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Petrol station and disabled customers

Abstract: The article is devoted to the problem of accessibility of petrol stations for people with disabilities. In a cross-sectional way it describes the problems of disabled people using all the functions offered by a petrol station, focusing on one - which is neglected in the author's opinion - the problem of refueling a vehicle. It describes the unacceptable current situation and possible ways of improvement.

Keywords: Roads; Petrol stations; Disabled

Introduction

A modern petrol station resembles a place where only fuel and car accessories are sold. Currently, it is a modern, multifunctional facility, offering the possibility of purchasing a wide range of goods and services not entirely related to the automotive industry, such as: buying food and industrial products, withdrawing money from an ATM, sending a letter, eating a meal, using the toilet or just resting in a warm and covered indoors, outside the car.

Along with civilization and social development, the fuel station has undergone evolutionary changes adapting it to the needs of all people, including people with disabilities.

Using petrol stations

According to the results of the National Census of Population and Housing [1], the number of disabled people in 2011 amounted to over 12% of the total population. How many of them use petrol stations as active drivers or only as passengers, statistics do not provide this. Probably most of them visit petrol stations at least sporadically and use their offer to some extent. For this reason, the current station infrastructure should be ready to receive such people, although this was not always the case in the past.

For many years, the service of disabled people at the service station was minimal and was limited primarily to assisting the staff with refueling or brokerage in purchases. The entrances to the station buildings were adapted only occasionally, and although most of the buildings were single-story, they had at least one step or a high threshold. Customer toilets were rare, usually reserved for staff only. In the case of disabled people, the staff often made an exception allowing them to use them, but it was quite a trick for people in a wheelchair to get to them. They were made according to the standard of the time - small cabins with narrow doors and accesses, without any supporting elements (handrails).

The political and economic breakthrough that took place in 1989 caused the rapid development of the automotive industry, including petrol stations, both in terms of quantity and quality. The reason was:

- inheriting old CPN (Headquarters of Petroleum Products) facilities not complying with the new regulations and modern standards of travel service, requiring modernization, especially in the face of foreign competition that ensured such a standard,
- the rapid development of the automotive industry - an increase in the number of vehicles and travelers for which the then rare network of petrol stations became insufficient,
- construction of new roads, especially motorways and expressways, and therefore the need to build new petrol stations.

As of January 1, 1995, the obligation to ensure the accessibility of construction infrastructure to the disabled was introduced. These regulations applied to all structures and public utility buildings [8]. Fuel stations were found to be also subject to these regulations. As a result, the following years brought a huge increase in the number of adapted stations and currently only some of them do not meet this requirement yet. But if you take a closer look at the stations considered adapted, there are still many places where there are details in the adaptation solutions, both technical and organizational, that negatively affect the availability of stations. By making the use of the station by disabled people still troublesome and difficult. The problem of insufficient adaptation of fuel stations was also noticed by the Ministry of Investment and Development and in the announced program: Accessibility Plus in action 23, subsection mobility, it was written that: *"To improve the mobility of the elderly and people with disabilities, the following was planned: [...] implementation of accessibility standards for petrol stations, including portable payment terminals, service call-up system, the possibility of payment via a mobile application, on-line sign language translation system"* [2].

The current adaptation of petrol stations

In the Polish regulations [5] there is no information road sign which would, for example, use a symbol/pictogram to indicate whether a given station is adapted. Such signage for many disabled people would be useful because these people could be informed in advance whether the station to which they are approaching is friendly to them. Currently, they find out about it only after driving in and viewing the station from the car window, or after leaving and trying to use it. Occasionally and only in an individual scope (and with individual marking), some stations signal such adaptation (Fig. 1).



1. Marking with information boards on the availability of petrol stations in an individual manner - Poland/Czech Republic

This marking, however, is not fully understandable - whether the adaptation concerns only the availability of the toilet, or also other services and infrastructure, including the entrance to the station building (the toilet may be located at the back of the building and be adapted, but the main entrance to the station building should be may not be like that). Similarly, the information provided via websites. For example, on the websites of two oil companies (Orlen and BP) in the descriptions of the stations there is information about their availability, but only in the form of a symbol/notation without giving details what this availability is about.

