

# THE BAR CODES AND THE TECHNOLOGY OF CARGO TRANSPORT SYSTEMS FOR PACKETS AND SMALL INDIVIDUAL PACKAGES IN THE CZECH REPUBLIC

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*Summary: The technology of the systems for intrastate cargo transport of packets and small individual packages is mentioned in the paper. The utilization of the bar (EAN) codes in these systems is described there next to it. The facts shown in the paper are based on the actual practices from the technologies used in these transport systems. The special attention is paid for high effectiveness of several points (and for better quality of operations and for results reached during the transport process). This technology is based on traditional chain: consignors – centers of consignors – tranship point(s) – centers of consignees – consignee (it is known as the standard traffic system of type “door-to-door”).*

*Key words: packet, small individual package, bar code, tranship point, technology*

## 1. INTRODUCTION

There are some systems for intrastate cargo transport of packets and small individual packages in the Czech Republic. These systems have got activities not only on the territory of the Czech Republic, but as well as for the Slovak Republic too [1], [2], [3]. The object of these systems is transportation from the consignors to consignees within the “night jump“ system (known as “Nachtsprung” in German speaking countries) system and the “door-to-door“ system as well.

The intrastate cargo transport system of packets and small individual packages will be described step by step with the emphasis on the technology and the using of bar codes.

## 2. THE TRANSPORT ORDER AND COLLECTION OF CONSIGNMENTS

It is possible to make the order of transportation in the service centre of the attraction zone in various ways, e.g. by telephone, fax, E-mail or in the way of personal visit.

The all territory of the state is divided into the attraction zones. Every locality is appertained in one attraction zone only.

Important data necessary for transportation order are following:

- a) data about consignor and consignee – name of company or person, address of subject, name of contact person and contact information (e.g. phone number, e-mail address),
- b) data about the consignment – weight, kind of goods, package, rate of article, dimensions, special records etc.

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- c) data about the transport unit – kind of the unit (palette, transport box and so-called UNI), allowed kinds of manipulation with goods by handling,
- d) other data – payment of transport charges, cash on packet, time of delivery, graphic legend of place of loading or discharging etc.

The collection (and distribution of course) of consignments is provided by drivers of service vehicles in compliance with the orders of transportation. There is responsible officer for filling of the transport documents (contracts of carriage) in the service centre of the attraction zone. The entrance number is main information in the transport documents. This number (better code) is consisted of the codes of origin and destination attraction zones and of the number of consignment. The consignments are numbered in the service center of origin attraction zones. The numbering is started from number “1” every year. There is possible to use e.g. carrier charge as well.

In the case, when another service centre (situated in another attraction zone) is contacted by a client, the officer of this centre has to accept the transport order and inform the competent service centre (in the correct attraction zone), because there is a risk of lost of this contract.

The collection of consignments is performed by the service vehicles in the service centre of attraction zone. Driver of vehicle has to monitor the goods with the emphasis on the following features of goods – integrity, entireness, sufficiency and integrity of package. The attention is paid for readability and durability of marking of all pieces as well. Driver has to fill the documents and he is able to close contracts (in some special cases) in consonance with the instructions of operation controller (dispatching). He is able to take up goods in bad package as well, but only in the case, when the situation is documented and confirmed by the consignor.

### **3. TECHNOLOGICAL PROCEDURES WITH CONSIGNMENT IN THE SERVICE CENTRE OF ATTRACTION ZONE**

Driver of service vehicle handles goods past collection and distribution of consignments in attraction zone to warehouseman of transportation (next only „warehouseman“) in the centre of system.

The warehouseman has to control the integrity, entireness, sufficiency and integrity of package, readability and durability of marking all of pieces again. When some problem is found at goods, he has to make written report about it. All consignments are equipped by address data card with following data: entrance number, rate of pieces, regime of transportation, place of destination of consignment (incl. post code) and bar code (fig.1).



