



LNG

Refueling manual LNG refueling stations



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Introduction

This is an operating manual for LNG refueling at a mobile refueling station.

The manual is intended as a training material for drivers and other persons and also as a manual for drivers who want to refuel their vehicles with LNG.

This manual has been divided into the following sections:

- About LNG
- Physical Properties of LNG
- Refueling Stations
- Refueling Procedure
- Emergency Procedure
- Checking Compliance with Procedures
- Your Vehicle
- Where to Refuel



1. About LNG

LNG stands for liquified natural gas.

LNG can be used as a full-fledged alternative fuel in heavy goods transport.

2. Physical Properties of LNG

LNG is the natural gas produced by cooling down and condensation into liquid form. **LNG** has the following physical properties:

- **LNG** is clear, colorless, and odorless.
- **LNG** is not corrosive and is non-toxic.
- Volume of **LNG** is 600 times smaller compared to the gaseous form. **LNG** can be easily transported without need for compression.
- Any **LNG** spills evaporate easily without leaving any traces. Spilled **LNG** in enclosed space may pose suffocation hazard.
- Any spilled **LNG** does not dissolve in water, is not harmful for water organisms and does not impair quality of water.
- **LNG** is the cryogenic liquid or, in other words, liquefied gas cooled down to a very low temperature.
- For **LNG** to become explosive, it must first evaporate and mix with air in the proportion between the explosion limits (4.4–17 % vol.). The evaporated cloud ignites if an ignition source is present (open flame, spark, electric discharge, hot surface over approx. 500°C). Explosion may occur if the gas accumulates in enclosed space.



CAUTION. LNG is a cryogenic liquid stored at the approximate temperature of -160°C . That means that the nozzle and pipes of the refueling station as well as valves on vehicle's tank can become very cold. Contact with these surfaces or with LNG directly may cause cold burns or

3. LNG Refueling Station

GasNet operates 2 types of refueling LNG stations – mobile and stationary refueling stations

LNG dispensing units may only be operated by trained drivers.

It is not allowed to park any vehicles outside reserved parking places.

Payment system

The payment system is located near the dispenser of the filling station and is used for online authorization of the refueling card. To activate LNG refueling, simply use a refueling card and after the operation is completed, the amount withdrawn will be registered in the payment system. The detailed payment procedure is described in Chapter 8.

3.1 Mobile refueling station HAM (Kaplice, Nýřany)

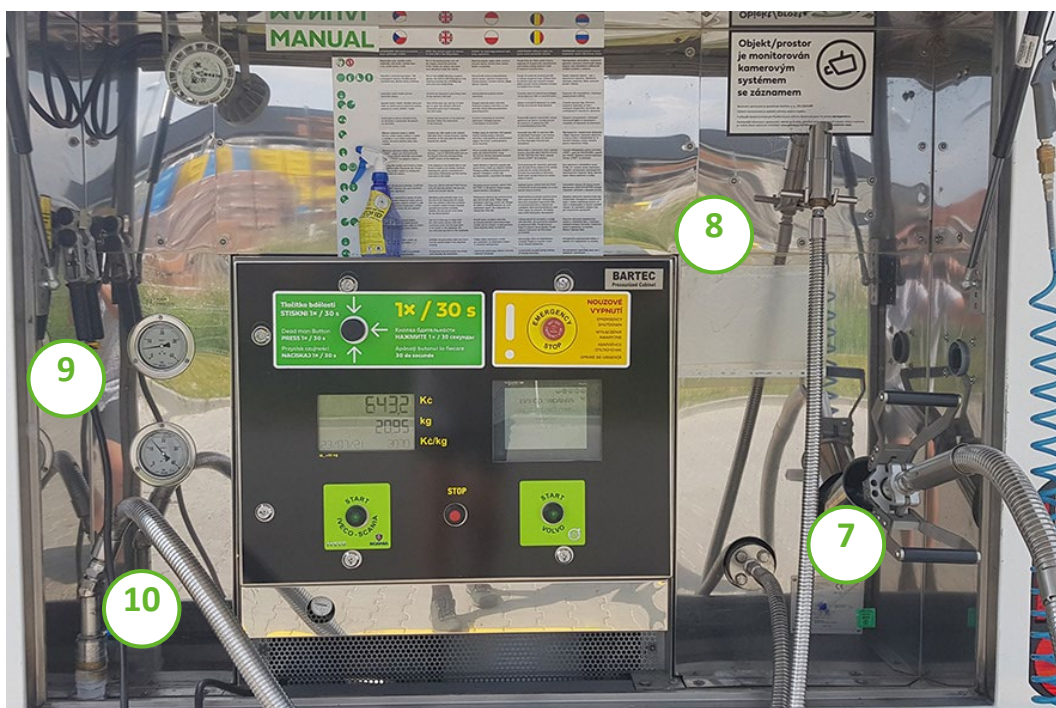


LNG station comprises a LNG storage tank from which LNG is transferred by pump into vehicle's fuel tank. At the mobile station, everything is connected in the form of a tank trailer.

Description of dispensing unit components:

Description of dispenser elements:

1. EMERGENCY SHUTDOWN BUTTON (ESD) - press to activate the emergency state
2. START button (Start refueling)
 - a. IVECO/SCANIA – saturated LNG
 - b. VOLVO – extra cold LNG
3. STOP button (Stop refueling)
4. DEAD MAN BUTTON (press every 30 seconds during filling)
5. Display with information about unit price, fuel quantity, and total amount in CZK
6. Display of the dispensing unit
7. LNG hose nozzle in a holder
8. Depressurization hose nozzle in a holder
9. Earthing clamp
10. Safety so-called break away coupling (do not pull on the hose with force - risk of rupture)



3.2 Stationary refueling station with FLOW dispenser (Kosmonosy, Klecany, Hradec)



The LNG station contains an LNG tank, from which it is pumped via LNG pump and a dispenser into the vehicle's tank. The free-standing stand of the stationary station is accessible from both sides - the passage through the station is therefore one-way and there is no need to reverse

Description of dispenser elements:

1. EMRGENCY SHUTDOWN BUTTON (ESD) - press to activate the emergency state
2. START button = Dead man button (keep pressed during refueling)
3. VOLVO button – extra cold LNG (select before refueling in case VOLVO truck)
4. Display with information about unit price, fuel quantity, and total amount in CZK
5. Control indicator (green = station in operation; red = out of order)
6. LNG hose nozzle in a holder
7. Depressurization hose nozzle in a holder
8. Earthing clamp
9. Earthing light indicator
10. Safety so-called break away coupling (do not pull on the hose with force - risk of rupture)