However, with regard to the introduction of the uniform road sign to the regulations, the question arises whether its possible introduction still makes sense, if actually most stations and the services provided there are already adapted to the extent required by law (including, in particular, in terms of toilet availability), and the remaining stations, are also successively rebuilt and adapted? This question has been an open-ended question for many years and gradually, with the passage of time, it loses its importance, although it would be beneficial for some stations. So people with disabilities still have a reliable and easiest way to find out about the availability of the station - after entering the station, on-site inspection from the car window or calling the staff and asking or attempting to use its services on their own, and if the visit is successful, remembering the station for the future.

Leaving the main road and entering the petrol station, seemingly easy, can sometimes be difficult. It is not only fatigue and driving fatigue or difficult visibility conditions. Also, disabilities, especially visual - amblyopia and motor disabilities - may cause the maneuver to be delayed and end up hitting the outer curb of the exit. To reduce this danger, the curb can be distinguished by e.g. contrasting painting - yellow or yellow-black (fig. 2), or even clearly visible reflective elements should be mounted on it.



2. Example of contrasting curb painting improving its visibility - Warsaw/Poland

Roofing the refueling zone and access to the building (Fig. 3) will not make this zone completely dry during rainfall, but the rainfall will certainly be smaller. Thanks to this, the comfort of moving in this most-used zone will improve - the umbrella will no longer be needed and the staff will not have to clear the snow so often. For these reasons, it is advisable to locate at least one parking place for disabled people in this zone near the entrance door to the station building. As a result, people for whom the process of getting out of the vehicle is longer compared to non-disabled people (people in wheelchairs, on crutches) will get less wet and at the same time will cover a shorter route without having to take an umbrella involving the necessary hand (Fig. 4).

