

# VITAMINS FROM BOSNIA AND HERZEGOVINA

VITAMINKA IS RELYING INCREASINGLY ON FRUIT BEVERAGES –  
KHS TECHNOLOGY IS „IN ON THE ACTION“

Manfred Keller

## VITAMINKA D.O.O.

The company, located in Banja Luca, has been Bosnia and Herzegovina's defining concept for vitamins for decades. It all began in 1947, with the processing of wild berries and continued with the production of jams, jellies, sauces, and stewed fruits made from a variety of fruits, as well as pickled products made from a number of kinds of vegetables. Up until 2002 – the year Vitaminka was privatized and converted into a publicly traded corporation – a small, almost insignificant number of fruit juices were included in the above product range. Today, approx. 45 percent of total sales are realized from fruit beverages

Vitaminka's Swiss principle stockholder, Kreis Industriehandel AG, always demands the best quality. The company invested in modern KHS filling and packaging technology.

Seventy-six percent of Vitaminka shares are currently held by Kreis Industriehandel AG, while the other twenty-four percent are distributed among funds and private small shareholders. Since 2006 alone, the price of Vitaminka shares has risen by a factor of 6. If we look at the sales increases realized over the past few years, that increase in price isn't surprising. The total production in tons in 2001 was just 4,250, while in 2006 it climbed to 18,000. The corresponding sales figure for 2006 was 14 million euros. Sales last year included about 8,000 tons of fruit beverages, a good 7,000 tons of pickled vegetables, and the rest was comprised of jellies, jams, sauces, and stewed fruits.

Within the field of fruit drinks, about 50 percent of sales are tallied by fruit juices, nectars, and syrups, and another 50 percent are fruit juice beverages. The range of types is wide and varied. The fruit juices include apple, orange, and pineapple. Then there is tomato juice, too, as a vegetable product. The spectrum of nectars, syrups, and fruit juice beverages is also full of variety. So much variety, in fact, that it would take too much space to list all the different flavors. For instance, they include strawberries,

pears, blueberries, and peaches. The clear leaders in the ranks of the products: apple juice and blueberry nectar.

Vitaminka's fruit juices reach the consumer through both the restaurant trade and grocery retail. There is an appropriate style of pack for each of those distribution channels. While the retail trade is primarily supplied with the 1-liter cartons, the 0.2-liter glass bottle is used primarily for restaurants.

## MOST IMPORTANT MANUFACTURER OF FRUIT DRINKS IN BOSNIA AND HERZEGOVINA

Until now, Vitaminka's activities have largely been on the domestic market. A market that offers loads of new sales



In order to be able to quickly jump onto the bandwagon of carbonated soft drinks if required, an Innopro PARAMIX CMX blender has already been integrated into the line.



In the Innoket ROLAND 16/4, the 0.2-liter bottles receive both a body label and a tamper-evident cap label.

opportunities. Although the company may well be the most significant manufacturer of fruit drinks within Bosnia and Herzegovina, with a market share of 10 percent, however, the market volume is comparatively small. Zarko Mikić, the director of Vitaminka, says, „We are counting on good future growth rates in Bosnia and Herzegovina. Among other reasons, this is because the per capita consumption of fruit drinks here is very capable of more growth.“ A look at the per capita consumption of fruit juices and nectars in Bosnia and Herzegovina shows that at 16 liters/year, in comparison with Western European numbers (per capita consumption of 26 liters/year) it is still at a relatively low level.

#### EXPORT ACTIVITIES

Despite foreseeable opportunities in the domestic market, this won't be alone in the focus in the future. An increase in export activities is also planned. So far, five percent of fruit drinks go to Montenegro, Austria, and Switzerland. In the medium term. A third of the total production is to be sold outside Bosnia and Herzegovina. The neighboring countries of Croatia, Serbia, and Montenegro will be the first in line.