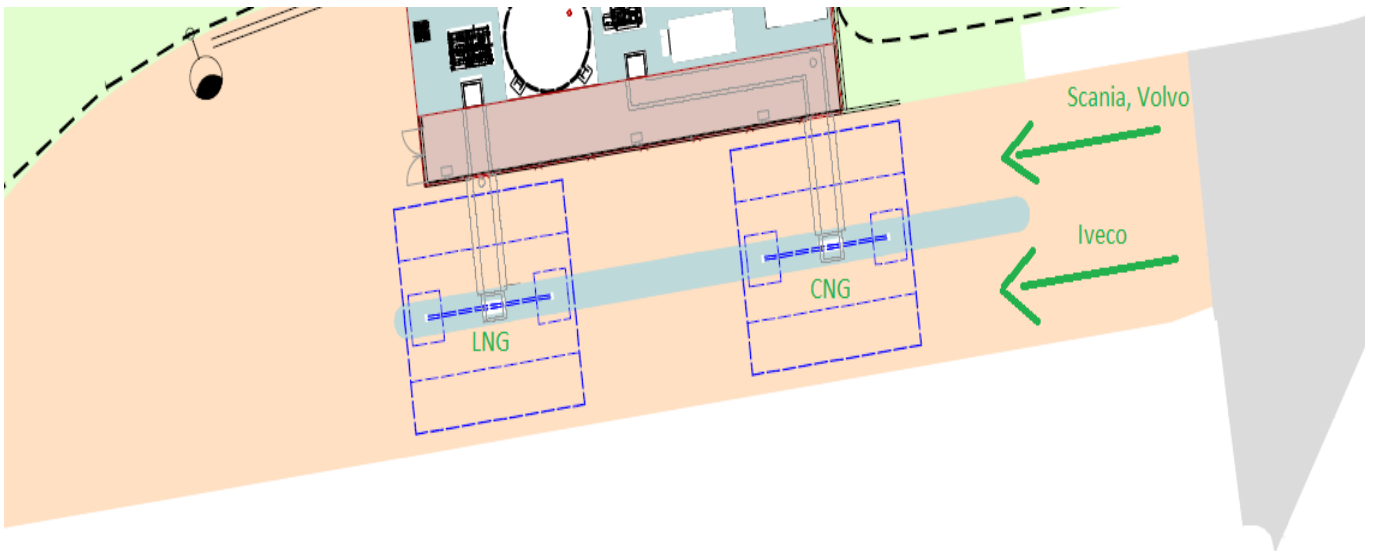
3.3 Refueling station with Cetil dispenser (Jažlovice)



Island dispenser of stationary station Jažlovice is accessible from both sides – the flow through the station is one-way and it is not necessary to reverse the vehicle. Besides LNG dispenser (in the front) there is also a CNG dispenser.

Plan of Jažlovice station:





Description of dispenser elements:

1. EMERGENCY SHUTDOWN BUTTON (ESD) - press to activate the emergency state
2. START button = Dead man button
3. VOLVO button – extra cold LNG (select before refueling in case VOLVO truck)
4. STOP button (Stops refueling)
5. Dispenser display
6. LNG hose nozzle in a holder
7. Depressurization hose nozzle in a holder
8. Air gun
9. Safety so-called break away coupling (do not pull on the hose with force - risk of rupture)



4. Refueling Procedure

The following restrictions must be observed at the LNG station:



- No unauthorized access to private areas
- No smoking
- No open fire
- It is prohibited to use electric or electronic equipment including personal electronic devices (cameras, telephones, computers, radio stations, etc.)

Refueling with **LNG** lasts approximately the same time as refueling with diesel, there are, however, several differences and more preventive measures have to be taken.

When you arrive to the mobile refueling station, locate the emergency shutdown button, intercom, fire extinguishers, and assembly area for persons. Read all signs and regulations posted at the site.

Use of personal protective equipment is mandatory at all **LNG** refueling stations:

- face shield;
- cryogenic gloves;
- long sleeves;
- long trousers;
- solid full shoes.

This protective equipment is necessary to protect you from extremely cold **LNG**.

Any exposed skin **must be covered** to minimize the risk of damage by cold or formation of cold burns as a consequence of random contact with the pieces of equipment through which LNG is flowing or with other cold surfaces.



Spálení chladem
Cold burn

Note: The refueling station is refilled from a road tank in regular intervals. Transfer of LNG lasts about 1 – 1.5 hours. Condensed vapor is produced during LNG filling which comes out of the evaporator below the semitrailer. This vapor should not be confused with a LNG spill.



Odpařené oblaky během dodávky LNG
Condensed water vapour during fresh LNG supply

4.1 First Refueling

The tank must cool down sufficiently during the first refueling. Follow the instructions up to point 8. Do not fill the tank completely in this phase – only refuel 8 – 16 kg of LNG and drive the vehicle for 10 – 15 minutes so the tank can cool down and pressure drops below 10 bar/150 psi. Then continue with the standard refueling procedure. Only refuel the tractor unit without the semitrailer this way.

The above-mentioned procedure is the recommendation from the refueling station operator. Always confirm its correctness in the operating manual of your vehicle as provided by the vehicle manufacturer.

4.2 Refueling Procedure on mobile refueling station HAM

The below-mentioned LNG refueling procedure conforms to the recommendations of NGVA Europe (The Natural & bio Gas Vehicle Association) and the pictograms used herein have been recommended for refueling station operators across Europe in order to achieve maximal unification of the refueling procedure and simplicity for customers. Instructions and pictograms showing the correct refueling procedure are posted directly at the LNG stations of GasNet. Watch the dispensing unit's display during the refueling - it shows you some instructions and information about the current situation.

1 Preparation

Park your LNG vehicle at the reserved place, switch off the engine and apply the handbrake. Various vehicle brands have their tanks located on different sides so it is necessary to approach the refueling station from the right side (Iveco) or from the left side (Scania and Volvo). Leave your mobile phone in the vehicle. Do not refuel during thunderstorm. The station registers the vehicle and starts heating the refueling nozzle with hot air.



2 Protective Equipment and Station Inspection

Check if the station is in operation. If the station is not in operation for example due to LNG supply or due to technical fault, this is shown on the dispensing unit's display. If you are not sure, use the intercom to contact the station operator. Wear the protective equipment.



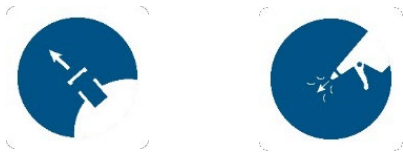
3 Earthing

Connect the earthing cable of the dispensing unit with the earthing point on the LNG tank. If there is no earthing point on the tank, the earthing cable must be attached to an unpainted metallic part according to vehicle operator's instructions, for example to the tank suspension brackets.



4 Cleaning

Remove the lid and clean the filler coupling on the tank with compressed air. Remove the filling hose from the holder and check the LNG nozzle whether it is undamaged, dry, and clean. Remove any dirt with compressed air.



STOP – WARNING

Never use water to clean the nozzle or tank coupling!

5 Authorization with LNG Fuel Card

Approach the payment terminal located right of the mobile station. Swipe your card to authorize yourself and follow the instructions on the terminal.

You have a limited time to start refueling from the moment when the transaction begins. If you do not proceed with subsequent steps after the beginning of the transaction, the transaction will be cancelled automatically after certain time.



