MAP Fruit & Vegetables

WITT
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/ TECHNOLOGY FOR GASES /

Yes, with WITT
gas control technology.
› Storage
› Ripeness control
› Packaging

ISO 22000 approval for food safety

CAN FRESHNESS BE CONTROLLED?

ALWAYS FRESH

Freshness, shelf life and ripeness of fruits and vegetables can be controlled by modified atmospheres.

Only few foods are as strongly connected with freshness as freshly picked fruits and vegetables. With globalised trade, consumers today expect a large range of fresh, natural products in best quality all year round. However, given the long transits, how can manufacturers satisfy this demand? With WITT gas technology.
Freshness, shelf life and ripeness can be controlled by modified atmospheres. Many sectors of the food industry have been using modified atmospheres for a while to extend the shelf life of products. In the process, the natural ambient air is replaced by a mixture of carbon dioxide and nitrogen, for example. This protective atmosphere prevents the produce's decay without affecting its quality or taste. Compared to chemical or thermal techniques, the use of modified atmospheres is to be rated an especially gentle method.
Modified atmospheres are also increasingly used for many fruit and vegetable products – not just in packaging but also for storage and ripeness control purposes.

› TRANSPORT/STORAGE

The consumers' demands on food have increased. Independent of the season, customers expect fresh fruits and vegetables at any time. This all-season availability is made possible by modern transport equipment and storage facilities. This way, tropical fruits can survive the long transport unscathed through a combination of suitable protective atmospheres and consistent cooling. You can even store apples for months under carbon dioxide without loss of quality and go on sale exactly when there is a demand for them.

› RIPENESS CONTROL

Nowadays, fruits are mostly harvested immaturely and transported to consumers in vast quantities. After the transport, the ripening takes place in special ripening chambers – for bananas for instance – with the help of the gas ethylene. The controlled ripening with modified atmospheres enables fresh, perfectly ripened goods on demand. In the case of tomatoes, ripening with ethylene can even replace the use of chemical additives.

› PACKAGING

The tendency to convenience products doesn't stop at fruits and vegetables. Chopped vegetables, pre-portioned salad mixes or ready-to-eat fruit salad – consumers increasingly buy convenient products that can easily be prepared. The so-called Modified Atmosphere Packaging (MAP) enables producers to take up the trend and offer appropriate products. Unlike other foods, fruits and vegetables keep breathing after the harvest. A complex combination between packaging type and protective atmosphere determines the shelf life of products. Commonly, mixtures of carbon dioxide, nitrogen and small amounts of oxygen are being used. The gas mixture is adjusted individually to the respective product. By taking into account the product's breathing and the foil's permeability, for instance through micro perforation, the ideal combination of protective atmosphere for the product is maintained. Combined with according cooling, the shelf life can be extended and an appealing packaging design can be realised at the point of sale.

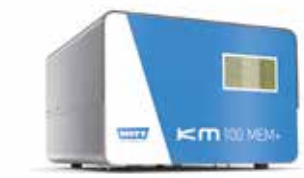
WITT PORTFOLIO

WITT offers a full range of gas mixing and metering systems, gas analysers, leak detection systems and gas monitoring systems. State-of-the-art gas technology and decade-long experience of the world leader ensure the highest levels of safety and quality for your production of fruits and vegetables. Of course, WITT is certified according to ISO 22000. This international standard specifies a food safety system. By external quality audits this certification is periodically approved and renewed. This offers you guaranteed safety you can trust.

KM100-2M

KM FLOW

KM100-2ME



KM 100-3MEM+

reddot design award
winner 2009

OXYBABY®

MAPY 4.0

PA 7.0

MFA 9000

› GAS MIXERS AND METERERS

WITT offers high-quality gas mixers and gas metering systems for two or more gases, for high flow rates and highly fluctuating gas withdrawals. Depending on your demand you can mix the exact mixing ratio and gas volume that you need. So you remain flexible and save money compared to pre-mixed gases. The gas mixing systems are adjusted to your specific product type and processing and require only basic installation requirements. Gas mixers by WITT provide controlled gas quality and safety in your storage, ripening or packaging process.

› GAS ANALYSERS

Witt gas analysers are fast, precise and multifunctional. The gas analysers are used as stationary or portable units for sample or continuous gas analysis for many applications in fruit and vegetable production. Intuitive and easy handling of the gas analysers is provided by intelligent operating controls. State-of-the-art sensors and intelligent software solutions guarantee accurate measurement results and secure the quality of your processes. To suit your applications, the gas analysers can be delivered as stand-alone units or integrated in gas mixing systems. Retain the control when using carbon dioxide in your storage, control the ripeness of your fruits using ethylene and ensure the quality of your products by sample testing of your modified atmosphere packages. With WITT gas analysers.

