

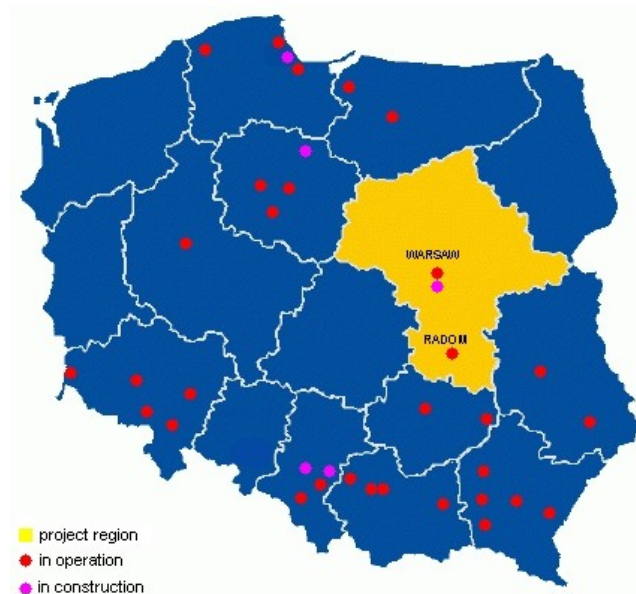
Case study for new gas filling station in Prądzińskiego Street, Warsaw

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1 Background

In the region geographically covered by the Institute for Renewable Energy (IEO), i.e. the Mazovian Voivodship of Poland (where the capital city of Warsaw is located), only two public natural gas filling stations has been in operation so far (one in Warsaw and one in Radom - Picture 1). The main users of the existing station at Kasprzaka St. have been Wawa Taxi and the Mazowiecka Spółka Gazownictwa (MSG) which is subsidiary of station owner and operator Polskie Górnictwo Naftowe i Gazownictwo (PGNiG). Wawa is the only taxi company nationwide, using natural gas to drive taxi cabs. Currently they have 160 taxi cabs in operation. The second user is the Mazowiecka Spółka Gazownictwa (MSG), which is a subsidiary of Polskie Górnictwo Naftowe i Gazownictwo (PGNiG) – the national gas producer and distributor. The Mazowiecka Spółka Gazownictwa operates 50 vans fuelled by natural gas: 40 Fiat Doblo and 10 Iveco Daily. The vehicles were originally equipped with mounted gas installation. Other users of the filling station are Dar Natury – company delivering bottled drinking water and some private cars. Main disadvantage of the existing gas filling station is operation time: from 6 am to 10 pm daily. Furthermore, it has only 2 fast fuelling points. Gas filling station in Radom has been integrated with petrol and diesel filling station and has only one fuelling points. Customers of the station are mainly private car owners.

IEO estimated that the lack of stations has strongly limited the number of gas fuelled cars in the region.



Picture 1. Localisation of natural gas filling stations

2 Natural gas filing stations in Warsaw

The new gas filling station will be located at Prądzyńskiego St., Warsaw also in an urban area, close to existing station at the Kasprzaka St. The new filling station is located in the center of Warsaw - disadvantageous is difficult access due to traffic jams but cars coming from all uptown areas can be fueled, which is an advantage. The further development is hampered by the lack of will to build other filling stations in the other districts of the city. New gas filling station will be built very close to the existing one (Picture 2).



- existing station
- station in construction

Picture 2 Localisation of natural gas filling stations in Warsaw

3 Existing gas filling station

Currently there is one gas filling station in Warsaw which has been main barrier for NGVs expansion. Due to protests of neighbors of the station can't be operated during the night. Some people claim that station has been making noise during it's operation. That's the reason why it is open only for 6 am to 10 pm. Taxi drivers of Wawa Taxi have to refuel containers (even if containers has some natural gas inside) until 10 pm, otherwise have to use petrol during the night instead. Station consist of 2 gas fast fuelling points (Picture 3). Table 1 presents data of gas filling station at Kasprzaka St. Future of the station is uncertain. It will be probably reserve station in case of problems with new one.

Table 1. Data of gas filling station at Kasprzaka St.