6 Nozzle Connection

Connect the filling nozzle to the tank coupling as follows:

Pull the levers backwards (towards you). Projections on the tank coupling must engage with grooves in the nozzle; push towards the tank while turning the nozzle clockwise until it stops (approx. 1/3 of the rotation). Choose a position of the nozzle which allows you to push the levers all the way forward (towards the tank).



CAUTION. Avoid excessive pressure on the nozzle and moving it there and back. Do not use any tools or other aids. Risk of damage to the nozzle and tank of LNG vehicle.



7 LNG Refueling



Station is equipped with two START buttons. One is for SCANIA and IVECO trucks, the other one is for VOLVO trucks. Press the correct START button to begin refueling.



If the pressure in the tank is too high (over 10 bar), the screen will display a request for pressure reduction. In such case, follow point 7b and the instructions of your vehicle manufacturer.



The station is equipped with DEAD MAN button. A request for pressing the DEAD MAN button appears on the screen every 30 seconds during the refueling process (display blinks red and acoustic signal appears) – you are required to do so within the next 15 seconds. Another 30-second interval starts once the button is pressed and this procedure repeats throughout the entire refueling phase. Failure to press the button on time stops the refueling process.

Thin frost layer forms on the hose and nozzle during the refueling process due to cryogenic liquid flow - this is normal.

The pump automatically stops once the vehicle tank is full.
Refueling may also stop due to the following reasons:

- You pressed the STOP button to stop the refueling process
- You did not press the START button as a part of the vigilance function
- Station's safety system has been activated
- Someone pressed the emergency shutdown button (ESD)



STOP button



Emergency shutdown button (ESD)



CAUTION. If you use a dual fuel system (LNG/Diesel or LNG/CNG) or if your truck is towed to the refueling station, there is a risk of “warm tank”. This may stop the refueling process before the tank becomes full. If this happens, follow the steps for the first refueling as indicated above.

Do not restart the refueling process if the tank is full. This may cause damage to your tank.

7b Pressure Adjustment in the Tank



If necessary, station tells you to reduce the pressure in your truck tank. Reduce the pressure in the tank as follows:

Iveco and Scania vehicles:

- a) Clean the tank depressurization hose and its coupling on the tank (marked as VENT) with compressed air.



CAUTION. If the depressurization hose and tank coupling are not cleaned properly, there is a risk that the pieces will freeze together. If this happens, they will come loose again after certain time; this time can be shortened for example with stream of compressed air. Do not pull the hose by force. This might loosen the tank coupling and the contents of the tank could spill out. If the depressurization hose connection is already loose, we recommend that you disconnect the hose and replace the tank lid. The lid can be opened again after the depressurization hose is disconnected.

- b) Connect the depressurization hose to the VENT outlet on the vehicle.



STOP – WARNING

It is prohibited to release any gas into the atmosphere at the LNG refueling stations.



- c) Release the grey vapors shut-off valve on the vehicle's tank. The depressurization starts automatically.



- d) When the pressure in the vehicle tank decreases below 10 bar as required, the station stops the depressurization automatically. Close the grey vapors shut-off valve on the vehicle's tank.

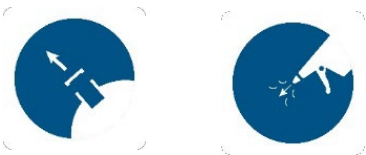


- e) Clean the hose and the coupling on the tank with compressed air again. After the pressure in the tank is reduced, return the depressurization hose back into the stand, otherwise the refueling process will not be allowed to continue.



Volvo vehicles:

- a) Tank depressurization on Volvo vehicles is performed with the same hose as LNG refueling. Remove and clean the filler coupling on the tank with compressed air. Remove the filling hose from the holder and check the LNG nozzle whether it is undamaged and also clean it with compressed air.



- b) Turn the depressurization lever on the vehicle's tank.



- c) When the pressure in the vehicle tank decreases below 10 bar as required, the station stops the depressurization automatically. Return the lever on the vehicle to original closed position.



8 Nozzle Disconnection

Pull both levers simultaneously towards you and then turn the nozzle counterclockwise (about 1/3 of rotation).

The pressurized nozzle must "blow off".

Do not use force to disconnect the coupling. If the nozzle cannot be disconnected easily without using force, wait for it to release and then try again after a while.



CAUTION. Do not attempt to continue refueling the vehicle after the pump has stopped. Overflow of the tank may result in LNG escape into the atmosphere. If the station stops the refueling process for any reason although the on-board unit does not indicate the full tank, it is necessary to reduce the tank

9 Cleaning

Clean the nozzle of the hose with stream of compressed air and return it to the holder on the station. Clean the tank coupling with compressed air and replace the tank lid. Automatic nozzle heating with hot air starts automatically after the nozzle is placed into the holder on the dispensing unit.



10 Earthing Cable Disconnection

Remove the earthing cable and place it back to the correct place on the dispensing unit.



12. Transaction Completion

Return to the payment terminal and finalize the transaction - touch to wake the terminal up and press "Lístek" (Receipt) to print the receipt with information about fuel quantity. Close the payment terminal lid with red button on its right-hand side.

The refueling is finished. Screen of the dispensing unit displays information about total quantity of issued LNG in kilograms.



Before you start your vehicle, check that:

- All hoses and protective conductors are disconnected and properly put away.
- The tank lid is replaced properly.
- There is no visible LNG leakage from the vehicle or from the station.

Mainly in the case of high pressure in your truck tank (warm tank) it is possible that during first filling you don't fill 100%. In this case you need to start over according to above described procedure (earthing, cleaning of nozzle and tank coupling with air pistol, new transaction, connection of nozzle, depressurization – follow the instructions of the dispenser.

4.3 Refueling procedure on stationary refueling station with Flow dispenser

1 Preparation

Park your LNG vehicle at the reserved place, switch off the engine and apply the handbrake. Various vehicle brands have their tanks located on different sides, so it is necessary to approach the refueling station from the right side (Iveco) or from the left side (Scania and Volvo). Leave your mobile phone in the vehicle. Do not refuel during thunderstorm. The station registers the vehicle and starts heating the refueling nozzle with hot air.



2 Protective Equipment and Station Inspection

Check if the station is in operation. If the station is not in operation for example due to LNG supply or due to technical fault, this is shown on the dispensing unit's display. If you are not sure, use the intercom to contact the station operator. Wear the protective equipment.



3 Earthing

Connect the earthing cable of the dispensing unit with the earthing point on the LNG tank. If there is no earthing point on the tank, the earthing cable must be attached to an unpainted metallic part according to vehicle operator's instructions, for example to the tank suspension brackets. The green indicator light on the stand next to the ground wire will illuminate. The vehicle symbol appears on the display of the stand.



4 Pressure Adjustment in the Tank



If it is necessary to adjust the pressure in the vehicle tank high (> 8 bar), it must first be reduced. Reduce the pressure in the vehicle tank as follows:

Iveco and Scania vehicles:

- a) Clean the tank depressurization hose and its coupling on the tank (marked as VENT) with compressed air.



- b) Connect the depressurization hose to the VENT outlet on the vehicle.



