

# NEPTUN



## WATER SECTOR

### F.A. NEPTUN

Mena, Chernihiv Oblast, Ukraine

Group: Avantgard

- 14,400 BOTTLES/HOUR PET LINE
- Smiform 8-66-8 LG-VMAG ECOBLOC®
- Smiflexi SK 500F shrinkwrapper
- Smipal APS 3050P palletizer
- Smiline conveyor belts
- Subcontracting equipment



GEO LOCATION



Golden domes sparkle over modern buildings, medieval cities contrast with oriental motifs ... We are in Ukraine, in the heart of Eastern Europe, a frontier land both from a geographic and cultural point of view; a land that lies between the western world and the eastern Slavic world, whose name means, in one word, "borderland". Ukraine, inhabited by 46 million people and its extension of 604,000 square kilometers, is the second largest state in Europe, after European Russia and first of metropolitan France. The fertility of this land has been known for centuries, so much so that in the past they used to call Ukraine the "bread basket" of Europe or the "barn of Europe". Not surprisingly, wheat and its derivatives are the symbols of tradition and basic ingredients of the Ukrainians' daily diet, as well as the leading lights of dinners and banquets organized for important events and national holidays. The spring from which the "Ostrechenskaya" water is sourced is located in the Oblast (i.e. province) of Chernihiv, one



of the greenest and most picturesque landscapes in northern Ukraine, far from the big factories of the main industrial centers. This water is extracted from the soil at a depth of 830 meters and boasts excellent therapeutic and healing properties. Ostrechenskaya water is bottled in PET containers by F.A. Neptun, in a modern 14,400 bottle/hour plant supplied by SMI.



# NATURAL AND CULTURAL HERITAGE

Ukraine is a land that will enchant you not only for its spectacular nature but also for its picturesque regional traditions such as those related to ancient monasteries, which are celebrated regularly by the population, with folkloristic events including singing, folk dancing and local cuisine. The Ukrainian landscape mostly consists of fertile plains and vast steppes that stretch as far as the eye can see, crossed by several rivers including the Dnepr, the Donec, the Dnestr and the southern Bug, which leap into the Black Sea and into the smaller Sea of Azov; in the southwestern part, the delta of the Danube forms the border with Romania.

The few existing mountain ranges are the foothills of the Carpathian Mountains, to the west, whose highest peak is Mount Hoverla (2,061 meters), and the mountains of the Crimean Peninsula. The natural, historical and cultural heritage of Ukraine is very rich, and UNESCO has included many of its tourist attractions on the World Heritage list. It suffices to say that over 500 Ukrainian cities go back thousands of years and that about 4,500 villages have existed for over 300 years. Thanks to its strategic geographical position, Ukraine is also an excellent communication trade route with Asia and is therefore the ideal bridge between Europe and the Eastern countries.



# KIEV, THE CITY OF GOLDEN DOMES

A trip to Ukraine can only start from its capital, Kiev, which, according to legend, was built 1,500 years ago on the hilly shores of the Dnieper River by three brothers, Kyi, Shchek and Khoryv, and their sister Lybid. Kiev was probably founded long before the 5th century and acted as a trade route between Constantinople and north-eastern Europe. The Goth historian Jordanes recorded the existence of the city with the name of Danaprstadr. When the region came under the Slavic-Varangian influence, the city became known as Kyiv and was elected to Mother of Russian Cities by Oleg of Novgorod. The entire region around Kiev was known by the name Rus' and the Kievans were generally called Rusiny/Rusici.

Coming to more recent times, on September 19, 1941, during Operation Barbarossa of World War II, Germany occupied Kiev, destroying a large division of the Red Army, which controlled the area, and taking over 650,000 prisoners. The city remained in German hands until the Soviet Red Army took it back on November 6, 1943. For its heroism during the war, the title "hero city" was later bestowed upon this city. Finally, after 57 years as capital of the Soviet Union's Ukrainian SSR, Kiev became the capital of independent Ukraine in 1991. Today Kiev is a modern metropolis of nearly 4 million inhabitants, where the sun is reflected in the golden domes of numerous churches, built around the 11th century when Kiev was the largest city in Europe. The reflection of the domes makes streets and buildings gleam in the sun while the interior of the Byzantine cathedrals is decorated with magnificent frescoes that completely cover walls and ceilings.

