

# NATE magazine

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NEWS 2015  
CAN FILLER

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# 42 LAYERS IN MOTION: the moving face of FRANZ KAFKA

## HOW TO SPIN 42 LAYERS?

Since the end of October 2014, 42 layers have been spinning and attracting the attention of passers-by in front of the Quadrio Shopping Centre in Prague, near Národní třída. A moveable sculpture that bears the face of Franz Kafka, has been designed based on David Černý's sketches. The spinning head enables the watchers to observe Kafka's metamorphosis live.

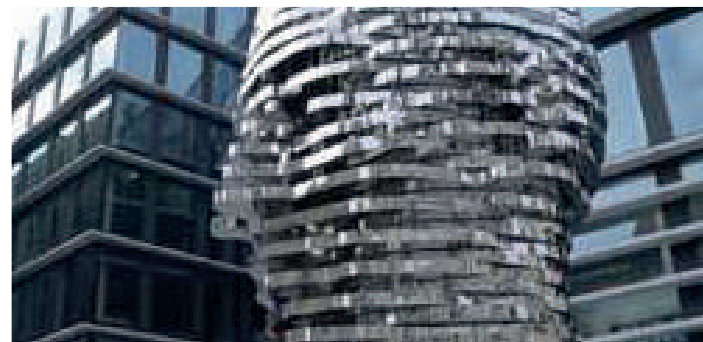
↑ 10,6 m  
height statue  
with base

39 t  
weight statues

2,8 m  
height stand

6,06 m  
average statues

1 500 m<sup>2</sup> | 24 t  
mirror finish stainless steel sheet



In layman's terms the sculpture consists of a base and 42 layers. Technically-speaking, however, there are 252 major construction segments, nearly a kilometre of cables, 1,500 m<sup>2</sup> of mirror gloss stainless steel plate and more than 16,300 individual fasteners. During the course of the construction a 3D model was created, the data volume of which comprises more than 20 gigabytes. This model has been detailed on 2,039 technical drawings. The sculpture's movement is implemented by means of **42 synchronous motors that are powered by 21 motor modules**. The entire project is controlled using the Siemens Simotion P320 system.

The implementer of the project requested the **NATE Company** to participate in the production of the supporting structure and also to supply the requisite rotating segments for the individual layers of the sculpture. The difficult part of the task consisted not only in providing a supply of the required parts, but also in ensuring their progressive delivery. In order to meet the deadline for the completion of the sculpture everything had to be delivered to the construction site located in the City Centre at a predetermined time. We succeeded in fulfilling this demanding and unusual task by working in close cooperation with the client and with its engineers.

Author: David Černý

Client: Czech Property Investments, a.s.

Project Implementer: DEIMOS, s.r.o.