CAUTION. If the depressurization hose and tank coupling are not cleaned properly, there is a risk that the pieces will freeze together. If this happens, they will come loose again after certain time; this time can be shortened for example with stream of compressed air. Do not pull the hose by force. This might loosen the tank coupling and the contents of the tank could spill out. If the depressurization hose connection is already loose, we recommend that you disconnect the hose and replace the tank lid. The lid can be opened again after the depressurization hose is disconnected.



STOP – WARNING

It is prohibited to release any gas into the atmosphere at the LNG refueling stations.

- c)



Depressurization starts automatically.



- d) When the pressure in the vehicle tank decreases below 10 bar as required, the station stops the depressurization automatically. Close the grey vapors shut-off valve on the vehicle's tank.



- e) Clean the hose and the coupling on the tank with compressed air again. After the pressure in the tank is reduced, return the depressurization hose back into the stand, otherwise the refueling process will not be allowed to continue. If the depressurizing nozzle is not inserted correctly in the holder, the message "GASrEt" will appear on the display, and it will not be possible to refuel.



Volvo vehicles:

- a) Tank depressurization on Volvo vehicles is performed with the same hose as LNG refueling. Remove and clean the filler coupling on the tank with compressed air. Remove the filling hose from the holder and check the LNG nozzle whether it is undamaged and also clean it with compressed air.



- b) Turn the depressurization lever on the vehicle's tank. This will start depressurization. During depressurization, a rotating arrow symbol appears on the rack display.



- c) When the pressure in the vehicle tank decreases below 8 bar as required, return the lever on the vehicle to original closed position.



- d) After depressurizing, disconnect the nozzle and return it to the holder on the stand.

5 Cleaning

Remove the lid and clean the filler coupling on the tank with compressed air. Remove the filling hose from the holder and check the LNG nozzle whether it is undamaged, dry, and clean. Remove any dirt with compressed air.



STOP – WARNING

Never use water to clean the nozzle or tank coupling!

6 Authorization with LNG Fuel Card

Approach the payment terminal located close to the dispenser. Authorize by the card and follow the instructions on the terminal.

From the moment the transaction begins, you have limited time to start refueling. If you do not after starting the transaction further steps, this transaction will be automatically canceled after a certain time.



7 Choose the LNG temperature (Volvo)

In the case of a Volvo, press the VOLVO button on the dispenser. Otherwise, continue to the next point

8 Nozzle Connection

Connect the filling nozzle to the tank coupling as follows:

Place the nozzle on the neck and turn it clockwise until it clicks.



CAUTION. Avoid excessive pressure on the nozzle and moving it there and back. Do not use any tools or other aids. Risk of damage to the nozzle and tank of LNG vehicle.





Two flashing circular arrows appear on the display. They indicate that the external pump has started, and the system is cooling to operating temperature. This process can take up to two minutes. At the end of the cooling phase, the flashing stops, and the arrows light up continuously. You can now start refueling.

9 LNG Refueling



The START button = DEAD MAN BUTTON is located on both sides of the dispenser, and also on the joystick, which is attached by cable to the dispenser. These buttons can be freely swapped. Press the button to start refueling and keep this button pressed while refueling. If you release the button for more than 2 seconds, refueling will be stopped.



Thin frost layer forms on the hose and nozzle during the refueling process due to cryogenic liquid flow - this is normal.

The pump automatically stops once the vehicle tank is full.

Refueling may also stop due to the following reasons:

- You did not press the START button as a part of the vigilance function
- Station's safety system has been activated
- Someone pressed the emergency shutdown button (ESD)
- The critical pressure in the vehicle tank has been reached



Emergency shutdown button (ESD)

When the refueling is complete "End" appears on the display.

Do not start the procedure again if the tank is full. Your tank may be damaged.

10 Nozzle disconnection

Wait until "END" appears on the display, then disconnect the nozzle by quick rotation counterclockwise.

Do not use force to disconnect the coupling.



CAUTION. Do not attempt to continue refueling the vehicle after the pump has stopped. Overflow of the tank may result in LNG escape into the atmosphere. If the station stops the refueling process for any reason although the on-board unit does not indicate the full tank, it is necessary to reduce the tank

11 Cleaning

Clean the nozzle of the hose with stream of compressed air and return it to the holder on the station. Clean the tank coupling with compressed air and replace the tank lid.



12 Earthing Cable Disconnection

Remove the earthing cable and place it back to the correct place on the dispensing unit.



12. Transaction Completion

Return to the payment terminal and finalize the transaction - touch to wake the terminal up and press "Listek" (Receipt) to print the receipt with information about fuel quantity.

The refueling is finished. Screen of the dispensing unit displays information about total quantity of issued LNG in kilograms.



Before you start your vehicle, check that:

- All hoses and protective conductors are disconnected and properly put away.
- The tank lid is replaced properly.
- There is no visible LNG leakage from the vehicle or from the station.

Mainly in the case of high pressure in your truck tank (warm tank) it is possible that during first filling you don't fill 100%. In this case you need to start over according to above-described procedure (earthing, cleaning of nozzle and tank coupling with air pistol, new transaction, connection of nozzle, depressurization – follow the instructions of the dispenser).

4.4 Refueling procedure at a station with Cetil dispenser

1 Preparation

Park your LNG vehicle at the reserved place, switch off the engine and apply the handbrake. Various vehicle brands have their tanks located on different sides, so it is necessary to approach the refueling station from the right side (Iveco) or from the left side (Scania and Volvo). Leave your mobile phone in the vehicle. Do not refuel during thunderstorm. The station registers the vehicle and starts heating the refueling nozzle with hot air.



2 Protective Equipment and Station Inspection

Check if the station is in operation. If the station is not in operation for example due to LNG supply or due to technical fault, this is shown on the dispensing unit's display. If you are not sure, use the intercom to contact the station operator. Wear the protective equipment.



3 LNG card authorisation

Initiate the transaction at the payment terminal. Follow the instructions on the terminal.



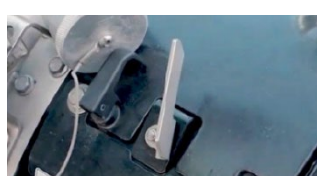
4 Earthing

Connect the earthing cable of the dispensing unit with the earthing point on the LNG tank. If there is no earthing point on the tank, the earthing cable must be attached to an unpainted metallic part according to vehicle operator's instructions, for example to the tank suspension brackets. The green indicator light on the stand next to the ground wire will illuminate. The vehicle symbol appears on the display of the stand.



5 Opening depressurisation valve

Open the vent valve (lever in case of Volvo) into the vehicle tank(s). Depressurisation starts automatically.



6 Cleaning

Take off the tank cap. Use the air blow gun to clean the vehicle's LNG tank and venting connection point and both nozzles.



STOP – WARNING

Never use water to clean the nozzle or tank coupling!

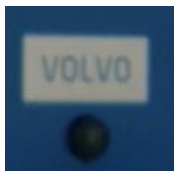
7 Nozzle connection

Connect the refueling nozzle to the tank in this way: Fit the nozzle to the tank connection and turn it clockwise till it clicks. In case of Vacuum type nozzle move the levers forward additionally. In case of Iveco/Scania, connect also the venting nozzle.