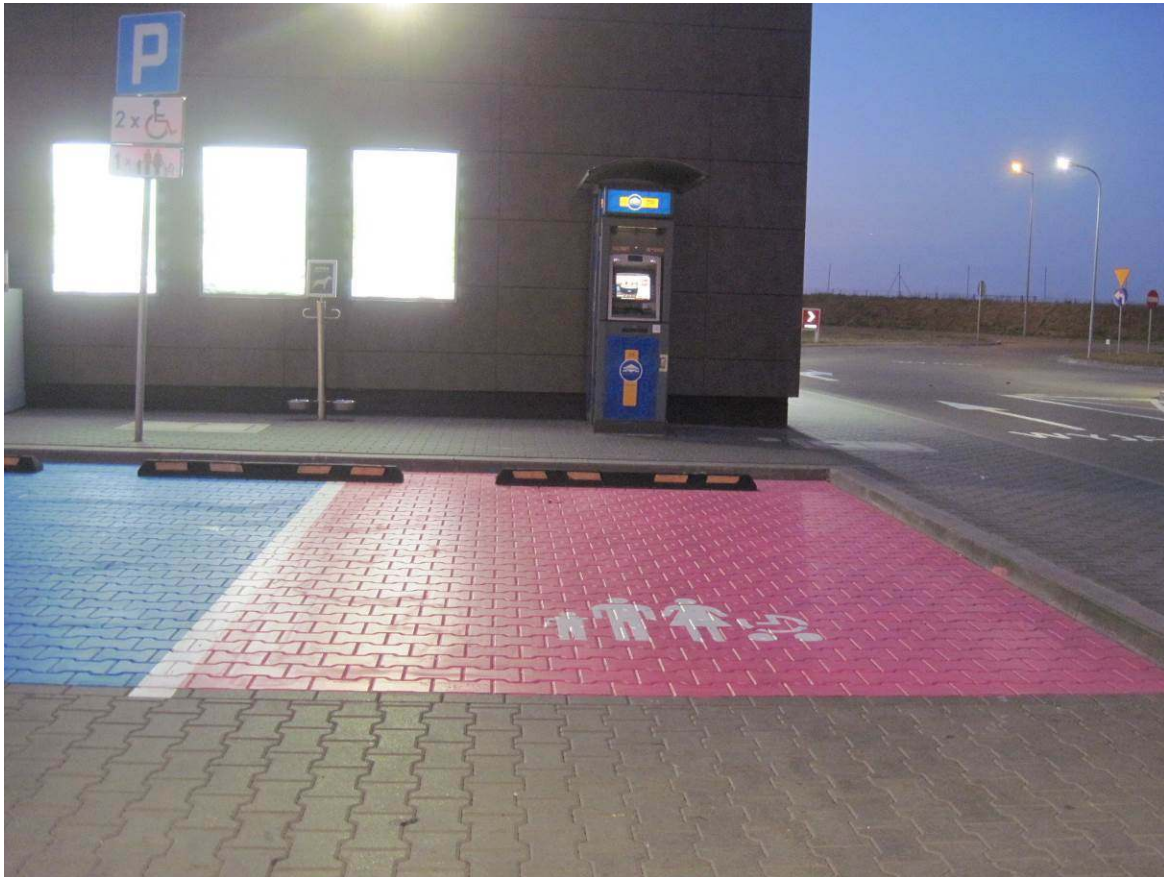


3. Roofing of the refueling zone and access to the building has a positive effect on the safety and comfort of movement of accelerated drivers and passengers - Siedlce/Poland



4. A designated parking space for disabled people in the immediate vicinity of the entrance and under the roof (no color marking) - Poland

Such a parking place should have appropriate dimensions [4] and be properly marked, including color (blue) [5]. If there is a greater demand for this type of parking space, they can be designated at a certain distance from the door and in the vicinity of places dedicated to other privileged vehicles, e.g. for a parent with a child (Fig. 5).



5. A designated parking space for disabled people together with a place for a parent with a child out of the roof - Poland

The building (or complex of buildings) at the service station plays an important role. There are: a cash register, often a toilet, shopping and restaurant rooms, bank branches and ATMs, a post office and a letterbox, etc. However, in order to be able to use these services, an adapted **entrance** is required. It should meet the criteria included in [3, 7] - entrance preferably from the ground level (no stairs or a steep ramp), with doors that open automatically. Glazed doors, dominant at stations, should have distinctions indicating glazing in the form of horizontal stripes made in the manner specified, for example, in [9], or alternatively with information about station working hours or the words "automatic door" (Fig. 6). Of course, the recommendations according to [9] regarding the most commonly used yellow color may arouse resistance of the station owner, for whom yellow may be associated with the color of a specific competitive network of petrol stations (eg Shell). Therefore, the color may refer to the color that is associated with the station, e.g. for Orlen, it is: white-red, BP: green, etc.



6. Glass door with information indicating glazing and advertisements enhancing this information - Warsaw/Poland.

Inside the room, corridors, doors, and counters should meet the criteria included in [3, 7] ensuring the possibility of moving around and using services, especially by people in wheelchairs. However, it is problematic to ensure that these people can move between the exhibition shelves in the self-service part. The narrower the passage, the more racks can be accommodated by the station owner and therefore more products to display. However, in order to enable people on wheelchairs to do their own shopping, the minimum actual width should be 90 cm (optimal 110 cm) [7], and this width should be understood as the width not between the edges of the shelves but between the products lined up.

The surface of the room floor should at least theoretically be made of materials with high anti-slip properties. However, for aesthetic reasons and ease of cleaning, matte, smooth gres is used almost everywhere. It is a hard material and liked by people on wheelchairs because it gives good support to the wheels of the wheelchair. On the other hand, in wet conditions, it becomes slippery and dangerous, especially for walking people (for people in wheelchairs, it is slippery only on larger slopes). Then, during rainfall, various types of anti-slip materials are used ad hoc, rugs made of synthetic fabrics, rubber, and even paper boxes are temporarily placed on the floor, and various types of doormats at the entrance to clean shoes. They all do not make it easier for people in wheelchairs to move around.

The toilet is a very important element of the petrol station. It must be remembered that many of the disabled people have no alternative, such as the still popular so-called "bushes".

The toilet for the disabled, compared to the standard toilet, is characterized by larger dimensions and specialized equipment. This allows the wheelchair to be maneuvered inside without opening the door and using special equipment [3, 7]. In order to save space, these toilets are often combined with places intended for serving babies - changing tables are set. At some stations, the standard of equipment of such toilets is higher - the equipment is very versatile (Fig. 7), there are childcare products and other amenities (Fig. 8).

