

**Comparison investment and exploitation costs Long Haul Diesel truck (EURO6) and LNG-CNG truck with NONOX technology  
Containing the ecological aspect in terms of CO2 emission**



		Diesel Euro6	LNG-NONOX Euro6 [Zeebrugge LNG Quality]	CNG-NONOX Euro6 [Russian H-Gas Quality]	CNG-NONOX Euro6 [Groningen L-Gas Quality]	
Batch	1	1	1	1	1	1
Price tractor truck (Long distance) 450HP	€ 100.000	€ 100.000	€ 110.000	€ 110.000	€ 110.000	€ 110.000
Price reduction for big quantities	0%	0%	0%	0%	0%	0%
Operational life time	4 Yr	4 Yr	4 Yr	4 Yr	4 Yr	4 Yr
Number of km per year	125000 km	125000 km	125000 km	125000 km	125000 km	125000 km
Subsidy	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0
Price per truck	€ 100.000	€ 100.000	€ 110.000	€ 110.000	€ 110.000	€ 110.000
		<b>Costs diesel truck per year</b>		<b>Costs LNG truck per year</b>	<b>Costs CNG truck per year</b>	<b>Costs CNG truck per year</b>
a. Maintenance costs	€ 0,20	€ 25.000	€ 0,20	€ 25.000	€ 0,20	€ 25.000
b. Financings costs per year	2,50%	€ 1.750	2,50%	€ 1.925	2,50%	€ 1.925
c. Warranty period	2 Yr	-	2 Yr	-	2 Yr	-
e. Energy consumption per km (L Diesel, kg LNG)	0,34 lt/km	42.500 lt	0,26 kg/km	32.513 kg	0,26 kg/km	32.737 kg
f. Energy costs Lt diesel, kg LNG, resp. per year	€ 1,00	€ 42.500	€ 1,12	€ 36.415	€ 0,96	€ 31.493
g. Adblue consumption per km in Liter (6% of Diesel consumption)	0,02 lt	2.550 lt	-	-	-	-
h. Adblue price per liter €0,70	€ 0,70	-	-	-	-	-
i. Adblue costs per km, total	€ 0,01	€ 1.785	-	-	-	-
j. Residual value truck after operational life time	€ 40.000	-	€ 44.000	-	€ 44.000	-
k. Depreciation truck per year (10%)		€ 15.000		€ 16.500		€ 16.500
m. Fuel station						
n. Road tax per year	€ 760	€ 760	€ 760	€ 760	€ 760	€ 760
<b>Total costs per truck per year</b>		<b>€ 86.795</b>		<b>€ 80.600,08</b>	<b>€ 75.677,67</b>	<b>€ 76.729,71</b>
<b>Costs per km</b>		<b>€ 0,69</b>		<b>€ 0,64</b>	<b>€ 0,61</b>	<b>€ 0,61</b>
<b>Operational savings per year compared to diesel</b>		<b>€ 0,00</b>		<b>€ 6.194,92</b>	<b>€ 11.117,33</b>	<b>€ 10.065,29</b>
<b>Operational savings per operational lifetime compared to diesel</b>		<b>€ 0,00</b>	<b>over operational lifetime</b>	<b>€ 24.779,68</b>	<b>€ 44.469,33</b>	<b>€ 40.261,17</b>
<b>Costs if German toll is taken in to account</b>						
<i>Toll in Germany per Euro VI Diesel truck &gt; 18 ton: € 0,187/km</i>	€ 0,187		€ 0,00		€ 0,00	
<b>Total costs per truck per year</b>		<b>€ 110.170,00</b>		<b>€ 80.600,08</b>	<b>€ 75.677,67</b>	<b>€ 76.729,71</b>
<b>Costs per km</b>		<b>€ 0,88</b>		<b>€ 0,64</b>	<b>€ 0,61</b>	<b>€ 0,61</b>
<b>Operational savings per year compared to diesel</b>		<b>€ 0,00</b>		<b>29.569,92 €</b>	<b>34.492,33 €</b>	<b>33.440,29 €</b>
<b>Operational savings per operational lifetime compared to diesel</b>		<b>€ 0,00</b>		<b>118.279,68 €</b>	<b>137.969,33 €</b>	<b>133.761,17 €</b>
<b>CO2-emission [gCO2/km] depending on fuel consumption</b>	<b>CO2-Emission</b>	<b>901 gr/km</b>		<b>721 gr/km</b>	<b>711 gr/km</b>	<b>727 gr/km</b>
<b>Relative CO2 emission [ diesel set to 100%]</b>		<b>100,00%</b>		<b>80,00%</b>	<b>78,95%</b>	<b>80,71%</b>
<b>Relative penalty in caloric energy consumption [%]</b>				1,05	1,05	1,05
(max 5%-10% penalty with NONOX Technologie compared to diesel)						
Required energy consumption [KJ/km]		12.280,80 kJ/km		12.894,84 kJ/km	12.894,84 kJ/km	12.894,84 kJ/km
Resulting fuel consumption of gas trucks (calculated) [ kg/km]				0,26 kg/km	0,26 kg/km	0,34 kg/km
<b>This calculation is based on the following assumptions:</b>						0,41 m3/km
c. Adblue costs per km €0,014						0,76 €/kg
g. the combustion of 1 litre diesel results in 2,65 kgCO2		2,65				Daily Range [km/day]
h. The combustion of 1 kg Sowjet H-Gas results in 2,716 kgCO2		2,716				500
i. The combustion of 1 kg Zeebrugge LNG results in 2,771 kgCO2		2,771				Daily Fuel consumption [m3/day]
j. The combustion of 1 kg Groningen L-Gas results in 2,1325 kgCO2		2,1325				205,01
Density Diesel rho=0,84 kg/liter		0,84				
LHV Diesel = 43000 kJ/kg		43000				
LHV Sowjet H= 49237 kJ/kg		49237				
LHV Zeebrugge LNG=49575 kJ/kg		49575				
LHV Groningen L-Gas= 37814 kJ/kg		37814				
Density Groningen Gas RHO_Gro = 0,8317 kg/m3		0,8317				
Price Groningen gas (19.03.2019) [€/m3]		0,635				
Price Groningen gas (19.03.2019) [€/kg]		0,76				