LEAK-MASTER® EASY

LEAK-MASTER® PRO

LEAK-MASTER® MAPMAX

RLA multichannel

› LEAK DETECTORS

In order to optimise your quality management of your packages a final leak testing is vital. WITT offers certified high-quality systems for the leak detection of all types of packages – with modified atmosphere or vacuum. You can choose between leak detection systems for sample or continuous checks – based on CO_2 or as a bubble test. Naturally, the leak detection systems are manufactured with established WITT quality for highly accurate and reliable results.

› GAS MONITORING

Even small amounts of the colourless and odourless gas carbon dioxide can have an influence on the human organism. High concentrations can lead to unconsciousness or even death. Gas monitoring devices by WITT offer reliable protection against this danger. The gas warning unit permanently controls the concentration of carbon dioxide in ambient air and activates an acoustic and visual alarm when individually definable limits are exceeded. If necessary, additional devices can be controlled, e.g. extraction units can be started or machinery can be stopped by means of a potential-free contact. WITT gas warning systems for ambient air monitoring increase the safety of your employees and at the same time control and reduce the consumption of carbon dioxide.

EVERYTHING UNDER CONTROL

With WITT gas technology you can deliver fresh, perfectly ripened goods on demand.

For transport, ripeness control and packaging of fruits and vegetables under modified atmosphere, 4 gases are most commonly used: oxygen, carbon dioxide, nitrogen and ethylene.

› **OXYGEN (O_2)** basically causes the oxidation induced decay of foods and forms the basis for the growth of aerobic microorganisms. That is why oxygen is often excluded from protective atmosphere packaging. When packing fruits and vegetables, oxygen is added in controlled quantities – on the one hand, for the preservation of breathing and on the other hand, for the repression of growth of anaerobic microorganisms.

› **CARBON DIOXIDE (CO_2)** is colourless, odourless and neutral in taste. It acts as oxidation and growth inhibitor to most aerobic bacteria and mildew. The gas is often used to extend the shelf life of fruits and vegetables during transport and storage. Usually, the higher the CO_2 concentration is the longer is the shelf life of packed and stored foods. When carbon dioxide is used in protective atmosphere packaging, it can quickly diffuse from the package which causes the package to collapse. Using supporting or filling gas can slow down this effect.

› **NITROGEN (N_2)** is an inert gas which exhibits high purity due to its production. It is ordinarily used to suppress air – particularly atmospheric oxygen – from food packages. This prevents the oxidation of foods and obstructs the growth of aerobic microorganisms. It is often used as a supporting or filling gas because it diffuses through plastic film very slowly and thus stays in the package longer.

› **ETHYLENE OR ETHENE (C_2H_4)** is an organic, gaseous hormone which induces the ripening process. When fruits come into contact with ethylene, enzymatic activity increases and starch converts to sugar. The fruits ripen and the colour of the skin changes. The specific use of ethylene in ripening chambers enables the controlled ripening of varieties of fruits and vegetables.

› TYPICAL GAS MIXTURES FOR MODIFIED ATMOSPHERE PACKAGING

Depending on the product, workmanship and general conditions, the shelf life of fruits and vegetables can be extended by 50–400 % by using protective atmospheres. The indicated mixture ratios and shelf life information are merely for orientation. The optimum gas mixtures and actual shelf life can vary greatly in practice and depend on, for instance, type of packaging, refrigeration and the product and packaging size ratio.

	O_2	CO_2	N_2
Apple	2–3	1–2	95–97
Banana	2–5	3–5	90–95
Bean	2–3	4–7	90–94
Broccoli	1–2	5–10	88–94
Capsicum	3–5	1–2	92–95
Chicory	3–4	4–5	91–93
Grape	3–5	1–3	92–96
Grapefruit	5–10	5–10	80–90
Mango	3–5	5–10	85–92
Olive	2–4	1–2	94–97
Pear	2–3	1–2	95–97
Pineapple	2–5	5–10	75–93
Plum	1–3	1–8	89–98
Salad mixed	2–5	5–20	75–93
Spinach	5–10	5–10	80–90
Strawberry	5–15	15–60	25–80
Tomato	3–5	2–10	85–95

All units given in %

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OUR PRODUCT RANGE

GAS CONTROL EQUIPMENT

Gas mixing systems
Gas metering systems
Gas analysers
Leak detection systems
Gas pressure vessels
Engineering of customised systems

GAS SAFETY EQUIPMENT

Flashback arrestors
Non-return valves / check valves
Quick couplers
Safety relief valves
Stainless steel devices
Gas filters
Pressure regulators
Outlet points
Lance holders
Ball valves
Automatic hose reels
Test equipment
Accessories
Customised safety equipment

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