize the shrinking border between well performing and insufficient robust package product.

The Steinfurth SWART (Side Wall Abuse Resistance Tester) has been developed for automatic and user independent monitoring of the mechanical resistance of pressurized beverage packaging against defined impact.

To assure most optimal process efficiency each SWART is pre-programmed with standardized fully automated and semiautomatic test procedures.

Additionally up to thirty free programmable procedures can be used for customized adaptation of the instrument to the specific test application.

FUNCTION:

The SWART is automatically adjusting subsequently to the different pre-programmed launch heights and releasing the drop weight (bullet) to fall on the sample. A destroyed sample is automatically detected.

TECHNICAL DATA:

Data Interface:	RS 232 (optional USB)
Power Supply:	110-230 V, 50/60 Hz
Dimensions:	62 x 52 x 1350 cm
	(D x W x H)
Weight:	approx. 60 kg/120 lbs

Steinfurth Temperature Logger (Telid 3T)

Monitoring of temperatures transport

Many applications in the modern beverage industry requires monitoring of temperature.
The Steinfurth Temperature Logger Telid 3T is developed as a specialized system for simple monitoring of temperature during storage or transport of beverages.

The complete evaluation of the measured data is done at the PC.
Clearly structured software offers graphical display as well as clearly arranged data storage.
All measuring data files include a time stamp.
An unlimited number of loggers can be used.
Calculation & evaluation of TDUs is part of the system software.

Product Details	Specification
Industry	Beverages, Food Industry, Pharmacy, Packaging Industry
Employment	Measuring & Recording
Measurement Categories	Temperature
Objects	Beverages & Food
Specifics	Measuring & recording during transport & storage
System	Yes
Automation Level	Fully Automatic Machine

Advantages

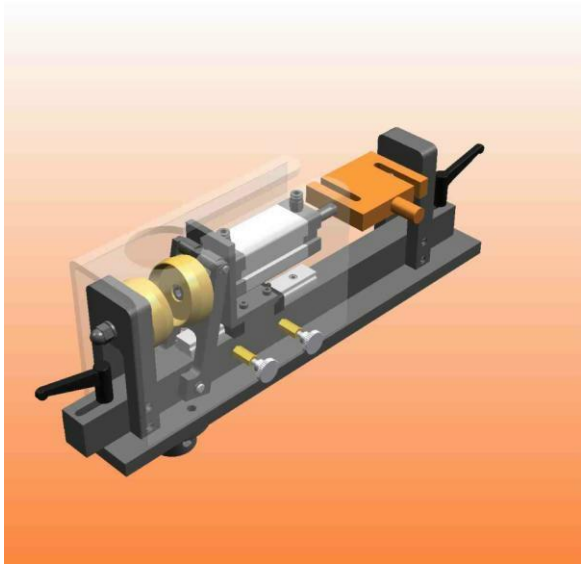
- Compact, robust build
- Simple graphic evaluation
- Documentation of temperature processes
- Self-sufficient functioning
- Food grade materials
- Data export to MS Office™
- Data transfer: via radio waves

Technical Data

- Geometry: cylindric
- Diameter: 30mm
- Height: 12mm
- Weight: 24g
- Housing: stainless steel/epoxyd
- Data memory: ca.1800 measuring values
- User-Memory: min. 64 characters
- Battery life: typical 4 years
  depending on measuring rate, mode and temperature
- Temperature range: -30...+85°C
- Storage: at –25...+25°C (to safe the battery life time)
- Temperature resolution: 0.5K
- Temperature accuracy (without calibration): 1K (0...+70°C)
  2K (-10...+85°C)
  4K (-30...+85°C)
- Thermal time coefficient: ca. 9min (in air)
  ca. 2min (in water)
- Data storage: start date & time programmable
- Measuring interval: 1...255min (programmable)

Tension Side Load Sport Closure Tester

…for standardised safety tests on sport closures



The Tension Side Load Tester for Sport Closures (TSLT) is an appliance designed for use on an automatic tensile testing machine. It consists of a pneumatic clamp assembly, a preform clamp and a pneumatic control box.