Existing gas filling station	
Name of filling station and address	PGNiG, Kasprzaka 25 St., Warsaw
Type of location, eg. urban, motorway, industrial estate,	Urban
Type of filling station eg stand-alone, within petrol/diesel filling station	Stand alone
Number of fast filling points	2
Number of slow filling points	0
Number and make of compressors	Ariel 600Nm ³ , Sulzer 60Nm ³ (reserve compressor)
Storage pressure (bar)	250 bar
Storage capacity (water litres)	1000 water litres
Ownership of station	Polskie Górnictwo Naftowe i Gazownictwo (PGNiG)
Method of financing station	Equity of owner
Main user of station	Wawa Taxi (taxi cabs), MSG, Dar Natury
Number of vehicle fills per week	700 times cars refuel containers
Total weekly supply of gas to vehicles	12 500 m ³
Types of vehicles already using the filling station eg HGV, bus, van, taxi, car	taxi, private cars, van
What proportion of the gas is bio methane	0 %
Name of gas supplier	Polskie Górnictwo Naftowe i Gazownictwo (PGNiG)
Price of gas to vehicle owner	2,10 per m3
Price of gas to station owner	2,10 per m3
Opening hours	6AM-10PM/7
Method of payment, eg. credit card, special card, number plate recognition and account	Cash only
Profitable or not, with figures if possible	No profitable



Picture 3 Existing gas filling station in Kasprzaka St.

4 Gas filling station in construction

Gas filling station on Prądzyńskiego Street has been in construction phase (Picture 4) at the moment. Construction works are provided by company JT Zakład Budowy Gazociągów which is domiciled in Warsaw. Provider of components for the station is Górnośląski Zakład Obsługi Gazownictwa. Company will deliver full service and maintenance of the installation. Manufacturer's guarantee covers 3 years of exploitation. PGNiG had chosen technology of Argentina based company Galileo (model Microbox). The station will have 3 distributors - 6 fast fuelling points in total (Picture 5), which is main advantage in relation to existing one. Compressors allow flows ranging from 300 Sm³/h to over 3 000 Sm³/h, which is more than sufficient for the station (Picture 6). Data of gas filling station presents Table 2.

Table 2 Data of gas filling station at Prądzyńskiego St.

Gas filling station in construction	
Name of filling station and address	PGNiG gas filling station, Prądzyńskiego 16 Street, Warszawa
Type of location, eg. urban, motorway, industrial estate,	Urban
Type of filling station eg stand-alone, within petrol/diesel filling station	Stand alone
Number of fast filling points	6
Number of slow filling points	0
Number and make of compressors	2 * 600 m ³ Galileo, model Microbox
Storage pressure (bar)	250 bar
Storage capacity (water litres)	3600 water litres
Ownership of station	Polskie Górnictwo Naftowe i Gazownictwo (PGNiG)
Method of financing station	Equity of owner
Main user of station (planned)	Wawa Taxi, PGNiG
Number of vehicle fills per week (planned)	700 cars refuel containers
Total weekly supply of gas to vehicles (planned)	12 500 m ³
Types of vehicles already using the filling station eg HGV, bus, van, taxi, car (planned)	Bus, van, taxi, personal cars
What proportion of the gas is biomethane	0 %
Name of gas supplier	PGNiG
Price of gas to vehicle owner	€ 2,10 per m ³
Price of gas to station owner	€ 2,10 per m ³
Opening hours	24/7
Method of payment, eg. credit card, special card, number plate recognition and account (planned)	Bill of sale, cash
Profitable or not, with figures if possible	According to PGNiG representative no

profitable, no figures.



Picture 4 Gas filling station at Prądzyńskiego St. in construction phase



Picture 5 Distributor



Picture 6. Compressor Galileo Microbox

Technical data of installation:

- A hourly volume from 300 Sm³/h to over 3 000 Sm³/h
- The wide range inlet pressures covered is from 0.5 bar to 60 bars.
- Integrated gas engine – enables to cut operation costs from electricity
- Module construction enables to easily move installation to different location
- Electronic system which visualizes: fleet management data, readout of performance and operative data of the unit, maintenance reports, records of preventive maintenance compliance, fault detection and alarms, access to programs and restrictions guiding all aspects of the unit
- Wireless connection for operations, performance and maintenance of the unit.

Activities of IEO:

- IEO speaks with PGNiG members of the board to introduce fleet cars for natural gas
- Trying to convince that more gas filling stations in different locations are needed. More gas filling stations will stimulate demand on NGV on the customer side
- IEO trying to convince taxi companies that natural gas is safe and profitable for fleet use
- Introduced informational campaign which shows new opportunities coming from new gas filling station
- Using “Tool for economical feasibility of car conversion to natural gas” made by IEO to prove that conversion is profitable
- Introduced informational campaign for taxi fleet owners, showing new opportunities coming from gas filling station



5 Summary

Building of new gas filling station doesn't eliminate market barriers, however gives opportunities for development. The most significant improvement will be operation time 24/7, which is in favor for fleet owners. We consider that fleets of cars play significant role in gas market and are very important for expansion of NGV in Poland. We consider that operation of gas filling station in Pradzyńskiego St. will bring positive results either on the station owner and customers side.