8 900 h  
man hours

1 800 h  
developers, designers  
and programmers

4 200 h  
production hours

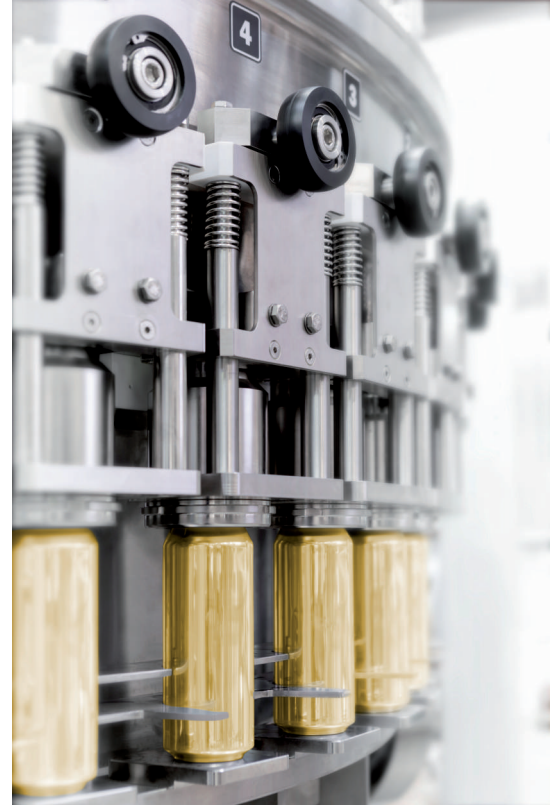
2 900 h  
assembly hours



## DESCRIPTION OF THE CAN FILLER WITH A PERFORMANCE LEVEL OF UP TO 3,500 CANS PER HOUR

### THE PASSAGE OF CANS THROUGH THE MACHINE

- The can is brought to the filler by means of a lamellar conveyor
- At its input to the filler the can is distributed in accordance with the desired spacing using the placement gear. The placement gear then passes the can into the filler
- At its entrance to the filler the can is centred, the valve lands on the can from above and seals it
- Prior to sealing the can may be purged with inert gas from the tank of the filler – this is recommended when bottling beer
- After it is sealed the can is pressurised using inert gas from the tank of the filler and after the pressure has equalised the valve will open and the beverage will be filled
- After filling the can the pressure is released. The valve then releases the can
- The can is then discharged from the filler by means of transition gear or by a toothed chain and transferred to the step capper
- In the capper (supplied by our partner, the Angelus Company) a cap is fitted and then pressed in by the rollers
- After the can is released it is transported along a lamellar conveyor for additional processing



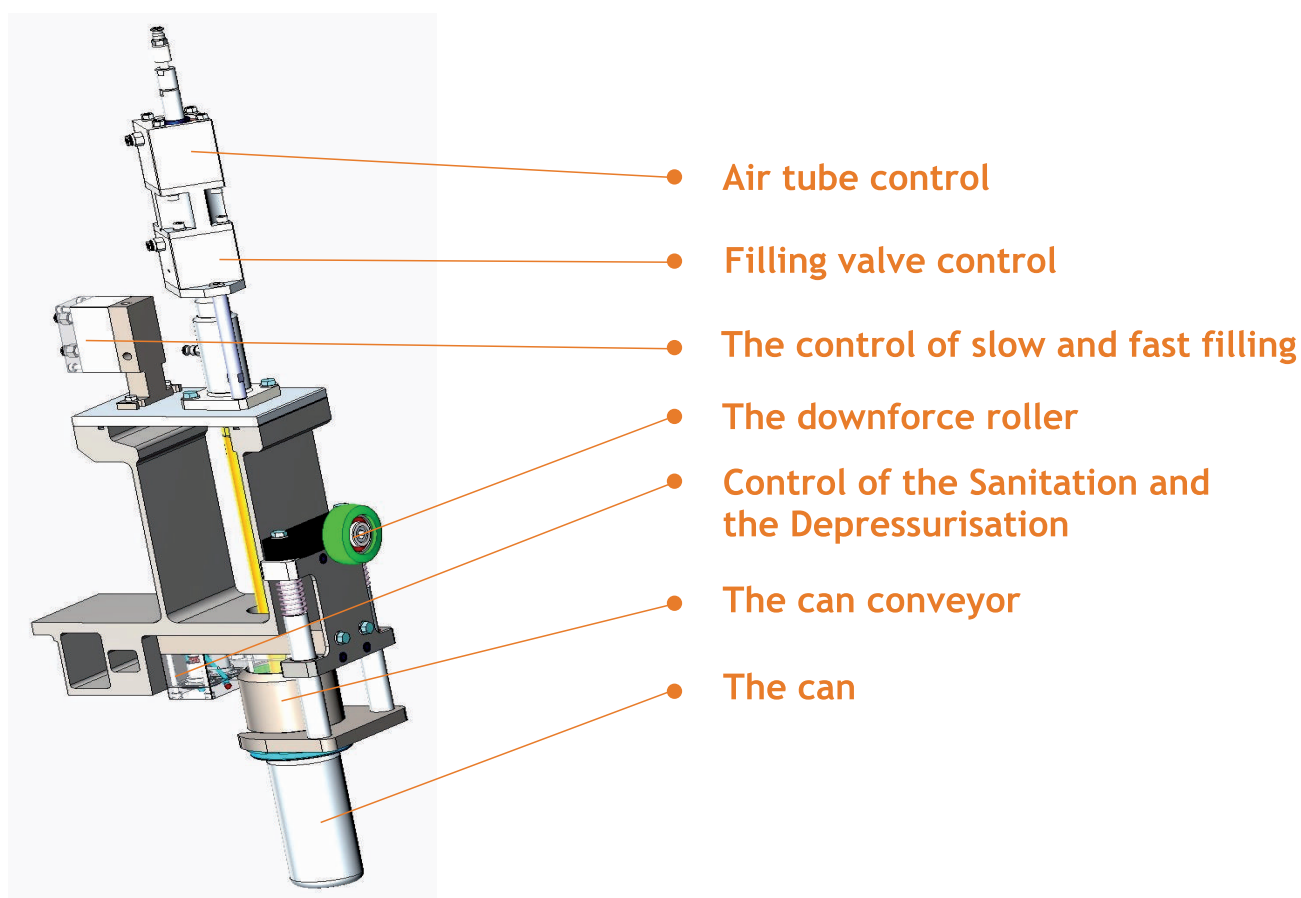
The entire drive system of the machine is based on decentralised SEW Moviaxis servo drives with electronic synchronisation. This enables the deployment of the non-table-design of the machine frame and thereby achieving an excellent cleanability of the external surfaces that are minimised and sloped and offer easy access to individual parts of the machine during its maintenance.