## THE MINERAL WATER:

# OSTRECHENSKA

The Ukraine mineral water market is growing constantly, thanks to sustained growth in the demand for bottled drinking water by a large segment of the population. F.A. Neptun is among the most active companies in this sector, which stands out in the Ukrainian market for continued investments in new technologies and new production facilities for its plant in Mena, in the province of Chernihiv. Recently, the Ukrainian company turned to SMI for the design, implementation and installation of a new Ostrechenska mineral water bottling and packaging line, both natural and carbonated, in 0.5 L and 1.5 L PET bottles. SMI also provided the client with technical support in the 0.5 L and 1.5 L bottle study and design stage. The new PET containers design and manufacture took into consideration Neptun's expectations in terms of functionality, cost-reduction and brand image. The new bottles of Ostrechenska mineral water are made of lightweight preforms and fully comply with the customer's environment policy, while maintaining a very good robustness. Following this new investment,

Neptun's production facilities today consist of two modern lines: one for the production of mineral water under the Ostrechenska brand, bottled in 0.5 L and 1.5 L PET containers, and one for the bottling of lemonade-based soft drinks, beverages with natural fruit juices and herbs, orangeades and tonic beverages marketed under more than 18 brands.



“ the Neptun company name inevitably evokes mythology and Neptune, the god of water, and all the popular legends and traditions that over the years have helped to increase the popularity and demand for this water of high quality ”

### NEPTUNE AND GREEK-ROMAN MYTHOLOGY

Neptune is a religious deity of the ancient Romans, the god of freshwater, the sea and earthquakes, and is the equivalent of the Greek god Poseidon, brother of Zeus and god of the sea, the horse defender and he who unleashes earthquakes. In some legends, Poseidon appears as the older brother of Zeus (Jupiter to the Romans), in others as the younger brother; the most reliable legend is the one that unites all brothers and sisters, according to which the father Kronos devoured his children at birth to avoid falling victim to the prophecy which in turn condemned him, in the future, to be ousted from his own heirs. But Rhea, Kronos' wife, determined to preserve her offspring, had recourse to a stratagem when Zeus, the last son, was born: she replaced the baby with a stone and covered him with some bands so that her husband would not discover the subterfuge and devour this one, too. Once grown, Zeus was able to deal with Kronos and free all his siblings by forcing his father to expel them from his belly. Later on, they randomly divided the various kingdoms and Poseidon became the god of the seas. Even the god of the sea has a long list of lovers, just like his brother Zeus, both among goddesses, nymphs and mortal women. It was because of the love affair with Poseidon/Neptune if the Gorgon Medusa was transformed into the monster having the face of a hideous human female with living venomous snakes in place of hair that we all know. Mythology has it that Medusa consumed her passion with the mighty god of the sea on the floor of Athena's temple. This enraged Athena who transformed Medusa into a horrible monster in revenge for this blatant disrespect.



# A COMPLETE SPECIFICALLY DESIGNED LINE

The line solution that SMI provided to the Ukrainian company Neptun is the result of a preliminary study of the project as well as the logistical conditions of the production site, accurate analyses of the dynamics of accumulation, distribution and handling of the product to be bottled and packaged, to ensure a fluid and constant production flow as well as utmost operational flexibility of the machines installed. In fact, the proper design of the bottling line, the appropriate sizing of machines and systems and the smooth running of the entire system are essential elements that enable Neptun to produce the Ostrechenska water efficiently, at low cost and with a good competitive edge. The line solution installed by SMI in the Mena plant favors energy saving and provides, for the "wet" part, an ECOBLOC® 8-66-8 LG-VMAG unit, suitable for both carbonated and still products. Smiform's ECOBLOC® integrated system brings together stretch-blow moulding, filling and capping features in a single system (and also labeling, on request). This is an innovative solution that reduces

overall dimensions and power consumption and also significantly lowers the production costs of every single bottle, especially thanks to energy saving devices and systems with which the machines are equipped for production cycle optimization (such as the Air Recovery System of the stretch-blow moulding module, which reduces the consumption of high pressure compressed air up to 40%).



