

Kyrgyzstan uses tax stamps on tobacco and alcohol products, provided by Garsu Pasaulis of Lithuania. The alcohol stamps are self-adhesive, with an offset-printed background in five different colours, one of which is invisible UV. They also carry three optically active features in the form of an iridescent flexo-printed band, intaglio colour-shifting band, and holographic strip, as well as inkjet-printed variable data, including coding, and security kiss-cuts.

	Imported without filter		Local with filter
	Imported with filter		Alcohol
	Local without filter		Alcohol

Kyrgyzstan's tax stamp family.

Moldova uses offset-printed, wet glue-applied paper-based tax stamps for cigarettes, other tobacco products, spirits and wine. The longstanding producer of the stamps is the local printer Bastina Radog.

RUSSIA

In this extended section on Russia, we focus on three different programmes involving tax stamps and product marking technologies: the alcohol tax stamp and track and trace system, the fur-labelling programme, and the Chestny ZNAK unified marking system.

Like almost all other countries in the region, Russia has been using tax stamps on tobacco and alcohol products for a number of decades now.

In 2006, the country upgraded its stamps for domestic and imported alcohol products to incorporate data for a new programme that is today considered one of the few examples of a true alcohol track and trace system. The system is called *EGAIS* (Unified State Automated Information System) and it is used to track production volumes and turnover of all alcohol products (including beer, which doesn't currently carry tax stamps) sold on the Russian market.

EGAIS has been developed by the state-owned developer Center-Inform, with the tax stamps themselves provided by Goznak.

Although initially designed for the manufacturing and wholesale sectors, in 2016 EGAIS expanded its coverage to distribution and retail, which meant that products could from then on be monitored up to their sale to the consumer.

In order to perform their tracking obligations, retailers are equipped with special software installed at point-of-sale (POS) tills and computers to register every product received from manufacturers, distributors or importers. The registered data is then compared with corresponding producer, importer and distributor data, in order to detect any discrepancies.

The system also obliges the retailer to scan each individual EGAIS barcode on the tax stamp of products sold to the final consumer (in fact, the normal linear barcode on the product label, when scanned, automatically recognises the product as

alcohol, and won't allow a purchase receipt to be generated until the EGAIS code is likewise scanned). The scanning of the EGAIS code is carried out with a 2D scanner connected to the till.

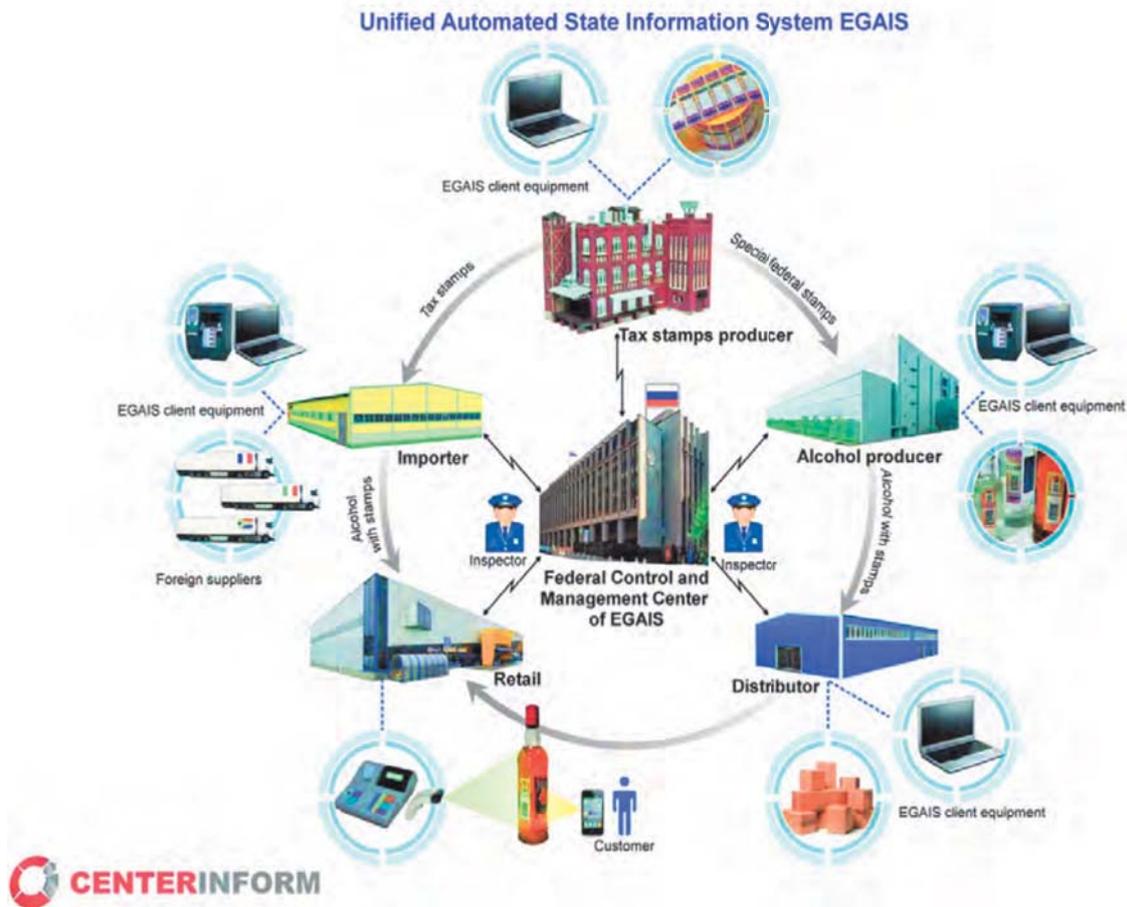
Once the EGAIS code has been read and confirmed, a final receipt is generated and the purchase data is registered in the system and sent to the central database. However, if the code is not confirmed, or if data discrepancies are identified, the retailer won't be able to sell the product.