BENEFITS:

- Standardised ISBT test for Sport Closures
- Repeatable results at any load machine
- Simulation of human jaw
- Easy adaptation to any load machine
- Safety protected clamping mechanism
- Pressure controlled operation of the jaw mechanism

OPERATION:

The design of the clamp assembly complies with ISBT physical performance testing methods #102 and #103. It simulates a human jaw with teeth. The bite force is controlled by a pressure regulator located in the control box and measured using a standard load cell.

TECHNICAL DATA:

Bite force (max.):	141 N / 31.7 lbf
Specimen diameter:	30 mm / 1.2 in
Preform diameter:	15...27 mm / 0.6...1.2 in
Load cell capacity:	200 N / 45 lbf
Supply pressure:	7.5...10 bar/110..145 psi

TMS 2000 Torque Measuring System

…Manual closure torque measurement

In the food & beverage industry, the opening torque of bottles and other containers with twist-off closures is an important quality parameter and vital for customer satisfaction.

For many routine tests, where neither precise reproducibility nor special test procedures are necessary, a manually operated torque measuring device is a sensible and favourable solution.

BENEFITS:

- Precise torque measuring
- Suitable for lab and filling line
- Easy handling
- Robust construction
- On site calibration possible
- PC interface

OPERATION:

The container is fitted to the clamp mechanism and manually opened. Meanwhile, the reactive torque is monitored and its peak value displayed and stored afterwards.

Measuring the closing torque is also possible.

TECHNICAL DATA:

Measuring range:	0 … 50 in-lbs, both directions (others on request)
Accuracy:	±0.5 % F.S.
Resolution:	0.1 in-lbs
Interface:	RS 232 (optional USB)
Electricity:	240 V, 50 Hz (opt. 115 V)
Protection class:	IP 54
Dimensions:	ca. 300mmx250mmx 60mm (L x W x H)
Weight:	ca. 5 kg / 11 lb

Calibration kit for Steinfurth TMS 2000

The TMS 2000 Calibration Kit is designed as a perfect tool for the on-site calibration of the Steinfurth Torque Tester TMS 2000. The device contains a base plate with a screwed fixation for the TMS 2000, additionally with a ball bearing load support assembly. The necessary hardware and calibration weights are supported to offer optimal performance accuracy in calibration.

Product Details	Specification
Industry	Beverages, Food Industry, Pharmacy, Packaging Industry
Employment	Torque
Measurement Categories	Torque via Weight
Specifics	Check/Calibration
System	No
Automation Level	Calibration

TMS 4010 Torque Measuring System

Automatic closure torque measurement at the filling line

In the food & beverage industry, the opening torque of bottles and other containers with twist-off closures is an important quality parameter and vital for customer satisfaction.
For many routine tests, where precise reproducibility, user independency and special test procedures are necessary, an automatic operated torque measuring device is an optimal solution.

BENEFITS:

- User-independent, precise torque measuring
- Suitable for lab and filling line
- Integrated standard beverage procedures
- Interaktively programmable measuring sequences
- Easy procedure change via barcode scanner
- Easy handling
- Standardised variable Top Load
- Complementary calibration device
- Measuring data evaluation via standard PC software (MS EXCEL™)

OPERATION:

The bottle (container) is fitted to the clamp mechanism and automatically opened. Meanwhile, the reactive torque is monitored and it's peak value and torque curve displayed and stored afterwards.
Measuring the closing torque is also possible.

TECHNICAL DATA:

Torque range:	0 - 50 in-lbs, both directions
Accuracy:	±0.25% F.S.
Resolution:	0.03 in-lbs (50 in-lbs version)
Memory:	According to configuration
Interface:	Ethernet (RS232 optional)
Supply voltage:	240 V / 115V, 50 / 60 Hz
Protection:	IP 65
Dimensions:	600x400x900mm (24x16x36")
Weight:	approx. 25 kg / 55 lbs

TMS 5000 Torque Measuring System

… Automatic closure torque measurement

In the food & beverage industry, the opening torque of bottles and other containers with twist-off closures is an important quality parameter and vital for customer satisfaction.
For many routine tests, where precise reproducibility, user independency and special test procedures are necessary, a automatic operated torque measuring device is a optimal solution.