An additional element that may persuade some travelers to stop at a given petrol station is the possibility of relaxing in the fresh air and the unhampered consumption of their own food products and drinks (sandwiches and tea/coffee from a thermos). **Picnic tables/benches** are used for this (Fig. 9). It is advisable that at least one of them should be adapted for disabled people in wheelchairs through hardened access (minimum 90 cm wide), the appropriate height of the top (70 cm) and a specially left space (instead of a seat) for wheelchair access (120 cm x 90 cm) in accordance with [6].



7. An additional element supporting the use of the toilet bowl, in the form of a ladder attached to the ceiling - Germany.



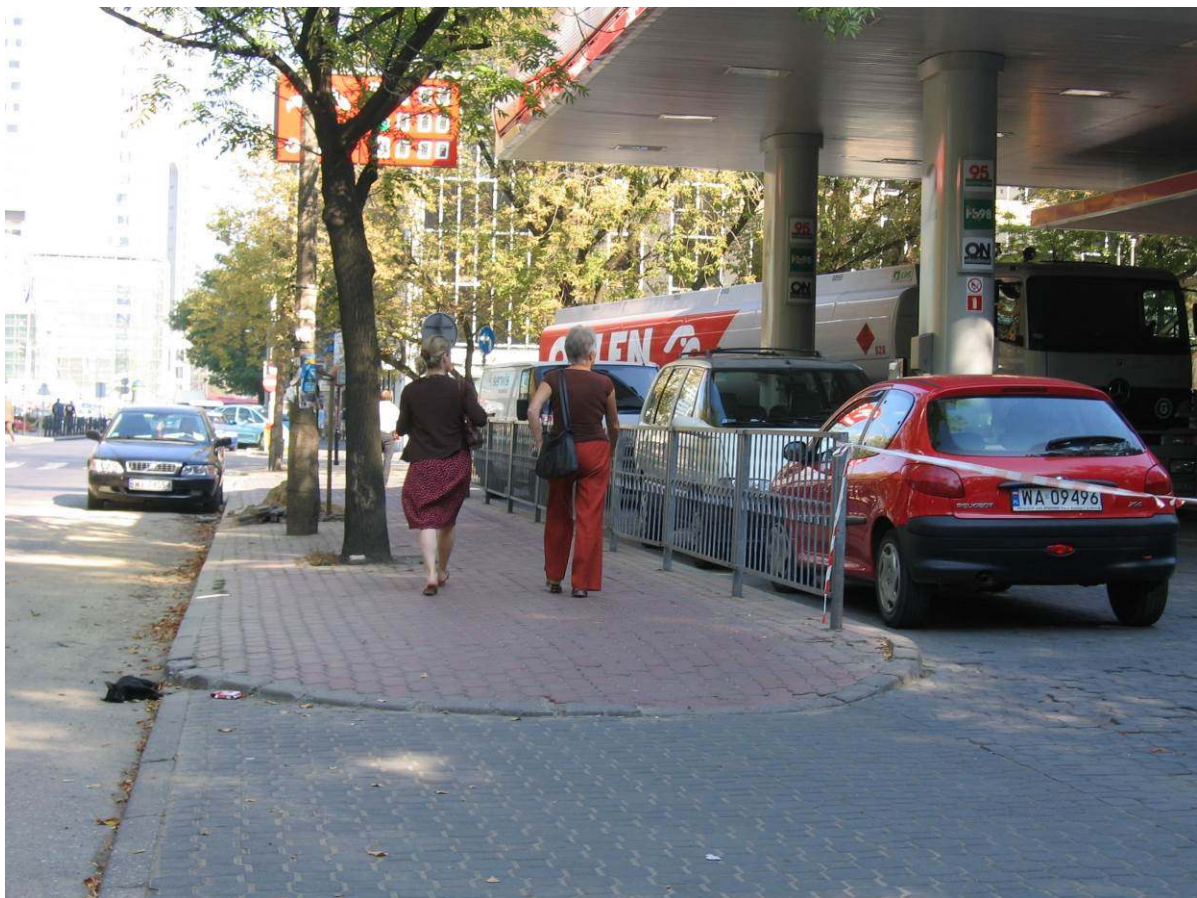
8. Baby care products placed with the changing table and hangers for clothes improve the comfort of using the toilet - Germany