The purchase receipt itself carries yet another code, in the form of a QR code which customers can scan with their mobile phones to check the validity of the purchase. Customers have access to a mobile application called *Anti-Counterfeit ALCO*, which provides them with data on the origin and authenticity of alcohol beverages, as well as information such as the locations where legal alcohol products are available for purchase. As at the end of 2018, more than 1.3 million users of the mobile app were registered in the EGAIS portal.

The customer can also submit a complaint about a particular vendor or the quality of a particular product. 2,000 complaints were received in 2017, 300 of which were confirmed and processed. Also in 2017, 23 million units of counterfeit alcoholic beverages were detected and prevented from being sold at retail outlets, followed by more than 20 million units in 2018.

In 2018, the accounting of every alcohol product unit was introduced together with upgraded tax stamps. Before 2018, EGAIS had been monitoring each individual bottle only at the moment of production and the moment of sale to the consumer, with wholesalers only transferring batch level data into the system. Since 2018, however, EGAIS has been carrying data on every bottle of alcohol at every point in the supply chain.





EGAIS: Russia's track and trace system for alcohol.

Functional scheme of EGAIS in retail



Registration of retail sale of marked alcohol products in EGAIS.



RUSSIA (Continued)

A total of 57 stamps were introduced in 2018, including for vodka and different categories of spirits, wine and cognac. The wide variety of tax stamps is justified by various excise rates for different types of alcohol, as well as a wide assortment of packaging containers and the need to differentiate between domestically produced and imported products.

The tax stamps, supplied by Goznak, are printed on self-adhesive paper and incorporate a security thread (which is uncommon for tax stamps) as well as a holographic stripe. The paper is kiss-cut in order to prevent removal and reuse.

The mark producer prints the serial number, alcohol product type and volume, and the unique EGAIS identifier in the form of a datamatrix code, onto the tax stamps.



Tax stamp serial number

DataMatrix code containing EGAIS ID

2018 Russian alcohol mark appearance.



Bottle of vodka with new tax stamp for domestic products.

The unique identifier is generated by the Federal Service for Alcohol Market Regulation, an executive body under Russia's Ministry of Finance, and then transmitted to Goznak, which prints the unique identifier onto the tax stamps, ready for delivery to the manufacturers. The stamps are subsequently applied to individual products by automatic applicators installed on the beverage bottling lines, and the unique identifier (which is also known as the EGAIS identifier) on the stamp is scanned and linked with its associated bottle by means of special software.