Format parts can be exchanged easily without the use of tools.



## FILLING SYSTEM

- A level filling system is utilised, meaning that the volume of the filled beverage is determined by the length of the air tube
- Prior to its filling the can is pressurised using inert gas from the tank of the filler
- After the equalisation of the pressure, both in the can and in the tank of the filler, the filling valve opens
- The supply of the beverage to the can passes along its wall, while gas is discharged from the can into the tank of the filler
- The filling system is completely electro-pneumatically controlled, i.e. it is possible to set, in the memory of the control system, the classification and the duration of the rinsing time and the number of depressurisation steps necessary in regard to specific types of beverages
- The closure of the valve is controlled electronically, i.e. even if the can filler stops beneath the beverage filler there is no risk of overfilling the can





#### **CLEANING THE INTERNAL PARTS OF THE FILLER - CIP**

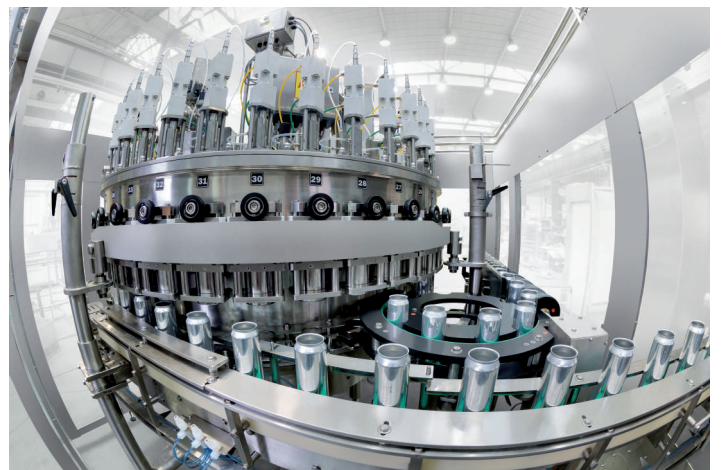
The filler is equipped with sanitation extensions for sanitising the internal parts of the circuit. The individual sanitation circuits are controlled by means of electro-pneumatic valves.