9. Example of partial adjustment of the picnic table - hardened access and acceptable table top height, but without space for a pram - Poland

When the station is located in an urbanized area, there is also the problem of integrating the station into the surroundings - not worsening the existing accessibility of the existing space for disabled people. The sudden direct proximity of the newly built station to the existing pavement (Fig. 10) or, what is worse, its liquidation in favor of the station (Fig. 11) may cause pedestrians who used to walk on the pavement to move in the immediate vicinity or between refueling vehicles. This brings the immediate danger of causing a fire, for example, when the embers from a cigarette butt thrown by a pedestrian hit the spilled fuel. In this case, the pavement should be moved away from the refueling zone and perhaps even separated by a tight separating partition.

In the width of the pavement near the station, advertising and information elements of the station should not be placed, and if they must be located, they should at least meet the conditions of ensuring the minimum width of the pavement (150 cm) and the minimum height of the pavement gauge (250 or 220 cm) [4] (Fig. 12).



10. The pavement and pedestrians moving in the immediate vicinity of the petrol station pose a safety risk (station no longer existing) - Warsaw/Poland



11. The construction of the station without a pavement caused dangerous pedestrian traffic through the station area - Poland



12. An advertising and information board for a petrol station along the pavement that does not meet the criterion of the minimum gauge height is a threat to the blind and partially sighted - Kraków/Poland

If the location of the station forced the correction of the pavement routing (Fig. 13), its new route should be understandable and legible, especially for the blind and partially sighted people. For them, the information about the change in the position of the pavement and therefore the need to change the direction of movement must be properly communicated. This can be achieved by appropriate pavement routing combined with the appropriate arrangement of curbs, the use of the Surface Guiding System [9], and even the use of fencing. Otherwise, it may result in the dangerous loss of orientation by these people and moving around the station or even the roadway by mistake.

It is also worth mentioning the important, but so far the unresolved problem of adapting the additional equipment of the station, such as self-service stationary vacuum

cleaners and car compressors. So far, the author has never encountered such devices that would be adapted. It seems that the potential degree of use of these devices by disabled people in relation to the possible outlays would be so small that the attempts to adjust them were abandoned. The use of them requires quite a high general fitness, so only some of these people would be able to deal with it on their own. A much larger part must (and will have to) use the help of able-bodied people or use their own, individually tested devices.



13. Improperly performed correction of the pavement course poses a threat to the movement of visually impaired and blind people - Warsaw/Poland

What is missing at the petrol station

An element of the adaptation of the filling station, which has not yet been solved in a comprehensive and uniform manner, is the optimal and reliable system for servicing disabled people in the field of refueling the vehicle. The author encountered several different systems - methods of service functioning in the country and abroad. Each of them has specific advantages, but also disadvantages that should be limited or eliminated. Currently in operation there are such systems:

- Call for service by using the horn three times after driving under the dispenser (Fig. 14);

It is assumed that the signaling configured in this way is to attract the attention of the station staff and cause a staff member to come, but this method has at least two disadvantages: the trumpeter's vehicle may not be visible from the window, e.g. of a cash desk - e.g. it may be covered by another larger vehicle and then the staff cannot see the vehicle ignores the signal, or the staff may not hear the signal, because the station is loud on the radio, or the employees are busy serving other people in the store. Then the disabled driver waits unnecessarily or

should wait a longer moment, but without knowing it, he thinks that no one hears the signals and leaves in search of another station;

- Asking for the help of an outsider - another station customer, to refuel and carry the amount due by us, or to ask a station employee to come;

The first way is very uncertain because money must be entrusted to a stranger, to an unknown person without being sure whether he will actually pay the amount due. The second method is not acceptable for all people with disabilities, because when making such a request to a stranger, everything should be at least briefly explained (say that you are a disabled person, needing help and not all disabled people like to talk about themselves in this way). Of these two ways, the second is necessarily better, especially when paying by card.