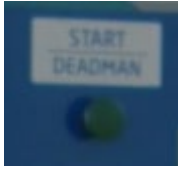
CAUTION. Do not attempt to continue refueling the vehicle after the pump has stopped. Overflow of the tank may result in LNG escape into the atmosphere. If the station stops the refueling process for any reason although the on-board unit does not indicate the full tank, it is necessary to reduce the tank

8 Volvo – cold LNG



In case of Volvo, press VOLVO button on the dispenser. Press START button. The venting takes place – wait for the message "PREPARE VEHICLE", afterwards close the venting valve on the vehicle.

9 Refueling



Press the START button on the dispenser. Refueling only takes place when this button is periodically pressed. The pump automatically stops once the vehicle tank is full. If you want to stop refueling earlier, press the STOP button. After filling the display shows „FIN SUMIN“, amount and price.

Thin frost layer forms on the hose and nozzle during the refueling process due to cryogenic liquid flow - this is normal.

The pump automatically stops once the vehicle tank is full. Refueling may also stop due to the following reasons:

- You pressed STOP button
- You stopped pressing the START/DEADMAN button
- Station's safety system has been activated
- Someone pressed the emergency shutdown button (ESD)
- The critical pressure in the vehicle tank has been reached



Tlačítko STOP



Tlačítko nouzového vypnutí (ESD)

Do not start the procedure again if the tank is full. Your tank may be damaged.

10 Disconnecting nozzles



Clean the nozzle connections on the dispenser with the air gun. Disconnect the nozzles from the vehicle's LNG tank and connect them to the dispenser. Do not use too much force for the disconnection! Put the LNG tank cap back on the receptacle.

11 Disconnecting earthing



Unfasten the grounding cable and return it to the correct holder in the dispenser housing.

11 Ukončení transakce



At payment terminal receive the receipt and complete the transaction.

Before you start your vehicle, check that:

- All hoses and protective conductors are disconnected and properly put away.
- The tank lid is replaced properly.
- There is no visible LNG leakage from the vehicle or from the station.

4.5 Troubleshooting

Should you encounter any problems during the refueling, contact the station operator via the intercom or use the telephone numbers posted at the station.

5. Emergency Procedure

Emergency state occurs if:

- someone is (seriously) injured and/on
- there is a (major) LNG leakage and/or
- there is a fire.

In case of emergency:

1. Press the emergency shutdown button (if possible).
2. Warn other persons in the area (if possible).
3. Run to a safe place (assembly area).
4. Call emergency services 112, 150 or 155.
5. Inform the station operator over the intercom or use the telephone numbers posted at the station.

5.1 Hazards Associated with LNG



- Extremely flammable gas.
- Very low temperatures (-162°C) cause freezing and properties of structural components (they become brittle). Wear special protective clothing whenever there is a possibility of contact:
- LNG is heavier than air (pay attention to underground spaces / sewer systems where LNG can collect).
- **CAUTION:** Explosion hazard in enclosed spaces (garages, workshops, etc.).
- Gas may cause suffocation, inhaling may result in drowsiness, dyspnea, rapid breathing, breathing problems, headache, dizziness, high gas concentrations may result in disorientation, vomiting, loss of consciousness, and death. Hypothermia symptoms: apathy, shivering, speech disorders, deteriorated motion coordination, loss of memory, tachycardia. Warm gas is no longer visible (the cloud no longer has the look of white steam).

5.2 Important Instructions

- Stay on the windward side (pay attention and do not stand in the cloud formed by vapors)
- Mobile phones, radio phones, etc., should be used only in safe areas.

5.3 Symptoms of Unexpected Events Relating to LNG

- Consider the possibility that the gas will spread far away, warm up and mix with air.
- (Visible) cloud depends on LNG temperature and on environmental factors like outside air temperature and humidity. A visible cloud does not always have to contain LNG, it can contain condensed water only!
- LNG is odorless and colorless (may become visible thanks to condensation of water vapor in the surrounding air).

5.4 Steps to Follow in Case of Unexpected Events Relating to LNG

Correct steps to follow are very similar for all of the above-mentioned incidents:

- Keep calm, act calmly, and avoid unnecessary risk. WARN persons that could be in danger.
- Press the EMERGENCY SHUTDOWN button if it is near you and accessible. After the emergency button is pressed, the system automatically closes all automated valves and all filling or refueling operations are interrupted.
- If possible, use the main power switch to isolate the power supply.
- In case of fire, use all available extinguishing equipment. Use fire extinguishers in case of any fire. Water should only be used in case of outside fires or if there is a need to cool down the adjacent equipment.
- In case of a large fire that cannot be extinguished locally, immediately call the fire brigade or other emergency services.
- Treat any frozen areas with tepid water. Do not rub the injured area. Get medical assistance/treatment immediately.
- Inform the LNG administrator over the intercom or use the telephone numbers posted at the station.



IMPORTANT.

- LNG evaporates to form a gas cloud. White clouds point to extremely low temperature and comprise water vapor and natural gas.
- Gas clouds are heavier than air shortly after evaporation, however, after some time they lift

5.5 Leakage / Drainage

6. **Do not manipulate** with vehicles and **do not start** them.
7. Inform all persons in close vicinity about the hazard and ask them to maintain a safe distance.
8. Inform the LNG administrator over the intercom or use the telephone numbers posted at the station.
9. If there is no communication equipment available, call 112 from a safe place.
10. Evacuate the area around the hazardous location and try to make sure that others keep safe distance.
11. Always walk against the wind or perpendicularly to the wind direction away from the dispensing unit.



CAUTION. The cloud formed from LNG ejects oxygen, thus posing hazard of suffocation in enclosed areas or in depressions where the gas can collect. Keep the distance.

5.6 Fire / Flame

FIRE OF ELECTRICAL EQUIPMENT

Fire may occur within the distribution board in any of the low voltage electric panels. Scope of this fire is not generally too large so act quickly in order to prevent its spreading into other parts of the installation.

Follow these instructions:

- Announce the emergency state by pressing the emergency shutdown button. This action immediately shuts down the station and disconnects power supply.
- Extinguishing with any available portable fire extinguisher. Do not use water if you are not sure whether you have shut down the station.
- SWITCH OFF the power supply. If you haven't done this before, switch off the power supply, preferably using the main power breaker if possible with regard to the location of the fire.
- Inform the LNG administrator over the intercom or use the telephone numbers posted at the station.
- After the fire is extinguished, the station cannot be started again until the cause of accident is determined by an authorized service company and until the problem is resolved.

FIRE FROM AN EXTERNAL SOURCE

In the event of a fire in the vicinity of the station (for example on a vehicle), proceed as follows:

- Announce the emergency state and report the situation by pressing the emergency shutdown button.
- If possible, eliminate the cause of the fire (e.g., if a vehicle is on fire).
- Extinguish the fire. If the fire is close to the station, try to extinguish it in addition to eliminating its cause. Water may be used to cool any nearby gas equipment provided that the electric system is not directly affected.
- Disconnect the station before extinguishing the fire.