#### PLANNED GROWTH FROM 2007 TO 2010

There are plenty opportunities in the domestic market, and at the same time an extensive set of possibilities for

export activities— so it's easy for Vitaminka to calculate a very significant growth in fruit drink sales. In 2007, the total production of the company should have already reached about 24,000 tons, whereof fifteen thousand tons will be from fruit drinks. The same growth is predicted for 2008. By 2010, the production of some 50,000 tons of fruit drinks and 10,000 tons of pickled vegetables are planned at a 50-million-euro sales figure.

#### KHS PLANT EQUIPMENT

Indeed, KHS system technology is a popular topic within the company. When Vitaminka received the award „One of the three most successful companies in Bosnia-Herzegovina“ last year, the new KHS line was even shown on television.

#### THE NEW GLASS LINE

Designed as a glass line, the KHS system handles the filling of 0.2-liter and 1-liter bottles. While 0.2-liter restaurant bottles are used for all fruit juices, fruit nectars, and fruit juice drinks, 1-liter bottles have been used so far only for the filling of syrup. In addition to non-carbonated fruit drinks, the system technology also enables to produce carbonated soft drinks.

The output of the glass line is 18,000 0.2-liter and 3,600 1-liter bottles/hr. At the moment, the plant is still run-



In the Innopack Kisters TSP 35 tray shrink packer, the bottles are fed into the machine according to the accumulation principle using funnel-shaped guide rails..

ning a one-shift operation. If sales increase as predicted, two- or even three-shift operations could quickly be implemented.

#### NEW GLASS DEPALLETZER

The first station in the line is the Innopal ASN new glass depalletizer. The depalletizing robot works with an automatically adjustable head section. When the bottle sizes to be processed are changed, then the depalletizing head is changed simply by pressing a button at the operator terminal. In this way, new adjustments are made in the shortest possible time.

The four-sided enclosed pushing system of the Innopal ASN offers maximum reliability during the depalletizing process at all times. All surfaces of the depalletizer that come into contact with the glass bottles are covered with plastic sheets in order to protect the containers. As a result, there are no contact pulse noises and no vibrations. A robot is handling the task of gripping of inverted trays, slip-sheets, and empty pallets, and transferring them to the magazine provided for this purpose. The advantage of the handling robot is the broad range of actions, the high processing speed, and the small space requirements of the system.

The next step is the clamping jaw rinser that in the planned filling of non-carbonated fruit drinks, implements not only the rinse process for reliable removal of

any dust or glass particles in the bottles, it also brings the bottles to the right temperature at the same time, thus preparing them for hot filling. A steam tunnel before the filler ensures that the heated glass bottles still pass through the filling process at the specified temperature. Within the steam tunnel, there is an automatic temperature check to ensure that the desired temperature is maintained. If carbonated soft drinks are to be integrated into Vitaminka's product line in the future, then only cold water will be used in the rinsing process for cleaning out those bottles, and the steam tunnel in this case will only act as a conveying segment.

#### THE FILLING SYSTEM

The electronically controlled Innofill DNRF filling system is capable of pressure-less hot filling of non-carbonated beverages as well as pressure filling of carbonated products. The various filling processes are selected at the operator panel, and the fast changeover of the system is handled by special software and the latest in electronics. Long filling tubes are used for filling according to the principle of fill level filling. Especially for the hot filling of fruit drinks, fill level filling is extremely important. The bottles must be filled exactly to the brim to enable sterilization of the headspace at a high product temperature. At the same time, fill level filling ensures the visual uniformity of the filled bottles, and therefore their perfect presentation at the point of sale.



...separated into specified product groups, pushed onto unfolded trays, which are then glued...

#### ADVANTAGES OF THE BOTTOM-UP FILLING PROCESS

During the pressure-less filling process for non-carbonated fruit drinks the bottles are pressed against the filling valve by the lifting element. A partial lift opens the liquids valve. The advantage: A low product flow rate coupled with low product impact against the bottom of the bottle. The low-turbulence filling process is particularly important for fruit drinks containing pulp, as turbulence can easily cause bubbles to cling to fruit fibers that subsequently float to the top to form clots in the bottle neck. The Innofill DNRF is made to process non-carbonated beverages with up to 10 percent homogenized pulp, as well as fibers contained in the drink with sizes between 3 and 5 mm.