- Addressing the station employee directly which, as part of his official duties, is constantly present at the dispensers refueling with fuel and LPG;

This is the most convenient way because the employee will not only help with refueling, getting off the car, but also accept money, but this form of service only works at some larger stations - where there is no information.

- Using the call button,

After approaching the adapted and marked distributor (Fig. 15), the customer presses the button (Fig. 16), which activates the sound or light signal at the service desk (at the checkout), the employee comes and serves. This system must have a feedback signal (control lamp, sound signal) informing the driver about sending (and probably noticing and accepting) the report, otherwise, it is not known if the system is working and whether the signal has been sent and received. A station employee comes and serves.

A similar paging system (Fig. 17) was once advertised by one of the companies supplying equipment to petrol stations but has not found a wider application in Poland (the author has not seen it anywhere).

- Constant refueling at the particular station,

This makes the staff know the brand, color of the vehicle and the driver's face, so they react quickly, in which case it is also possible for both parties to identify common individual hallmarks, e.g. a characteristic hoot or flashing of lights, arriving at a fixed time and day of the week. In practice, such a method can only function locally and only in relation to specific people;

- Self-service station (including personnel not performing activities related to the operation of the vehicle);

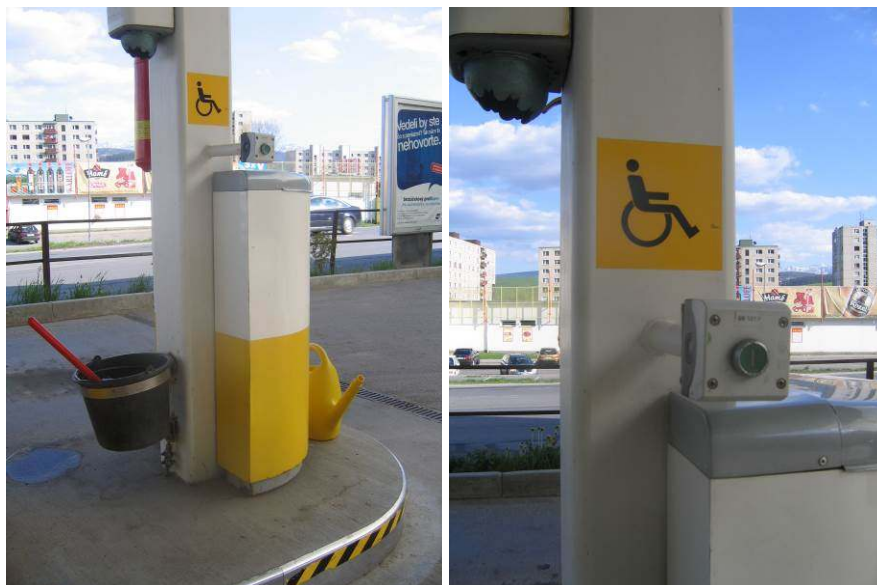
The driver, or the passenger, must refuel and pay himself at the machine, which requires leaving the vehicle and operating the machine (the machine should meet the criteria set out in eg [9]). At some self-service stations, an employee is present but only deals with accepting payments and monitoring. He is sitting in a room behind armored glass, and although he sees a disabled person requiring assistance on the screen, he cannot provide it due to the ban on leaving the cash desk, for fear of a hoax aimed at committing a robbery. Thus, all activities must be performed by a disabled person on their own or rely on the help of other people using the station. With regard to disabled people, this is the worst type of station.