- Switch off the power supply. If possible, use the main power switch to isolate the power supply.
- Inform the LNG administrator over the intercom or use the telephone numbers posted at the station.
- After each incident, before the station can be returned into operation, it is necessary to make sure that the equipment did not suffer any damage and, in case of any doubts, notify the helpdesk of a need for inspection before the station can be started again.

FIRE OF GAS

Fire caused by gas burns with more or less controlled flame and forms in the area of leakage within the equipment. The most efficient method for eliminating the fire is to shut off the gas supply into such point so the fire can burn low immediately. There is no use in trying to extinguish the fire without shutting off the gas supply.

Proceed as follows:

- Announce the emergency state by activating any emergency button. Automated valves shut off immediately. There is a good chance that the fire will burn low.
- Switch off the power supply. If possible, use the main power switch to isolate the power supply.
- Extinguishing. As soon as the gas inflow is shut off, it is possible to extinguish the fire around the leakage. Use the powder fire extinguishers located at various places on the system. Using water to extinguish the fire caused by gas has virtually no effect.
- Inform the LNG administrator over the intercom or use the telephone numbers posted at the station.
- The station must not be returned into operation until the causes of the fire are investigated and relevant measures are adopted.

FIRE ALARMING PROCEDURE

Every person, who sees a fire is obliged to do necessary measures to protect lives of endangered people, extinguish the fire by available means (e.g. a fire extinguisher), if it is possible, or to take necessary measures to prevent the fire from spreading and as soon as possible report the fire or make sure it is reported

- Way of fire alarming: **Callig "HOŘÍ" / "FIRE"**
- Fire to be reported at: **Line 112**
- To be reported: **who calls, where the fire is and what is on fire, size of the fire, your contact info**

Priority is to ensure evacuation of all people from the affected area, possibly ensure the evacuation of material, flammable substances and to secure the entrance and escape routes. All people, who are not part of the fire fighting works are obliged to stop their work immediately and to leave the building in the shortest escape non-affected route and to gather at the Emergency assembly point where the counting of evacuated employees will take place: Emergency assembly point is:



free area and roads in front of the main building

SOS (International emergency number): 112

Everyone is obliged to report every fire, even if it has already been distinguished and there was no damage.

5.7 Measures and First Aid

Inhalation: In case of any problems with breathing, take the affected person away from the area / gas cloud, take them to fresh air and sit them in a position where they can breathe easily.

If the person is unconscious, check the basic vital functions and lean their head backwards. If the person breathes, put them in stabilized position.

If necessary, resuscitate the affected person (with frequency of 100 chest compressions per minute). Call medical assistance.

Contact with skin: Cryogenic gases may cause skin damage by low temperature. Treat the damaged or frozen skin by rinsing the affected part or by immersing it into tepid water for at least 15 minutes. Excessively warm water (over 44°C) can cause rubbing the frozen skin off.



CAUTION. Many materials become brittle in contact with cold / cryogenic liquids and can suddenly break.

Do not rub the injured part. Do not undress if the clothing stick to your body. Once the symptoms of cold burns occur (changes of skin color, blisters), cover the skin with sterile gauze and seek medical attention immediately.

Contact with eyes: Should your eyes come into contact with cryogenic gas, remove contact lenses (if any), hold the lids open and calmly rinse the affected eyes with tepid water for at least 15 minutes. Seek medical attention immediately.

Ingestion: Ingestion of this product is unlikely because of its nature (gas and/or cryogenic gas). Should you ingest the cryogenic gas anyway, never induce vomiting. If possible, you should belch frequently. Rinse your mouth with cold water and drink one or two glasses of water or milk.

Important acute symptoms and effects: high concentrations may cause suffocation. Symptoms also include loss of consciousness.

The injured person does not have to be aware of the suffocation. Low concentrations cause dizziness, headache, or nausea.

If you are not sure what to do, call 112 from a safe location.

Then contact the LNG station administrator. Contact details are available on the information panel posted at the station.

6. Refueling Permit and Check for Compliance with Procedures

Only trained customers are allowed to refuel their vehicles at the refueling station. If the customer is a legal entity, it is obliged to train its employees (drivers). This operating manual and refueling instructions serve as the groundwork for such training. These documents are available on LNG.cz website and also at the mobile refueling station. Every person trained by GasNet will receive a training certificate.

6.1 Inspections

Administrator of each refueling station performs regular random inspections of compliance with the procedures described in this operating manual.

The refueling station operator is authorized to block customer's fuel card in case of a serious breach of regulations or gross negligence. Gross negligence means among others:

- Intentional threat to self or surroundings.
- Intentional failure to comply with the operating manual.
- Failure to use the specified personal protective equipment.
- Smoking or use of open fire at the refueling station.
- Movement of truck with connected hose.

7. Your Vehicle















You have received an operating manual with your vehicle. Because of the LNG equipment, it is important to inform the rescue services in emergency cases where main components are located (e.g., shut-off valves and safety valves).

The fuel tank is equipped with a safety valve which opens automatically under high pressure. Longer inactivity may cause gradual rise of pressure in the tank. The pressure remains sufficiently low during everyday use.

If the pressure starts to rise faster, inform the vehicle vendor.



8. Payment instructions

	Choose your language for communication	
	Select the dispenser icon	
	Agree on training and familiarization with refueling instructions	
	Choose the card you will pay with a) GasNet LNG card; b) Bank cards (Visa, Mastercard)	
	Payment with GasNet LNG card Place the card on the GasNet card reader	
	Enter the PIN code on the touch screen of the display	
	You can start refueling. Start refueling within 120 seconds.	
		Payment by bank card Enter the quantity LNG in kg you want to refuel. Only the amount according to the actual consumption will be deducted.
		
		Or by pressing yellow icon change the selection to the amount in CZK and enter the amount in CZK according to planned purchase.
		
		Insert a credit card to the terminal
		
		Enter the PIN code on the terminal keypad
		
		You can start refueling. Start refueling within 120 seconds.
		