Source: Author

Fig. 1 - Example of address data card (origin attraction zone is “Brno-mesto” (BM) - it is 12345<sup>th</sup> consignment in this year, attraction zone of delivery is “Litomerice“ (LT), it is second piece of two-piece consignment, time of delivery is 24 hours, place of destination of consignment is “Nove Dvory u Doksan“ with post code (Czech abbreviation is PSC), and the bar code specific for each consignment)

The transport document usually equipped by bar code is prepared for every consignment by responsible officer of the service centre of the attraction zone. The officer has to make a list of consignments for driver of goods-carrying vehicle (the consignments are hauled to transship point (TP) of the system by these vehicles). This list is then sent to the transship point by e-mail or fax.

The loading of consignments to goods-carrying vehicle is controlled by the warehouseman. The accuracy of loading is secured by warehouseman with the help of bar codes. The codes are controlled with a bar code reader by warehouseman.

#### 4. THE TECHNOLOGY IN THE TRANSSHIP POINT

The transship point is a guard place for reloading of consignments designated for various centers of attraction zones. All of stock areas are situated along a number of attraction zones (fig. 2, 3, 4).



Source: [1]

Fig. 2 - Photo of loading of goods-carrying vehicle in one of the transship points (system of night jump)

The consignments are relocated to appointed section (according to code of destination attraction zone) of the stock area. The address data cards and especially the bar codes are the powerful tools for management of transship point technology.

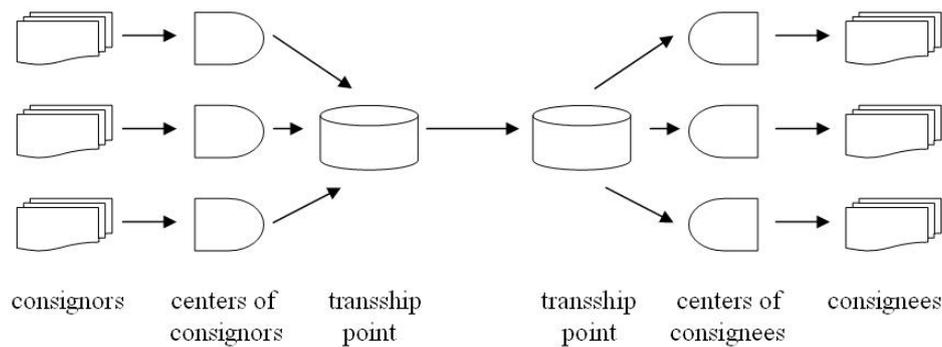
Then it is possible (after loading all of goods-carrying vehicles) to feed consignments into vehicles for back-journey to service centers of destination attraction zones. Address data cards of all pieces of goods are again controlled by the bar code reader.



Source: [2]

Fig. 3 - General view on area of transship point and workplace in office

System for cargo transport of packets and small individual packages has got sometimes two or more transship points. There are some types of possible configurations of these systems. One of them as an example is visible in scheme in the following fig. 4.



Source: Author

Fig. 4 - Scheme of transport processes of a system for cargo transport of packets and small individual packages

## 5. MANIPULATIONS WITH CONSIGNMENT IN THE CENTRE OF DELIVERY AND THEIR DISTRIBUTION

The address data cards and the bar codes are controlled by warehouseman during discharge of consignments down of the goods-carrying vehicles. All of transport documents are delivered into the office in the service centre of attraction zone by driver of service car. These delivered transport documents in paper form are compared with the sent in electronic form by the officer. All consignments are dispensed to service vehicles by the officer. The program consignment distribution is prepared by the officer in cooperation with dispatcher.

The consignments are loaded up into service vehicles by warehouseman. The kontrol of address data cards and bar codes is necessary. The lists of consignments are distributed to drivers of service vehicles and then the consignments are distributed.

## 6. CONCLUSION

The importance of the cargo transport systems for packets and small individual packages is high in the Czech Republic. These systems are thought as a very perspective section of the cargo transport. The correct function and high reliability of this service is determined by quality of organization of these systems. The quality organization has to be supported by the modern technologies e.g. by the using of the bar codes in every part of the transport system.

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