14. Examples of how to call for service - Polish, Czech and Hungarian versions



15. Distributor marked with the symbol "adapted for disabled people" - Trzciana/Slovakia



16. Call button (general view and close-up) - Trzciana/Slovakia

System przywoławczy (słupek sygnalizacyjny)

System przywoławczy jest układem pomocniczym montowanym na samoobsługowych stacjach paliw mającym za zadanie poinformować obsługę stacji znajdującą się w budynku stacji o konieczności pomocy w zatankowaniu pojazdu (np. inwalidzie). Może też być na wyposażeniu modułów LPG oddalonych od budynku obsługi lub posadowionych w sposób ograniczający widoczność z budynku pracownikowi obsługującemu nalew LPG. Składa się z części wyspekowej (kolumna z przyciskiem sygnalizacyjnym, sygnalizator świetlny stanu pracy urządzenia) oraz z części sterująco-informacyjnej w budynku (centralka sterująca, sygnalizator dźwiękowy i przycisk sygnalizatora dźwiękowego). W praktyce działanie systemu polega na tym, że osoba korzystająca podjeżdża do umieszczonej przy dystrybutorze kolumny sygnalizatora (sygnalizator świetlny koloru zielonego, ciągły) i naciska przycisk sygnalizacyjny (w opcji możliwe także aktywowanie systemu przy użyciu pilota drogą radiową - tylko dla osób upoważnionych, posiadających na wyposażeniu indywidualny pilot sterujący). W momencie aktywowania systemu w budynku obsługi włącza się sygnalizator dźwiękowy, a na słupku wyspekowym pojawia sygnalizacja świetlna mrugająca. Obsługa stacji ma możliwość wyłączenia sygnalizatora dźwiękowego przy pomocy przycisku. Po wyłączeniu obsługujący pojawia się przy potrzebującym pomocy kliencie.

- numer katalogowy:.....system przywoławczy SP-100

Część wyspekowa

- wymiary:wys. 100,0 cm; śr. 19,0 cm
- zakres temperatur pracy:.....-20° C ÷ +40° C
- sygnalizacja stanu:.....świetlna
- zasilanie:.....12 V DC

Część sterująco-informacyjna

- wymiary:19,0 x 25,0 x 6,5 cm
- zakres temperatur pracy:.....+10° C ÷ +40° C
- sygnalizacja stanu pracy:.....akustyczna
- zasilanie:.....230 V/50 Hz/45 W
- okablowanie:.....kabel sterowniczy ekranowany olejoodporny 10 żyłowy minimum 0,50 mm²

Odległości maksymalne:.....komunikacja kablowa - max 300 m
.....komunikacja radiowa (pilot) - max 100 m

17. A post with a call button (advertising material) - Poland

From the above-mentioned methods of servicing disabled people at petrol stations, it is difficult to state unequivocally which one could certainly become a universal method that could be commonly used. In this regard, more extensive research would be needed, e.g. a questionnaire survey among disabled drivers and passengers. However, with the development of the latest technologies, it seems that possible research could include at least two additional methods using the latest technologies - mobile phone and the Internet, i.e.:

- Solution based on a smartphone application - a person drives to the station, uses a special application to report the need for help informing about the number of the position, the station employee confirms receipt of the report and provides feedback in the form of feedback, possibly the waiting time for service;
- Placing the telephone number of the employee on duty on the distributor in a visible place (preferably at the cash desk) - the driver comes to the distributor, calls, orally reports the need for help informing about the number of the station, the station employee confirms receipt of the report, possibly stating the waiting time;

Putting the phone number on the distributor would be easier for some people than using the app. It would also save time spent looking for the right station and phone number on the website, allowing for quick verbal contact with the service, although one does not disturb the other.

Conclusions

Full adaptation of the fuel station, as well as the rest of the infrastructure, to the needs of disabled people, is not an easy task. Especially if the regulations regulate it quite vaguely and various types of publications and guides aimed at supplementing these regulations do not refer directly to the issue of adapting petrol stations. Thus, the question of the detailed adaptation of the station is left to the individual skills of the station designer and owner. And they can do it in the adaptation mode in a classic way by meeting only the criteria of the relevant regulations - minimum level or individually adapting - increased level. However, the increased level requires the use of publications and guides describing the principles of universal design and their correct interpretation, as well as getting to know the ways of movement and functioning of people with disabilities. However, the reward for this effort may be not only satisfaction but also a greater turnout of people using such a tailored and therefore friendly station.

Source materials

- [1] Biuro Pełnomocnika Rządu Ds Osób Niepełnosprawnych (strona internetowa: <http://www.niepelnosprawni.gov.pl/p,78,dane-demograficznebiuro> - dostęp: 11.06.2018r.)
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