The next step in the filling process: The valve is opened completely to start the fast filling phase. Here, the bottom-up low-turbulence filling process ensures a low oxygen pickup in the product. If the cold filling of carbonated soft drinks is performed under pressurized conditions, the bottom-up filling process also offers the advantage of low CO<sub>2</sub> consumption. Once the product reaches the bottle neck, the filling speed is reduced further in the Innofill DNRF, thus ensuring a smooth fluid surface. The filling process ends with the contact with the filling tube probe. The subsequent capping process is handled for the 1-liter glass bottles by the Innofill SV screw capper. It places aluminum screw caps onto the bottles. A twist-off capper is used for 0.2-liter glass bottles.

#### EXACT FILL LEVEL AND CAP CHECKING

The capping process is followed by precision fill level and cap checking using an Innocheck PROMICON 2000: a diode lighting field in conjunction with a camera image provides information on the exact filling level by averaging different measuring points. Sloshing effects are neutralized. In addition to monitoring the fill levels, one image per bottle determines, if the caps are also properly seated. After the checking process, 'flawed bottles' are rejected.

#### THE BLENDING SYSTEM

In order to be able to quickly jump onto the bandwagon of carbonated soft drinks if required, the Innopro PARAMIX CMX blender has been included in the KHS line concept and installed upstream of the filler area. The first step in the blender: deaeration of the water, based on the principle of two-stage vacuum spray deaeration. Deaerated water as well as syrup and other beverage components are dosed exactly according to the recipe by flow control segments. All necessary product data are stored in recipe memory ready for retrieval at the push of a button. The syrup metering accuracy is about 0.05° Brix and the CO<sub>2</sub> dosing accuracy is approximately 0.1 grams of CO<sub>2</sub> per liter.

While fruit drinks go through a re cooler on their way to the labeler, there is a corresponding bypass for the option of carbonated soft drinks.



...and finally wrapped in film and taken to the shrink process in the shrink tunnel.

## LABELING

The labeling of the bottles is realized with an Innoket ROLAND 16/4 that is equipped with two wet-glue labeling stations and outfits the 1-liter bottles with body, front, and back labels. The 0.2-liter bottles receive both a body label and a tamper-evident cap label. The tamper-evident cap label is also applied using the method of wet-glue labeling, but it is then also glued with a dot of hot melt positioned on the cap. The bottles enter the carousel through an infeed star after passing through the feedscrew. The lower chucks and centering bells fix the positions of the bottles and hold them securely in place in the carousel. A cam control drives the bottle turrets. The advantage of this cam control is that the bottle turrets can be oscillated after labels are applied so that the labeling materials are brushed on perfectly.

A special feature of the Innoket ROLAND 16/4 is its automatic height adjustment. The process in brief: a sample container is placed on a separately installed turret. The top bearing rim of the labeler is then lowered until a sensor detects the bottle cap. The adjustment of the labeler to the new container height is already completed.

## PACKING IN TRAY SHRINK PACKS

Freshly labeled, the bottles next go to an Innopack Kisters TSP 35 tray shrink packer. According to the accumulation principle the bottles – distributed to lanes by funnel-

shaped guide rails – are divided by a grouping unit into predefined product groups. Currently on the agenda: formation in groups of twenty-four 0.2-liter bottles and groups of six 1-liter bottles. Next, the formations are fed into a drag chain. Top pickups push the bottles onto an unfolded tray. In the folding station, chain-driven folding tools fold the tray after the application of adhesive at specified points. The next station for the tray packages is the shrink pack station. The film wrapping process is matched to the respective height and length of the tray pack to be wrapped with the utmost accuracy. Finally, the tray shrink packs pass over a speed compensation belt towards the shrinking tunnel. There, the sections of film underneath each pack are first sealed and in a further step, inflated with hot air at controlled temperatures thereby triggering the subsequent shrinking process. The temperatures in the shrink tunnel are adapted to both the quality of the film and the size of the pack.

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