The information contained in the code pertains to tax stamp data as opposed to production data – given that the code is generated and printed before the stamp can be associated with a particular item. The production and distribution data for track and trace purposes is subsequently generated in the EGAIS database and linked to the EGAIS identifier during the production process.

There then follows a process of packaging aggregation (which is a clear necessity for ensuring a smooth-running and time-saving track and trace system), which can be performed manually or automatically. Manual aggregation is carried out by personnel using barcode scanners, and involves the use of thermal transfer printers, controlled by special software, to produce labels for the group packaging.

With automatic aggregation, special stickers containing the datamatrix code with the EGAIS identifier are applied onto the bottle caps (in addition to the tax stamps). These stickers are later scanned and linked with the EGAIS identifier on the stamp. During the aggregation and group packaging process, the datamatrix codes on the bottle caps are read by automatic scanners and used to print group labels.

The expansion of the EGAIS system in terms of products (beer products were only incorporated in 2016) as well as the expansion into distribution and retail, resulted in a total excise gain in 2016/17 of 148 billion rubles (\$2.15 billion) compared to the previous year.

RFID Labels for Natural-Fur Products

Another development involving Russia is that since 2016, all natural-fur products – such as mink, fox and rabbit garments – which are placed on the Eurasian Economic Union (EAEU) market must be equipped with a secure control-identification mark (label). This obligation, which was agreed between the five countries of the EAEU (Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia), aims to decrease illegally imported or manufactured products, as well as increase government revenues and control product turnovers.



Russian label for domestically produced furs.

A green label is used for locally made fur products, while a red label is used for imports. Furthermore, the labels are available in two different sizes: 53mm x 80mm and 25mm x 160mm. The labels are also distinguished according to their intended market: for example, the labels used in Russia carry the letters 'RU', while those for Belarus are marked with 'BY', Kazakhstan with 'KZ', Armenia with 'AM', and Kyrgyzstan with 'KG'.

The secure label consists of a radio frequency identification (RFID) tag embedded in a small strip of flexible material. The label also carries a linear barcode (with corresponding alphanumeric sequence for human readability), as well as a QR code.

Together, these various elements provide the label with three different, open standard carriers for unique identification:

1. The linear barcode and alphanumeric sequence carry the unique number of the label itself;
2. This unique number is repeated in the QR code, which also carries a URL (web address) for the purposes of label verification;
3. The RFID tag carries an Electronic Product Code (EPC), composed of a Global Trade Item Number (GTIN) and serialised tag ID number (TID). The TID serves as the primary ID key for the marking and tracing system. The EPC is not linked to the linear barcode or QR code and shares nothing in common with them.

The linear code, alphanumeric sequence and QR code are printed onto the labels by the label maker (Goznak), which is also responsible for entering the chip's TID and the alphanumeric sequence into a central accounting and information system. The system is located on the premises of Russia's Federal Tax Service, which is the authority that operates the system.

The labels are then passed onto the fur product manufacturers (or importers) who use an RFID reader and specialised software to add the GTIN to the chip and combine it with the TID in the central accounting system. When the wholesaler receives the products from the manufacturer, he first reads the information on the labels in order to identify the products and then proceeds to transfer receipt and delivery data to the central database. As for the retailer, he carries out a similar exercise to the wholesaler, by first identifying the product and then transferring data on all sold marked products to the database, in order to build a full picture of the products' journey through the supply chain.

The participation of all supply chain operators in the identification and recording of each product, up to the point of sale, provides a good example of a comprehensive secure track and trace system for government-regulated products.

The system also offers components for information-sharing and interaction purposes. These include an integration component for the Eurasian Economic Commission, as well as national components in each EAEU member state, which are used to monitor the manufacturing and distribution activity of fur products at national level. In addition, organisations such as GS1 Russia and national customs and tax administration services are able to interact with the system.

The electronic and digital features of the label have been combined with physical security features, in order to create a high-security label. The physical features include microtext, metallic paint, a security thread with a central window and latent image, and an invisible, UV-luminescing feature.

The labels can be applied by different methods. The inner seam of a garment is one method, but there is also the more popular hinge method, where the label is inseparably attached to a structural element of the product.