#### **CLEANING THE EXTERNAL PARTS OF THE FILLER - COP**

In accordance with the customer's requirements the filler can be provided with a foaming system comprising a wide range of equipment from manual to fully automatic.

#### **HEIGHT ADJUSTMENT**

The height adjustment of the filler and the capper for cans of different heights are solved manually.









# BOTTLE WASHERS FOR VERY LOW PERFORMANCE LEVEL

**ATHENA stepper washers have now already constituted part of our product portfolio for several years. Let's take a look back at their development, how they fulfilled their assignment and how this product is doing now in the market.**

The purpose of their development was to expand the range of products by means of which our traders can reach out to our customers. We wanted to have a competitive product in this sector, which, even during the period of the economic downturn remained in demand and which currently is even increasing – i.e. the sector of small bottling plants, especially breweries. Territorially speaking, this product is designated especially for Germany, followed by Austria and then the Czech Republic. Elsewhere in Europe, the demand for washers for returnable glass bottles is not staggering. Nevertheless it is a market in which the number of suitable plants amounts to thousands. In the case of Germany the direct aim was to offer traders a breakthrough product that would facilitate the return of this market.

A thorough knowledge of the competition - such companies as Kitzinger, Schimanski, Pack and especially Klinger -helped us to determine the target parameters of this washer, which, at the very beginning of its development, were already predetermined by its competitive advantages, on the basis of which we wanted to succeed in the market.

We can mention:

- rotary rinsing for the rinsing sections
- a raker that prevents any re-penetration of removed labels into the lye tub
- under-level and above-level rinsing; the circulation of the washing medium in the front part of the lye tub
- the high pressure of the rinsing sections, etc.



At the same time we invited designers to assist us with the development, who then organised and modified the proportions of the washer and gave it an unambiguous appearance and colour design.

The development, the early conceptual design of which had been initiated in the year 2010, was completed by the production of a prototype model in 2012. This prototype was exhibited at Brau Bevale in Nuremberg in November 2012.

There our new washer met with great acclaim and a high-degree of interest from the visitors, who confirmed that we had hit on what the market expected, perhaps with the exception of the height of the machine, whereby we are unable to fit our washer into “just any old garage”. In addition to the positive feedback that it received from professionals the washer also scored well in the AV Engineering Award 2012 competition, at which innovative products from various fields of engineering were in competition with each other.

The uniqueness of our solution was also confirmed by the expert opinion of this washer published by Ing. Antonín Kratochvíle, a leading Czech expert on brewing and a long-time director of the Budvar Brewery. As you can see, this washer received from its Fates - namely the team of Mr. Libor Musil the engineer - a pile of gifts and of other prerequisites for a great life.

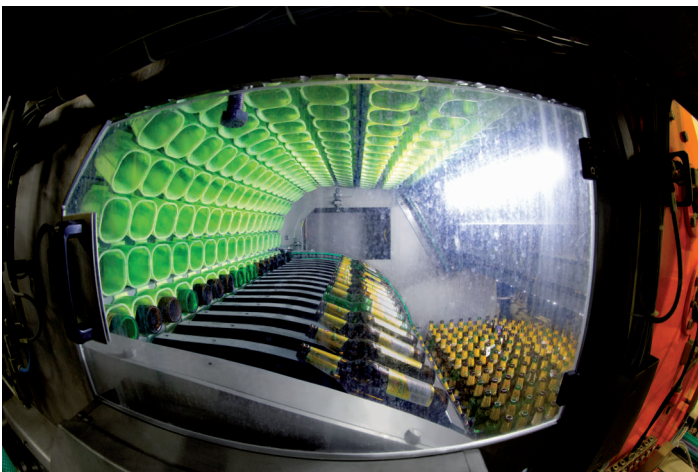
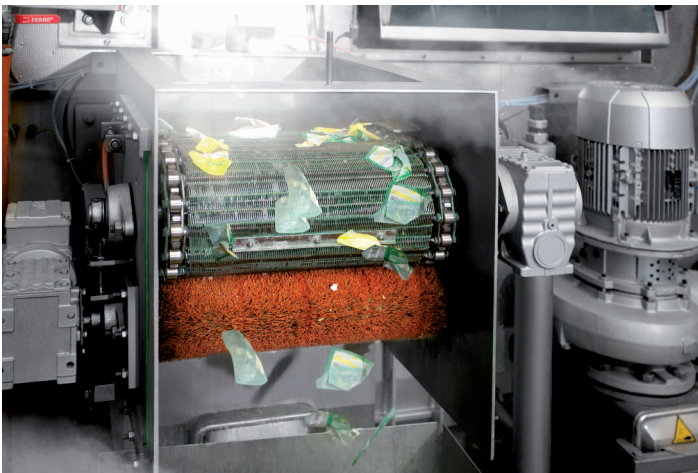