		When done refueling don't forget to take a ticket with an overview of the amount of LNG taken

9. Where to Refuel

9.1 Klecany Station

The station is located at the following address:

Zdibsko 495, 250 67 Klecany

GPS coordinates:

On the way to Volvo Truck Centrum Praha – Sever area
50.1844350, 14.4495864

Opening hours:

non-stop

Payment:

GasNet card, bank cards (Visa, Mastercard), EuroWAG, DKV

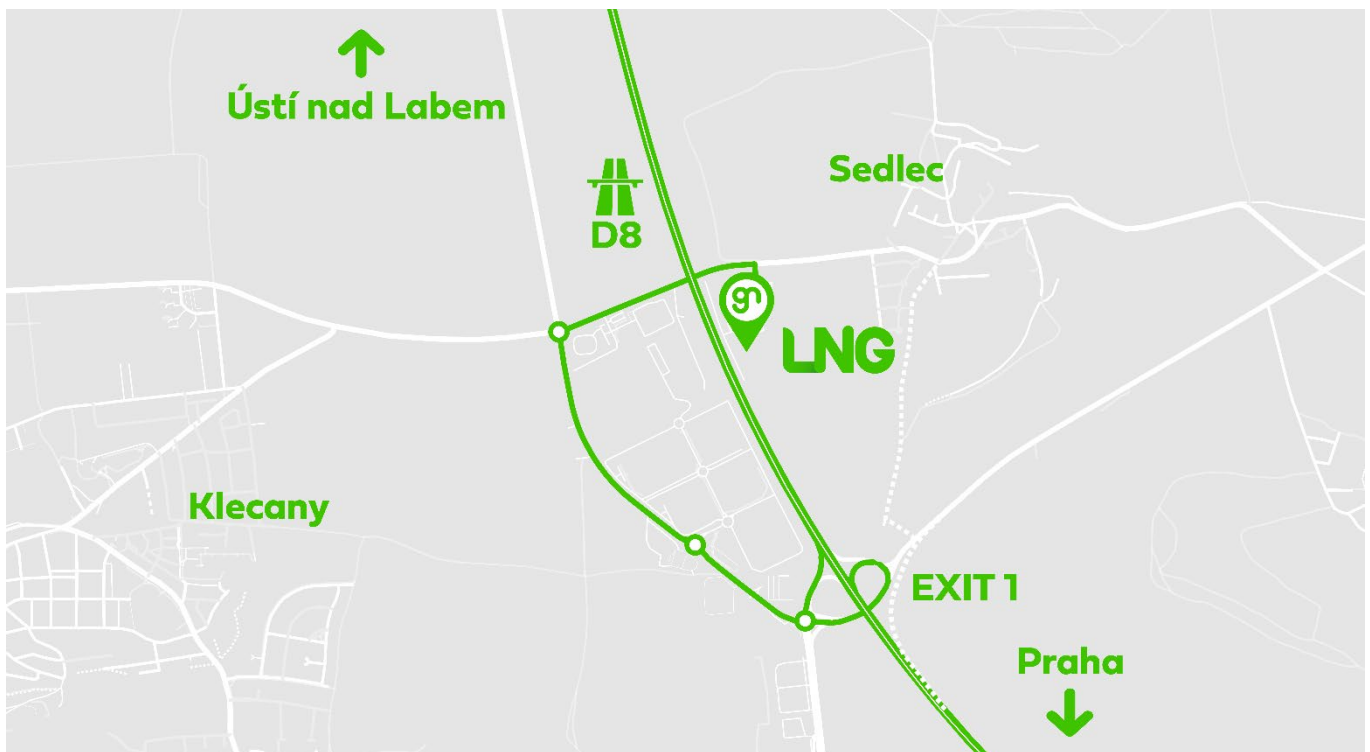
Type:

Mobile self-service public station suitable for all LNG vehicle brands (IVECO, SCANIA, VOLVO)

The station is located near Praha close to D8 motorway. It is located next to Volvo Truck Centrum Praha – Sever. The route to the station leads from motorway exit 1 and it leads only around the industrial park and Zdibsko community and then over the bridge across the motorway. The road through Sedlec community is closed for cargo transport in excess of 6 tons.

The self-service station is available 24/7.

Payment is possible with GasNet fuel card or bank cards (Visa, Mastercard), EuroWAG and DKV cards.

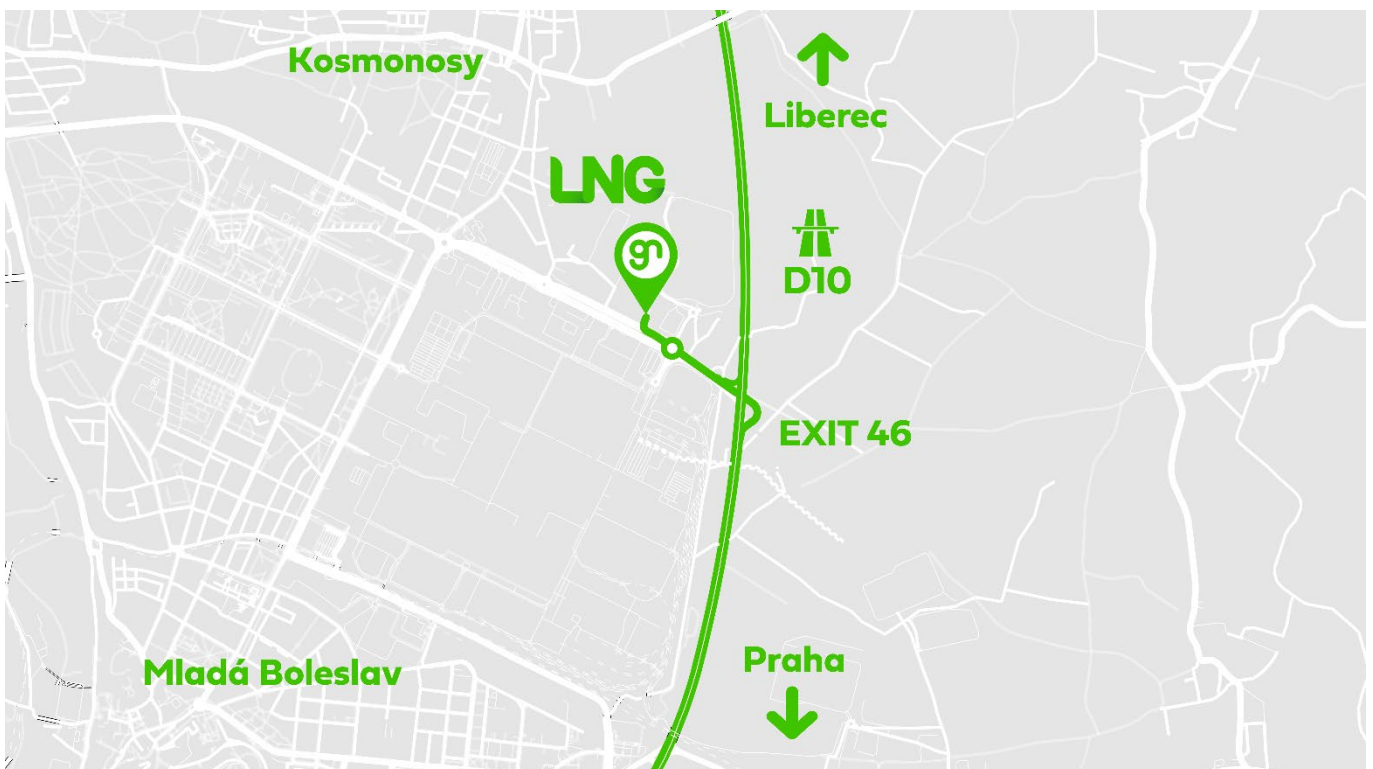


9.2 Kosmonosy Station

The stationary station is located at the following address:	Průmyslová 1315 (road I/38), 293 06 Mladá Boleslav – Kosmonosy behind the area Scania
GPS coordinates:	50.429310N, 14.936741E
Opening hours:	non-stop
Payment:	GasNet card, bank cards (Visa, Mastercard), EuroWAG, DKV
Type:	Mobile self-service public station suitable for all LNG vehicle brands (IVECO, SCANIA, VOLVO)

The station is located in Kosmonosy (Mladá Boleslav) in street Průmyslová 1315, road I/38. It is behind Scania area. The route to the station leads from motorway D10, exit 46.