The company that developed the fur marking and tracing system is Center-Inform, which also developed Russia's EGAIS system for alcohol tracking and monitoring.

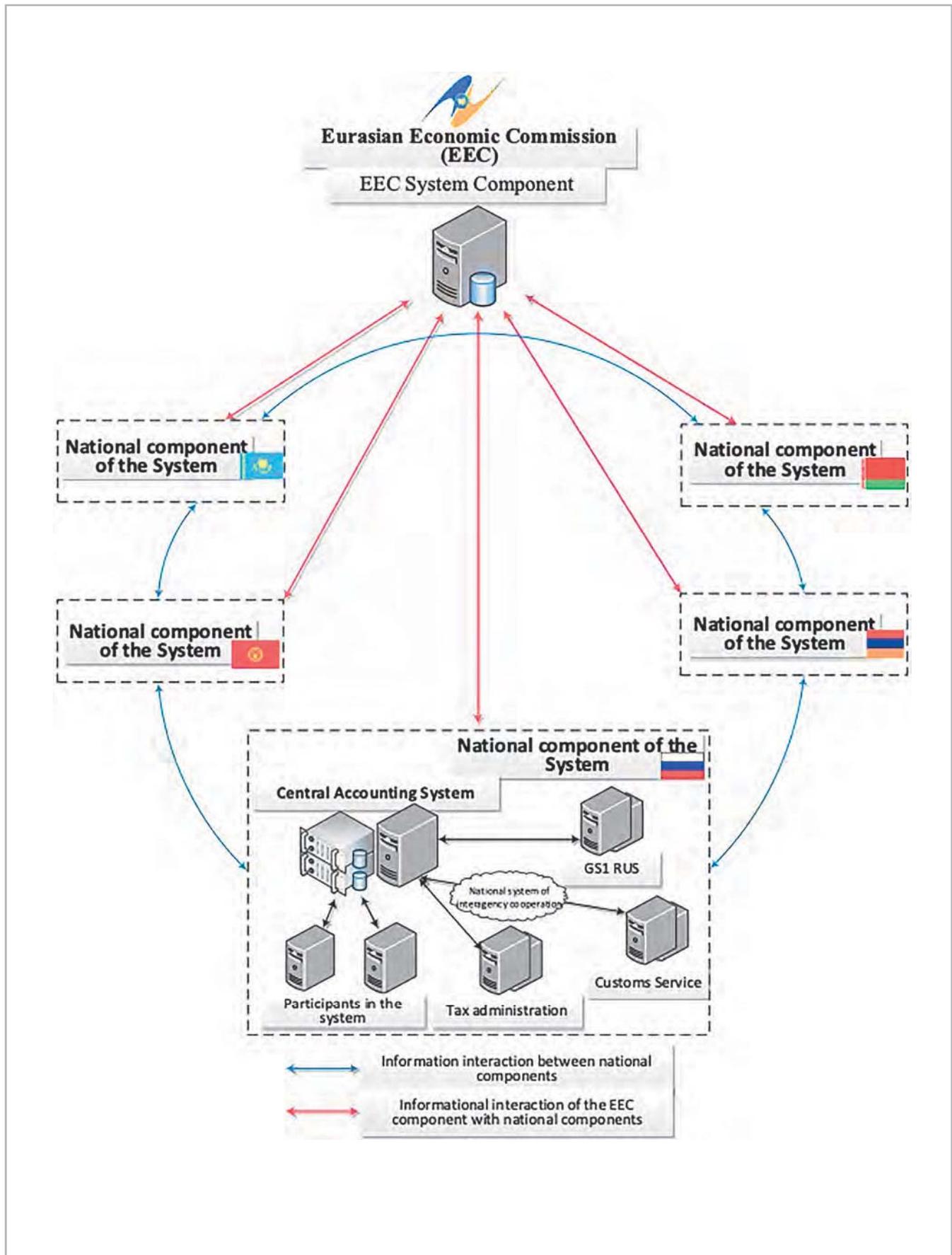
Before the introduction of the fur marking system, up to 80% of Russian fur imports were reported to be undeclared or underdeclared (according to *The Moscow Times* in a 2014 article). In addition, a spokesperson for a Russian fur producer said at the time that up to half of Russian furs could well be contraband.