## ADVANTAGES OF ATHENA BOTTLE WASHERS FOR VERY LOW PERFORMANCE LEVEL

- the contact time of a bottle with lye: 8 - 11 minutes
- performance range: 1,500 – 6,500 bottles per hour
- bottle volume: 0.2 – 1.0 l
- pre-rinsing the bottle before it enters the lye tub
- the pressure in the rinsing sections: 1.5 bar
- rinsing sections comprising rotating self-cleaning jets
- flow in the lye tub in the direction of the label raker
- improved cleaning of the lye medium – by means of a pumping device
- the separation of labels: by means of under-level and above-level rinsing
- the SIEMENS S7 control system - displays and enables the archiving of the operational data together with remote management

**The ATHENA 16/06.2. CN bottle washer for very low performance level in the Chotěboř Brewery, Czech Republic**





# BILINSKA KYSELKA

The delivery of a complete filling line for filling mineral water into glass and PET bottles with an output of 4,200 bottles per hour on behalf of the client **BOHEMIA HEALING MINERAL WATERS CZ, a.s.**, with their plant in Bílina represented quite a challenging task for us.

Prior to the actual delivery of the new filling technology it was necessary to first prepare a new water management system, one that would correspond to the modern standards. The most up-to-date collection system comprises a condensing matrix for producing Zaječická hořká mineral water together with a new aseptic filler that will meet any future demands for perfectly hygienic operation. The VERABLOK 20/24/6 bottle filler with an overpressure filling system has been installed to become the backbone of the filling line. All these factors thereby assist in ensuring that the mineral water will never leave its natural pressure conditions and that it will be conveyed to your table without having experienced any contact with atmospheric pressure. In conjunction with our new line of bottles that are produced from a dark cobalt blue glass from now on Bílinská kyselka will be available in what is the best quality so far in the entire history of the bottling of this mineral water.



## THE COMPOSITION OF THE FILLING LINE:

- OPTIMA 4 blowing machine
- A compressor station
- VERABLOK 20/24/6 bottle filler
- EXAN LEVEL inspection equipment
- MODULAR - PLUS PE labelling machine
- A printing device
- DIMAC sta@r one packing machine
- bottle conveyors
- An applicator of carrier strips
- OSN 5 volumetric mixer of beverages
- An applicator of herbal extracts
- CIP central sanitising station
- NMDm 1000 R depalletisation station for new bottles
- A line distributor
- A wrapping machine
- A storage tank
- A water management system







## INTERESTING FEATURES OF THE FILLING LINE

VERABLOK 20/24/6 bottle filler

An overpressure filler also comprising a rinsing machine and a screw capping machine

ULTRA CLEAN design

bottles: glass (0,25; 0,75l)  
PET (0,5 l; 1,0 l)

the decentralised drive technology was selected  
-> easy-to-clean surface(s) of the equipment





## WE ARE THE MOST SUCCESSFUL CZECHTRADE CLIENT

The NATE – nápojová technika a.s. Company won a prestigious award at the 17th annual DHL UNICREDIT Export Award Ceremony organised under the auspices of CzechTrade. This prize is awarded in several categories determined in accordance with the size of the company and with its export orientation. NATE – nápojová technika a.s. was rated as "THE MOST SUCCESSFUL CZECHTRADE CLIENT". It was Ing. Petr Papoušek, the Company's CEO, who personally accepted this prestigious award.