BENEFITS:

- User-independent, precise torque measuring
- Suitable for lab and filling line
- Integrated standard beverage procedures
- Interaktively programmable measuring sequences
- Easy handling
- Standardised variable Top Load
- Integrated calibration device
- Graphic display and torque curve
- Measuring data evaluation via standard PC software (MS EXCEL™)

OPERATION:

The bottle (container) is fitted to the clamp mechanism and automatically opened. Meanwhile, the reactive torque is monitored and it's peak value and torque curve displayed and stored afterwards.
Measuring the closing torque is also possible.

TECHNICAL DATA:

Torque range:	0 - 50 in-lbs, both directions
Accuracy:	±0,25 % F.S.
Resolution:	0.03 in-lbs (50 in-lbs version)
Memory:	According to configuration
Interface:	RS 232 (RS 485 optional)
Supply voltage:	240 V, 50 Hz (115V optional)
Protection:	IP 65
Dimensions:	ca. 600mm x 400mm x 900mm
Weight:	ca. 25 kg

TMS 5000 Calibration Kit

Calibration tool for Steinfurth TMS 5000

The TMS 5000 Calibration Kit is designed as a perfect tool for the on-site calibration or verification of the Steinfurth Torque Tester TMS 5000. The device contains a screwed fixation plate for assembling with the TMS 5000, a ball bearing load support assembly and the necessary hardware and calibration weights for optimal performing of an accurate calibration.
The TMS 5000 calibration Kit is delivered with every new TMS 5000 device.

Product Details	Specification
Industry	Beverages, Food Industry, Pharmacy, Packaging Industry
Employment	Torque
Measurement Categories	Torque via Weight
Specifics	Check/Calibration
System	No
Automation Level	Calibration

Analogue manometer

(class of accuracy 1,0) pressure measurement

Technical Data

- pressure: 0...6 bar (other on request)
- accuracy: 1%FS

TMS 4000 Torque Measuring System

Automatic closure torque measurement at the filling line

In the food & beverage industry, the opening torque of bottles and other containers with twist-off closures is an important quality parameter and vital for customer satisfaction.
For many routine tests, where precise reproducibility, user independency and special test procedures are necessary, an automatic operated torque measuring device is an optimal solution.

BENEFITS:

- User-independent, precise torque measuring
- Suitable for lab and filling line
- Integrated standard beverage procedures
- Interaktively programmable measuring sequences
- Easy procedure change via barcode scanner
- Easy handling
- Standardised variable Top Load
- Complementary calibration device
- Measuring data evaluation via standard PC software (MS EXCEL™)

OPERATION:

The bottle (container) is fitted to the clamp mechanism and automatically opened. Meanwhile, the reactive torque is monitored and it's peak value and torque curve displayed and stored afterwards.
Measuring the closing torque is also possible.

TECHNICAL DATA:

Torque range:	0 - 50 in-lbs, both directions
Accuracy:	±0.25% F.S.
Resolution:	0.03 in-lbs (50 in-lbs version)
Memory:	According to configuration
Interface:	Ethernet (RS232 optional)
Supply voltage:	240 V / 115V, 50 / 60 Hz
Protection:	IP 65
Dimensions:	600x400x900mm (24x16x36")
Weight:	approx. 25 kg / 55 lbs

TS 500 Torque Measuring System…

…for manual mobile closure torque measuring

In the food & beverage industry, the opening torque of bottles and other containers with twist-off closures is an important quality parameter and vital for customer satisfaction.

For many routine tests, where neither precise reproducibility nor special test procedures are necessary, a manually operated torque measuring device is a sensible and favourable solution. The mobile TS 500 is a simple mechanic torque tester for quick checks on closures or closing machinery.

BENEFITS:

- Low price
- Suitable as start up tool for torque checks
- Easy handling
- Flexible usage in QC, or Service Dept.

OPERATION:

The container is hold vertically with one hand and manually opened with the other hand. Meanwhile, the reactive torque is monitored and its peak value displayed afterwards. In case of using as a checking tool for the closing heads the closure chuck is replaced against a real closure and hold into the closing heads for checking of the torque settings.

Measuring of the closing torque is also possible.