Illegal importers were said to often use sub-par fur in their products. For instance, Chinese fur was sometimes dipped in formaldehyde, which caused it to increase in size. Tricks such as these allowed smuggled furs to be sold at half the price of legal products.

Since the implementation of the fur marking programme, Center-Inform is happy to report that more than 8,500 manufacturers, importers, wholesalers and retailers (20% of whom had never previously made tax returns) have been registered in the system.

In addition, more than 10 million labels have been produced, and the legal entry of fur products into the market has increased by 57%, to reach a total of over 3 million legal fur items in circulation.





Natural-fur garment marking system in the EAEU.

Unified System for Multitude of Products



Staying with Russia, in 2019 the country implemented what is being lauded as the world's largest unified track and trace system, covering a multitude of products. These include cigarettes and fur (but not alcohol).

This is a separate initiative to anything tax stamp-related, and is mainly coordinated by the Russian Ministry of Industry and Trade.

The new system is called *Chestny ZNAK*, which roughly means 'fair label', and it is based on the use of a unique datamatrix code printed onto the packaging of goods included in the system. For the moment, those goods consist of tobacco products, fur, footwear and some medications (which currently translates to about 6 billion codes), but perfume and photo cameras will be added in October 2020, and pilots for dairy products, bottled water, tyres and textile industry items are at various stages of completion.

Ultimately, the plan of the Russian government is to extend the system to cover most consumer industries by 2024, both in terms of domestic goods and imports. So the world's largest track and trace system indeed!

Why such an extensive system?

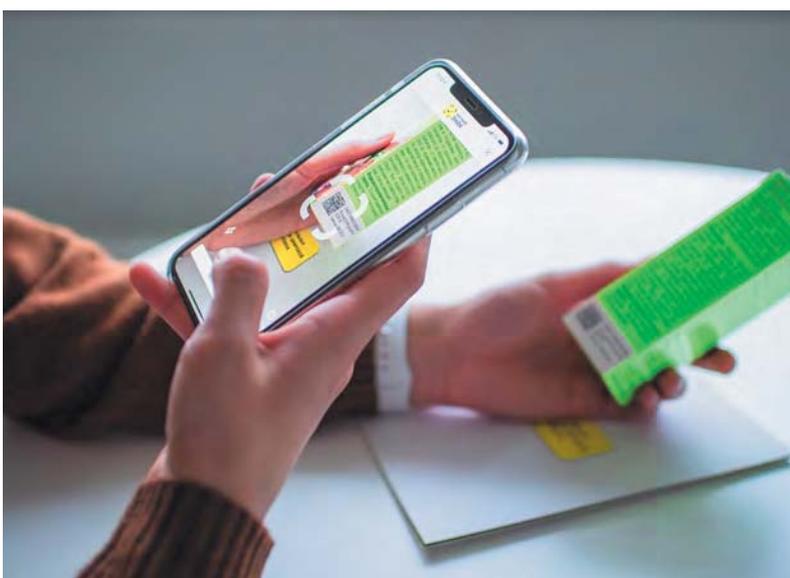
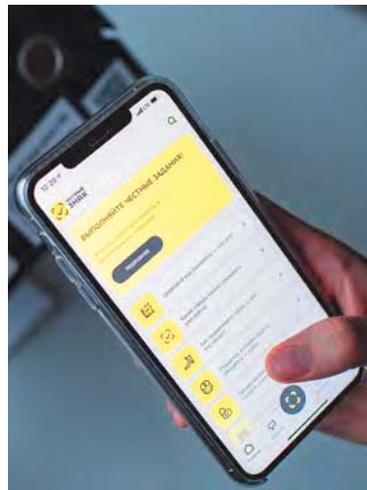
The problem of illegal product circulation is particularly acute for Russia, with the Ministry of Industry and Trade reporting that over 6 million counterfeit products have been identified in the Russian market since early 2018.

In particular, the share of illegal circulation of clothing and footwear is reported to be at about 35% (according to the Chestny ZNAK website), while in the perfume market it is about 20%, and in the medicine market it is up to 10%.