## LINE EFFICIENCY ALWAYS AT THE TOP

The use of a latest generation automation and control system, which uses sophisticated sensors positioned in the line's most strategic points, allows maintaining high levels of machine performance during all production cycle stages. Furthermore, the systems' advanced automation optimizes the use of raw materials, workforce and energy resources, promoting social and environmental compatibility in the proposed solutions. In addition, the bottling and packaging line installed by SMI in Neptun's plant in Mena features energy-efficient motors that further contribute to energy savings and cost reduction. Bottles blow-moulded, filled and capped by the ECOBLOC® 8-66-8 LG-VMAG unit are then customized by a wraparound label from a reel and packaged in shrink-film only packs, by a Smiflexi SK 500F shrinkwrapper. More specifically, the 0.5 L PET bottles are grouped in 4x3 film only packs while the 1.5 L bottle is packed in the 3x2 film only collation. Finally, both types of packages are placed on 800x1200 mm pallets by the Smipal APS 3050P automatic palletizing system.

## THE ADVANTAGES OF THE ECOBLOC® INTEGRATED SOLUTION

The compact systems of Smiform's ECOBLOC® series integrate the functions of a rotary stretch-blow moulder, an electronic rotary filler and a rotary

capper, and are characterized by their modular and compact structure as well as their extensive customization features. These SMI-produced systems are the ideal solution to produce, fill and cap PET containers of various capacities and sizes, having simple or complex shapes, and offer significant advantages in economic terms, as they do not require the presence of the rinsing machine, the conveyor belts between blow moulder and filler and the accumulation conveyors, all of which are provided in the case of separate machines. All the ECOBLOC® models are equipped with an innovative system that transfers

the containers, minimizing the risk of contaminating the product to be bottled and increasing the machine's overall performance. Furthermore, the aforesaid models use exclusively latest generation filling technologies that offer the advantage of managing the filling cycle in a fully electronic manner. The filling parameters are selected directly via the operator panel, depending on the product, the container and the required production speed. The filling valves feature great simplicity of maintenance and cleaning, while format changes are quick and easy and do not require the replacement of any mechanical parts.

# FLEXIBLE AND DYNAMIC LINE END

**S**mipal's APS 3050P series palletizing system is very flexible and can be easily adapted to the line end logistics conditions of the F.A. Neptun production plant. The mechanical components housed in the machine's central column are driven by brushless motors that ensure fast, accurate and smooth movements on all operating axes. This is a solution which guarantees high process reliability, reduced maintenance and low operating costs of the palletizing system. The automation and control system on-board the machine has a simple and user-friendly HMI, which allows the user to quickly and easily manage all line end palletizing operations. Moreover, when you enter the specifications of the packaged pack, the size and number of layers, the system automatically displays all the possible palletizing patterns on the operator panel screen. The entire range of Smipal palletizers of the APS series is equipped with a standard, brand new, dedicated "safety PLC" for programming the

safety systems flexibly, reliably and efficiently. This PLC monitors the working efficiency of all the machine's safety devices, integrating them with each other, and creates intersecting safety areas within the plant's boundaries. This allows significantly reducing machine downtime, both in case of emergency and during the pallet or interlayer loading operations, etc. thanks to differentiated logics in the various areas of intervention. Hence, maintenance can be carried out very easily and any adjustments to future safety standards can be implemented in no time.