## EXPORTNÍ CENA DHL UNICREDIT pod záštitou agentury CZECHTRADE

The ceremonial announcement of the DHL UNICREDIT Export Award took place on the 27th of November 2014 at the Congress Centre in Prague. This prize is awarded to small and medium-sized businesses in the Czech Republic, with the purpose of highlighting the importance that these companies have for the Czech economy. The main evaluation criterion for exporters is the index that is obtained as a product of the annual growth of exports and the share of exports in turnover. The very nature of the manner of valuation of companies testifies to the quality of the services provided and the high degree of competitiveness of the companies that do receive this prestigious award. Therefore for the NATE – nápojová technika a.s. Company too this award represents a great honour and one that we truly appreciate. We are already working actively on defending our leading position in 2015.





## THE TASK WAS CLEAR!

# TO CARRY OUT THE RECONSTRUCTION OF THE PETBLOK TO A HIGHER PERFORMANCE LEVEL IN THE SHORTEST POSSIBLE TIME

The big challenge for us was to fulfill the contract for the reconstruction of the PETBLOK for the KRONES brand in Dobrá Voda. Dobrá Voda belongs to the portfolio of brands of the Poděbradka, a.s. Company which is one of the leading manufacturers of soft drinks in the Czech Republic. The modern Dobrá Voda production plant is located in Byňov in South Bohemia and it specialises in bottling both natural and flavoured mineral waters.

The PETBLOK, which was originally designed for filling glass bottles, has now been adjusted to fulfill a single purpose -> to increase the operational efficiency for PET bottles. The sizes of the bottles that can now be filled are: 250 ml; 330 ml and also 750 ml when using the low-neck PCO 1881 bottles.

In terms of both its design and its installation the implementation of the project was highly complicated. It was necessary to modify all the stages of the distribution system of the bottles to enable that the bottle between entering the rinsing machine and leaving the capper is held only by the ring located beneath the bottle neck (thereby eliminating any need for the height-adjustment of the rinsing, filling and capping equipment when switching to a different bottle size). Only the plastic segments of the gears that stabilise the bottle as it passes through the machine and that are dependent on the bottle diameter had to be replaced. The bottle carriers were mounted beneath the filling valves (in the existing pressure sleeves), which do not require any adjustment when the size of the bottle is changed.

### QUESTIONS TO WHICH WE HAD TO REPLY BEFORE WE DO THIS ACTION GO

- How high will the loss of fillers?
- How do we deal with supply bottles to the filler?
- How we solve keeping the bottle? Plastic bottle It is led by the throat.
- How to behave in a new bottle fillers, when the machine was initially prepared only on glass bottles?



## A BRAND NEW ATHENA 24/24.3 CNT IN STAROPOLANKA

In April 2015, in the Polish spa town Polanica Zdroj we installed an innovative bottle washer designed for a medium level of performance. ATHENA 24/24.3 CNT replaced the refurbished TERMA 28/24.4 bottle washer that had been installed there in 2006.

NATE carried-out both the complete dismantling and removal of the former bottle washer and the subsequent installation of the new equipment that was transported to the site on the 9th April 2015. The actual shutdown of the operation lasted for only 5 working days. This timeframe highlights both the advanced level of our equipment and the expertise that we can offer to our customers.