Furthermore, according to Nielsen, in the third quarter of 2019 the share of the illegal cigarette market was 15.6%.

To address this, in December 2017, Russian President Vladimir Putin approved a government resolution for the creation of the unified national track and trace system, to be developed and implemented by a public-private partnership between the Centre for Research in Perspective Technologies (CRPT) – a joint venture between USM Holdings, Rostec State Corporation and Elvis-Plus Group – and the Russian government. This framework would allow the government to achieve its goals at no cost to the state budget, given that CRPT's shareholders agreed to invest some 220 billion rubles (\$3.5 billion) in the project over a period of 15 years.

As a result of the implementation of the track and trace system, the Ministry of Industry and Trade reported that in 2020 there was a marked decrease in the share of the illegal tobacco market.



UNIFIED SYSTEM FOR MULTITUDE OF PRODUCTS

(Continued)



The process, in general – since it will naturally vary between the different product groups – consists of the following:

- 1 In its capacity as state-authorized operator, CRPT has the authority to generate the unique codes, which it transfers electronically to manufacturers or importers;
- 2 CRPT stores the codes along with other product data in a centralized state information system;
- 3 The manufacturers/importers print the codes by different means, according to the type of product to be marked (which, as stated on the Chestny ZNAK website, could be by 'any office printer' as far as small entities are concerned) and apply them to the unit-level (and in some cases, aggregated) product packaging;
- 4 The information contained in the code (or accessible via the code) includes the name of the manufacturer, the place, date and time of production or sale, and the product expiration date, item number and standard number. For some products, the system also stores any relevant certificates and licences;
- 5 As the products pass through the supply chain, the code is scanned by each economic operator, thereby allowing the system to record the entire journey of the products, from their place of manufacture right up to their sale to the final consumer, at which point they are scanned by online fiscal cash registers before being withdrawn from circulation;
- 6 Consumers can also verify the legality of the products by means of a mobile application for digital marking.



There are, however, security concerns. Given that the unique codes can be printed on (in the Chestny ZNAK website's words) 'any office printer', this indicates that the codes – and the paper they are printed on – do not carry any physical security features. This means that the codes could quite easily be copied and passed off as originals with no-one any the wiser – unless the original and its duplicate happened to be sitting next to each other.

As far as Chestny ZNAK is concerned, however, the codes are counterfeit-proof. The website explains that 'unlike a simple paper mark, a digital code is difficult to falsify. Thanks to domestic crypto-technologies, the data on goods cannot be deleted from the system or adjusted. The marking code is comprised of two parts: the identification code, which determines the product's position in the system and in the unified catalogue of goods, and the verification code or crypto-tail generated by the CRPT.'

The website continues: 'when goods are removed from circulation, their legality is confirmed at the online cash register using fiscal storage. It synchronises the data of the track and trace system and the unified catalogue and prevents sellers from offering counterfeit goods.'

'The series of unique codes cannot be predicted, and the digital code itself is not repeated for five years after the release of the good's position.'

All well and good, but how will inspectors out in the field be able to distinguish a genuine code from its clone, especially if the clone is reproduced well enough to ostensibly perform the same function as the genuine code when interrogated with a smartphone?

Fortunately for people in the fur industry – as well as their consumers – this situation does not apply to them, given that the existing RFID secure label and track and trace system (described above), has been essentially retained under the Chestny ZNAK system. This is good news, considering that the labels in question will continue to be produced by Goznak. As for the datamatrix codes, any cloned copies will eventually be intercepted by the track and trace system, making any copying attempts useless, advises Chestny ZNAK.

As far as tobacco products are concerned, these were the first group of products to enter the system. While tobacco products continue to carry tax stamps (and it looks like it will remain that way for the foreseeable future given that the stamps perform a separate function to Chestny ZNAK), cigarette packs, cartons and even shipping cases are now also sporting the unique code of the unified national system.

As for alcohol products, the Ministry of Industry and Trade has submitted a proposal to the Russian government to include this product group in the track and trace system, beginning with a pilot project for beer products and possibly followed by other alcohol beverages.

Various research estimates suggest that the system may add as much as 1.2% to Russia's GDP by reducing illegal trade, increasing tax revenues, and improving the efficiency of the government's control and supervision activities.