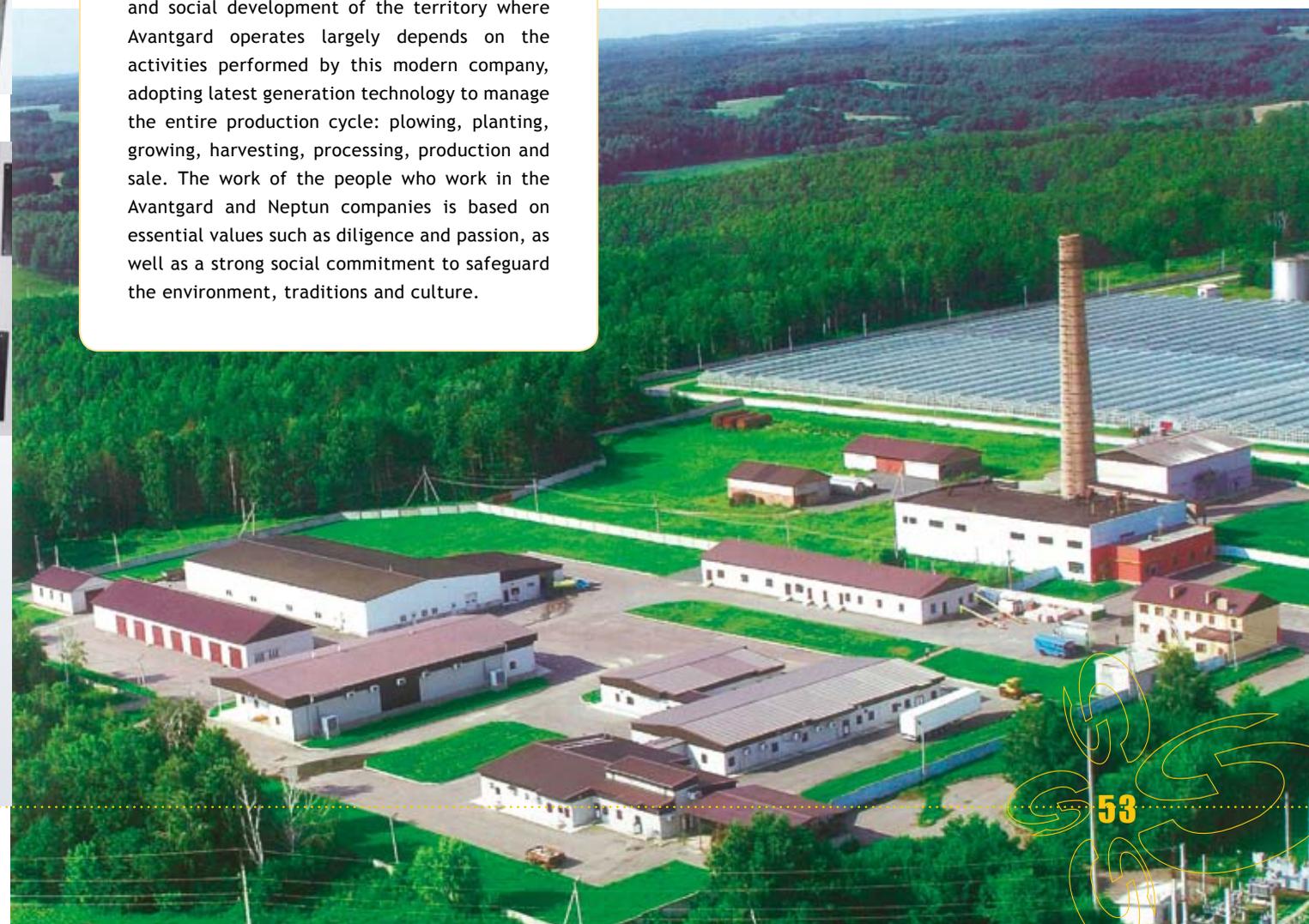


## NEPTUN AND THE AVANTGARD FARM

F.A. Neptun's success is linked to that of the Borovik family, owner of the company, whose dedication to work, entrepreneurship and great ability to innovate continuously led the Ukrainian company to occupy a leading role in the country's economy. Besides Neptun, the Borovik family also owns and operates Avantgard, a company located in the town of Sverdlovka (not far from the Ostrechenska water source), which is one of the largest and most modern agribusinesses in Ukraine (it holds 3,025 hectares of farming land, of which 1,776 are cultivable). It produces many of the products grown on their agricultural expanses, made directly from their cattle farm (sausages, milk, yogurt, etc.). The economic and social development of the territory where Avantgard operates largely depends on the activities performed by this modern company, adopting latest generation technology to manage the entire production cycle: plowing, planting, growing, harvesting, processing, production and sale. The work of the people who work in the Avantgard and Neptun companies is based on essential values such as diligence and passion, as well as a strong social commitment to safeguard the environment, traditions and culture.



**Above:**  
A.G. Borovik, owner of F.A. Neptun, with his grandsons Alexander and Anatoly.



# THE CITY OF CHERNIHIV

**F**ounded in the 13th century, the city of Chernihiv, also known as Chernigov, is an urban center of about 300,000 inhabitants. In the past, it was among the most important principalities of Kievan Rus', a medieval monarchical state (whose dawn was marked around the end of the 9th century in part of the territory including today's Ukraine, western Russia, Belarus, Poland, and the three Baltic states of Lithuania, Latvia and Estonia). It is considered the oldest organized East Slavic state, of which Kiev was the capital for a long time. Chernihiv, renowned for its many religious buildings of the 11th and 12th centuries, among the most beautiful in the country, is indeed one of Ukraine's oldest cities and also the regional center of the homonymous region, located to the right of the Desna River.