TECHNICAL DATA:

Measuring range:	0 … 30 in-lbs, both directions
Accuracy:	±2.0 % F.S.
Interface:	none
Power supply:	none
Weight:	ca. 0.4 kg / 0.9 lb

PRESSURE CALIBRATOR TS 92.4…

...for precise pressure calibration

The pressure calibrator is used for precise monitoring and adjustment of pressure gauges and transmitters. It is equipped with a precision manometer. A fine adjusting screw and a valve complete this portable device.

BENEFITS:

- Precise pressure generation
- Digital precision manometer
- Integrated pressure pump
- Easy operation
- Fine adjusting screw
- Portable
- Battery operated
- Three versions with several pressure ranges

OPERATION:

The pressure gauge to be checked is connected directly to the quick coupling of the calibrator. After closing the valve, the pressure can be increased by the hand pump and decreased by the valve. Small changes can be made by the fine adjusting screw.

TECHNICAL DATA:

Low pressure calibrator

Air pump:	up to 10 bar / 145psi
Vacuum pump:	down to -850 mbar / -12.3psi
Pressure range:	-1…2 bar / -14.5...29psi
	-1…10 bar / -14.5…145psi

Medium pressure calibrator

Integrated hand pump

Pressure range:	-1…10 bar / -14.5...145psi
	-1…20 bar / -14.5…290psi
	-1…25 bar / -14.5…362.5psi

High pressure calibrator

Pre-compression pump
Screw compressor for pressurizing and fine adjustment
Oil reservoir

Pressure range:	0…200 bars / 0…2900psi
	0…350 bars / 0…5075psi
	0…700 bars / 0…10150psi

All calibrators

Accuracy:	0.1% FS, within 0...50°C / 32...122°F
Resolution:	7400 steps (0.014% FS)
Battery life:	approx. ½ year, permanent operation
Displays:	Pressure, temperature, time, unit
Memory:	946 readings (optional 8114)
Interface:	RS 232

CHECK BOTTLE TS 94.5PC (SILVER BOTTLE)…

...Quick & accurate validation of the manometric CO_2-Testers

The Check Bottle TS 94.5 is used for monitoring the accuracy of the measuring heads of the CO_2 tester TS 91.7. It consists chiefly of a polycarbonate container and an integrated digital precision instrument, combining manometer and thermometer.

BENEFITS:

- Direct comparative measuring of pressure and temperature
- High precision
- Easy operation, like with a real bottle
- Measuring with carbonated beverage
- Durable and transparent container
- Instrument with quick-release coupling
- Approved testing apparatus for manometric CO_2 measuring devices

OPERATION:

Fill the polycarbonate container to the mark with carbonated beverage. Then, place the prepared check bottle in the container of the TS 91.7 like any beverage bottle, and start a measuring procedure. When the measuring is finished, compare the pressure and temperature readings of the check bottle and the measuring head.

TECHNICAL DATA:

Pressure range:	0…4 bar / 0…58psi
Pressure accuracy:	better ± 20 mbar / 0.29psi
Temperature range:	0…25°C / 0..77°F
Temperature accuracy:	better ± 0.3°C / 0.54°F
Filling volume:	330 ml / 11 fl. oz
Media:	carbonated beverages

Temperature-Logger TS 95.5

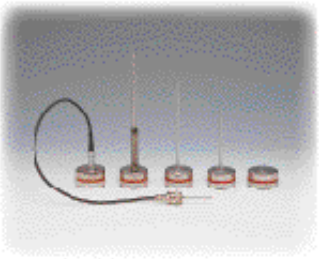
The measuring system TS 95.5 is used to monitor all temperature dependant processes. It consists of a mounting (e.g. a bottle) and a temperature logger. Different mountings allow a matching to all the processes to be monitored. The measuring rate of the logger is adjustable from 1 second upwards.
The system accessories (interface/software) that is part of the delivery package enable the optimum evaluation of all recorded data (graphically/in table form).

Technical Data:

Measuring probe	PT 1000
Memory	18.000 measurements
Battery	3 up to 10 years
Accuracy	0.3 of a degree
Temperature	up to 125 °C
Pressure resistance	up to 20 bar

Advantages:

- Test mediums for the HACCP
- Simple graphic evaluation
- Documentation of all temperature marches
- Self-sufficient functioning
- Small build
- Real food stuffs - Stainless steel finish



Fields of application:

- Bottle cleaning
- Pasteurising
- Sterilisation
- Autoclaving
- CIP processes
- Transport and storage conditions
- etc.

