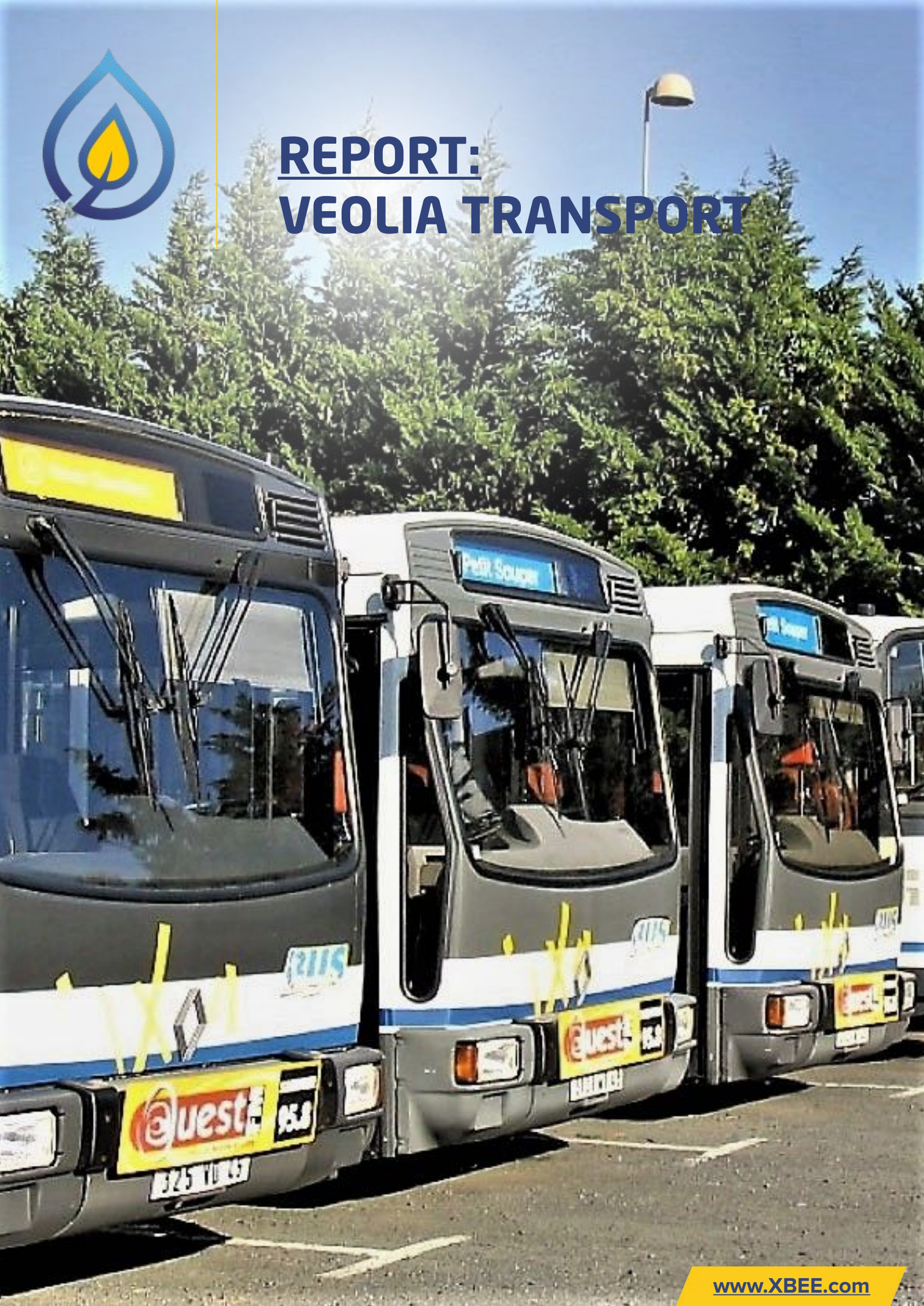
REPORT:
VEOLIA TRANSPORT



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Summary

Context

Back in 2005, Veolia Transport was in charge of several public transport networks in France, including the company CTS that was responsible for the bus network in the city of Saumur, France.

In April 2005, XBEE commissioned the laboratory Ascal – SMC2, that later became affiliated to Eurofins. Ascal was accredited by Cofrac, which is the sole national accreditation body in France, in line with regulation 765/2008 of the European Parliament and Council.

Measurements have been carried out with regular diesel on April 27, 2005. Veolia Transport then started to treat their storage tank with **XBEE Enzyme Fuel Technology** at the advised ratio of 4,000:1. Several buses have been selected in order to assure repeatability and consistency in the results.

On July 5, 2005 the laboratory repeated the measurements after two months of treatment with XBEE.

Data

1 | Engine loads

The buses have been measured at idle for most of them, the idea being to repeat the operating conditions of these vehicles waiting at traffic lights, at bus stops, etc.