### THE ADVANTAGES OF THE BOTTLE WASHER THAT WAS SUPPLIED:

#### **AUTOMATIC AND UNATTENDED MORNING PRE-HEATING OF THE MACHINE TO THE DESIRED OPERATING TEMPERATURE**

The operator simply sets the required date and time at which the pre-heating of the bottle washer should commence.

#### **CHECKING FOR DAMAGED BASKETS**

The washer detects the carrier line in which the damaged basket is located. Then, during normal operation, bottles are not fed to this line. After the completion of the operation or during the course of the maintenance of the machine, in the "Replacing baskets" menu the operator starts the main drive that automatically stops the carrier with the damaged basket in the correct position for exchanging it.

#### **PRESSURE PRE-RINSING WITH AUTOMATIC FILTRATION**

This is a very effective extra item of equipment in regard to the removal of solid impurities such as straws, cigarette-ends, insects and other undesirable items from the bottles prior to the main washing process. High pressure pre-rinsing washes these impurities out of the bottles. Given that this comprises a large quantity of impurities that accumulate on this section's filtration sieve, for the machine operator this automatic cleaning of the filtration system is very important.



#### **THE THERMAL INSULATION OF THE LYE BATHS AND THE PIPING**

This prevents the cooling of the lye washing section, thereby reducing steam consumption.

#### **HYDROGEN VAPOUR RECOVERY FROM THE WASHING SECTION**

When washing bottles with labels that contain aluminium in the lye bath the release of hydrogen also occurs, which at higher concentrations is explosive and therefore the washing section has to be vented in a controlled manner in order that the hydrogen concentration does not increase and, at the same time, also to prevent a large-degree of heat dissipation from this section.







### **DISINFECTION OF THE HEAD SECTION USING CHLORINE DIOXIDE**

Prior to the commencement of the operation cleaning the outlet area of bottles is implemented in order to avoid contaminating washed bottles after their final rinse with potable water and to ensure that only perfectly clean and biologically safe bottles emerge from the bottle washer.

### **STEAM DISINFECTION OF THE SPRAYING SECTIONS**

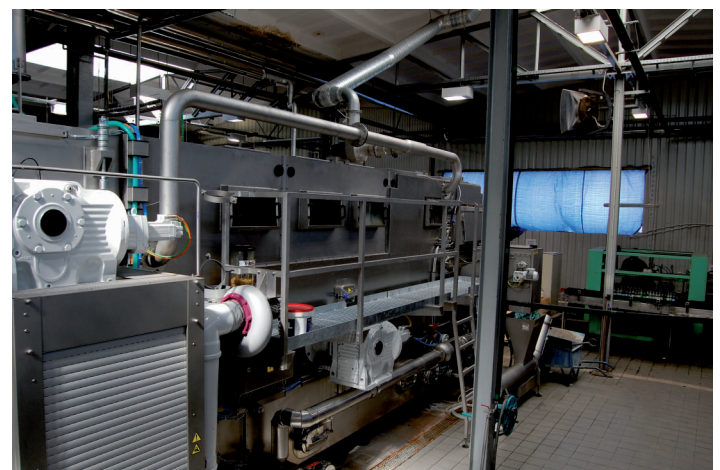
Cleaning the spraying sections by means of steam together with an intake of chemicals is implemented prior to the commencement of the process in order to guarantee the purity of these sections.

### **AUTOMATIC CENTRAL LUBRICATION**

Lessening the requirements for the maintenance and operation of the machine, automatic lubrication of all the necessary areas occurs at already preset time intervals.

### **AUTOMATIC REGULATION OF THE FLOW OF DRINKING WATER FOR THE FINAL RINSING OF BOTTLES IN ACCORDANCE WITH THE ACTUAL PERFORMANCE-LEVEL OF THE MACHINE**

The flow of water for the spraying and rinsing of the bottles with drinking water is controlled in accordance with the actual performance-level of the machine, thereby helping to conserve water usage.





**NATE - nápojová technika a.s.**  
EQUIPMENT FOR BEVERAGE INDUSTRY

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