Steinfurth Automatic Tumbler

Perfect sample preparation

Tumbling of packaged beverages is the best sample preparation for any analysis of dissolved gases.

During tumbling of beverages the headspace and the fluid phases are perfectly mixed and brought into a very stabile stage of equilibrium (overhead tumbling is the only correct method to stabilize the beverage temperature in the headspace and the fluid to the exact same level).

For different gas analyses there can be different tumbling frequencies or times recorded. These can be very easy adjusted with the Steinfurth Automatic Shaker.

OPERATION:

- The beverage samples are placed in the package holder (bottles, cans or a complete box) and fixed properly.
- The required settings are adjusted and the tumbling process started by pressing the START button.

Product Details	Specification
Industry	Beverages, Packaging Industry
Employment	Sample Preparation
Objects	Packed beverages
System	Yes
Automation Level	Fully Automatic Machine

Advantages

- Easy operation
- Safety cabinet
- Flexible adaptation to different packages
- Rugged design
- Adjustable tumbling speed
- Adjustable tumbling time

Technical Data

- Voltage: 230/115V 50/60Hz
- Tumbling frequence: variable
- Packages: bottles, cans, boxes

STEINFURTH Tumbling Tester

…Standardised abrasion test on closure coatings

The Tumbling Weight Loss Test determines whether crown closures, due to abrasive wear, contribute excessive amounts of dust which could contaminate the bottled beverage. A certain number of crown closures is weighted, „tumbled“ and weighted again. The loss of weight is the mass of the generated dust.

BENEFITS:

- Standardised abrasion test for crown closures
- Repeatable results
- Easy loading of the tumbling chamber
- Standardized movement of the abrasion weight

OPERATION:

The defined abrasion weight is tumbled inside of the sample chamber over a defined period of time and entailing repeatable coating abrasion on the sample closures.

TECHNICAL DATA:

Power supply:	230/115V, 50/60 Hz
Tumbling speed:	adjustable

System components:

- Tumbling device
- Sample chamber
- Tumbling container

VOS 4010

...Perfect turbidity measurement in beer

Turbidity is defined as “expression of the optical property that causes light to be scattered and absorbed rather than transmitted in straight lines through the sample.” In other words, turbidity is the measurement of relative sample clarity.

Turbidity is measured by comparison to standard solutions eg. Formazin. In practice, turbidity measurement is done in cuvettes. However, the measurement can also be executed in bottles of various sizes. Different bottle holders can easily cover the most commonly used bottle diameters.

About 25 years ago it was Vos Instrumenten who developed the VOS 4000 Hazemeter. This apparatus was the widely recognized reference for measuring turbidity in beer. Distributed all over the world, many well-established breweries have been using this VOS 4000 Hazemeter. The results of the turbidity measurements are comparable no matter using the VOS 4000 or

VOS 4010. This is a major advantage, since a gradual substitution of the 4000 by the 4010 series is now possible within one chain of breweries

BENEFITS:

- Easy four-point calibration
- Large, well-readable display
- Display readings in EBC, ASBC or Helm units
- Rugged, water resistant housing
- Tall hood for measurement on bottles
- RS 232 and printer interface
- Adaptable to supply voltages 115 or 230 V AC
- Use of different optical filters possible

OPERATION:

The Vos 4010 Hazemeter makes use of the scattered light principle. Scattered light caused by haze particles is measured at an angle of 90 degrees. A light source with red filter is used, operating at a light wavelength of 650 +/- 30 nm (recommended by MEBAK!). Other wavelength filters are optional and easily exchangeable in the apparatus. Amplifier cuvette/bottle measuring detector reflex-mirror halogen lamp voltage stabilizer reference detector

TECHNICAL DATA:

Measuring range:	Low 0-10 EBC : 0,01 EBC High 9-100 EBC : 0,1 EBC
Unstable signal at:	>6% variation in signal during measurement
Measuring units:	EBC, ASBC and Helm
Voltage:	230 V/50 Hz, 115 V/60 Hz
Lamp:	Halogen 12 V, 20W
Weight:	7,3 KG

Optional spare parts:
- hood for extra tall bottles
- green filter
- white filter