Payment is possible with GasNet fuel card or bank cards (Visa, Mastercard), EuroWAG and DKV cards.



9.3 Nýřany Mobile Station

The stationary station is located at the following address:	Průmyslová zóna "U Mexika" č. p. 1308, 330 23 Nýřany Volvo Group Truck Centrum Nýřany
GPS coordinates:	49.706989N, 13.223847E
Opening hours:	non-stop
Payment:	GasNet card, bank cards (Visa, Mastercard), EuroWAG, DKV
Type:	Mobile self-service public station suitable for all LNG vehicle brands (IVECO, SCANIA, VOLVO)

The station is located in Nýřany near city Pilsen (Plzeň) in street Průmyslová zóna "U Mexika" č. p. 1308. It is located within the area of Volvo Group Truck Centrum Nýřany. The route to the station leads from motorway D5, exit 93.

Payment is possible with GasNet fuel card or bank cards (Visa, Mastercard), EuroWAG and DKV cards.



9.4 Kaplice Mobile Station

Address:	Kaplice nádraží 107, 382 42 Střítež
GPS:	48.775623774934886, 14.470157693686174
Open:	non-stop
Payment:	LNG card GasNet, bank payment card (Visa, Mastercard), EUROWAG, DKV
Type:	Mobile self-service public station suitable for all LNG vehicle brands (IVECO, SCANIA, VOLVO)

The station is located in Kaplice, South Bohemia, close to E55 road. It is located within the area of Giomir company.

The self-service station is available 24/7.

Payment is possible with GasNet fuel card or bank cards (Visa, Mastercard), EuroWAG and DKV cards.



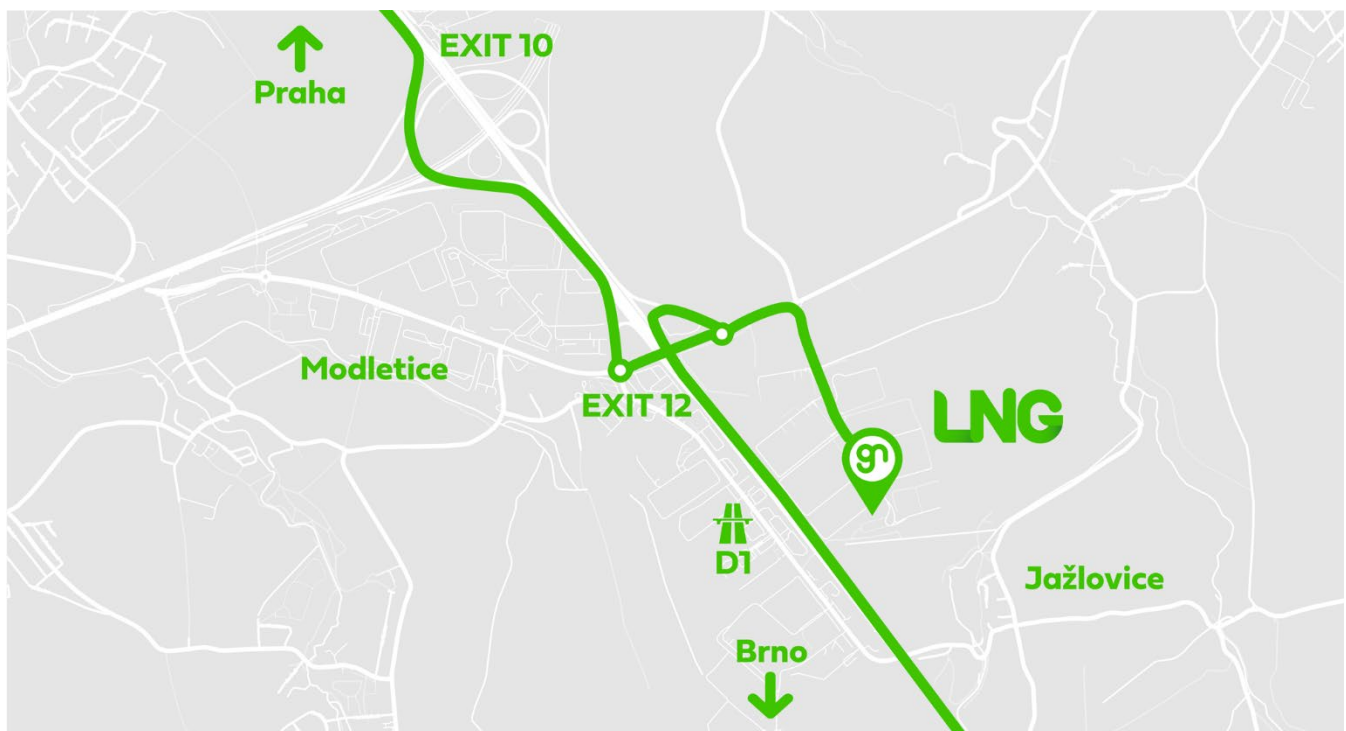
9.4 Jažlovice Station

Address:	Prologis park D1 East, Na Dlouhém 79, 251 01 Říčany
GPS:	49.967423644598576, 14.627203666368104
Opening hours:	non-stop
Payment:	LNG card GasNet, bank payment card (Visa, Mastercard), EUROWAG, DKV
Type:	Stationary self-service public station suitable for all LNG vehicle brands (IVECO, SCANIA, VOLVO)

The station is located in Jažlovicích, by the highway D1, EXIT 12 in the logistic park Prologis D1.

The self-service station is available 24/7.

Payment is possible with GasNet fuel card or bank cards (Visa, Mastercard), EuroWAG and DKV cards.



9.1 Hradec Králové Station

The station is located at the following address:

Vlčkovická 237, 500 04 Hradec Králové 4
next to Volvo Truck Centrum

GPS coordinates:

50.1823600N, 14.4490278E

Opening hours:

non-stop

Payment:

GasNet card, bank cards (Visa, Mastercard), EuroWAG, DKV

Type:

Stationary self-service public station suitable for all LNG
vehicle brands (IVECO, SCANIA, VOLVO)

The station is in Hradec Králové – Plačice close to D11 motorway. It is located near the area of Volvo Truck Center. The route to the station leads from motorway exit 90 via the streets Kutnohorská and Vlčkovická.

The self-service station is available 24/7.

Payment is possible with GasNet fuel card or bank cards (Visa, Mastercard), EuroWAG and DKV cards.



10. Important Contacts

In case of any problems, use the intercom to obtain technical assistance or call the following telephone numbers:

+420 555 901 109

non-stop

Non-stop hotline for LNG leakage reporting:

1239

Other contacts:

Website: www.LNG.cz

E-mail for current customers: support@LNG.cz



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LNG.cz