2 | Measured parameters

Ascal have measured an extensive list of parameters:

- Flue gas temperature (°C)
- Speed (rpm)
- Humidity (%)
- Gas flow (m^3/h)
- Oxygen - O_2 (%)
- Particulates (mg/m^3)
- Carbon monoxide - CO (mg/m^3)
- Carbon dioxide - CO_2 (%)
- Carbon dioxide - CO_2 (mg/m^3)
- Nitrogen monoxide - NO (mg/m^3)
- Nitrogen oxides - NO_x (mg/m^3)
- Volatile Organic Compounds - VOC (mg/m^3)

Data analysis

The raw data already demonstrate that **XBEE Enzyme Fuel Technology** has a great capacity to reduce all gas emissions. The following table compares gas emissions of seven buses between the two campaigns:

CO_2 *(g/kWh weighted*)*	**325 VD**	**9050 XT**	**4434 YF**	**9052 XT**	**3126 WT**	**9051 XT**	**7688 WJ**
Particulates	5.9%	-43.5%	31.4%	134.5%	47.1%	-27.6%	-37.5%
CO	-11.8%	-61.6%	-5.3%	-29.2%	-24.6%	-21.6%	-12.5%
CO_2	-6.8%	-12.4%	-5.1%	-12.4%	0.0%	-11.3%	-23.1%
O_2	0.5%	1.1%	0.6%	1.1%	-0.5%	0.5%	1.1%
NO	-12.7%	-12.2%	-2.4%	-24.0%	-1.0%	-5.5%	-27.0%
NO_x	-13.2%	-22.1%	-3.4%	-27.5%	-4.2%	-6.2%	-24.4%
COV	-3.6%	-40.1%	-7.4%	-19.4%	-12.0%	-12.2%	7.4%

Taking into account the average of the fleet, we can observe that four buses were still in the middle of the cleaning phase. In particular, buses 9052 XT and 3126 WT.

It is quite remarkable to observe the hyper-oxygenation of the fuel is marked by a slight increase of oxygen emissions, whereas carbon and nitrogen emissions are reduced.

CO_2 emissions are reduced by 10.2% in average.

Fleet average	
Particulates	22.8%
CO	-23.8%
CO_2	-10.2%
O_2	0.6%
NO	-11.8%
NO_x	-14.4%
COV	-12.6%

Gas emissions in kg/h

Taking into consideration the fact that XBEE enzymes improve fuel combustion, we have observed that bus engines do not run at the same speed after two months of treatment with XBEE. Consequently, gas flow differ from one campaign to the next.

In order to measure the impact of this improved combustion, we can compare gas emissions in kg/h and obtain the following results:

	325 VD	9050 XT	4434 YF	9052 XT	3126 WT	9051 XT	7688 WJ
Gas flow (m^3/h)	-42.3%	-34.0%	-20.1%	-16.7%	-29.6%	-10.2%	-37.2%
Particulates	-38.9%	-62.7%	5.0%	95.3%	3.5%	-35.0%	-29.8%
CO	-49.1%	-74.7%	-24.4%	-41.0%	-47.0%	-29.6%	-45.1%
CO_2	-46.2%	-42.2%	-24.2%	-27.0%	-29.6%	-20.3%	-51.8%
NO	-49.6%	-42.0%	-22.0%	-36.6%	-28.9%	-15.1%	-54.2%
NO_x	-49.9%	-48.6%	-22.8%	-39.6%	-32.5%	-15.8%	-52.6%
COV	-44.4%	-60.9%	-26.0%	-32.8%	-38.1%	-21.2%	-32.6%

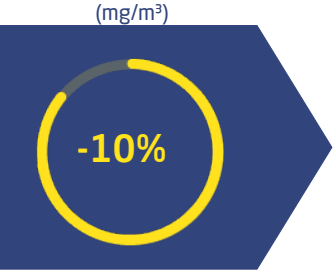
This analysis shows that XBEE enzymes improve combustion in a way that engines need less energy to achieve the same results. In this case, engines at idle emit a lot less gas emissions per hour.

Considering this weighing factor, that fleet of seven buses reduced CO_2 emissions by 34.5%!

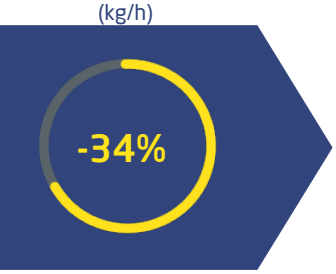
Fleet average	
Particulates	-8.9%
CO	-44.4%
CO_2	-34.5%
NO	-35.5%
NO_x	-37.4%
COV	-36.6%

Conclusions

CO_2
(mg/m³)



CO_2
(kg/h)



At the time of the measurements, the buses selected for the evaluation were ranging from 4 to 20 years old. These vehicles had accumulated from 240,000 to 713,000 kilometres. The oldest were made by Renault, and the most recent ones by Heuliez.

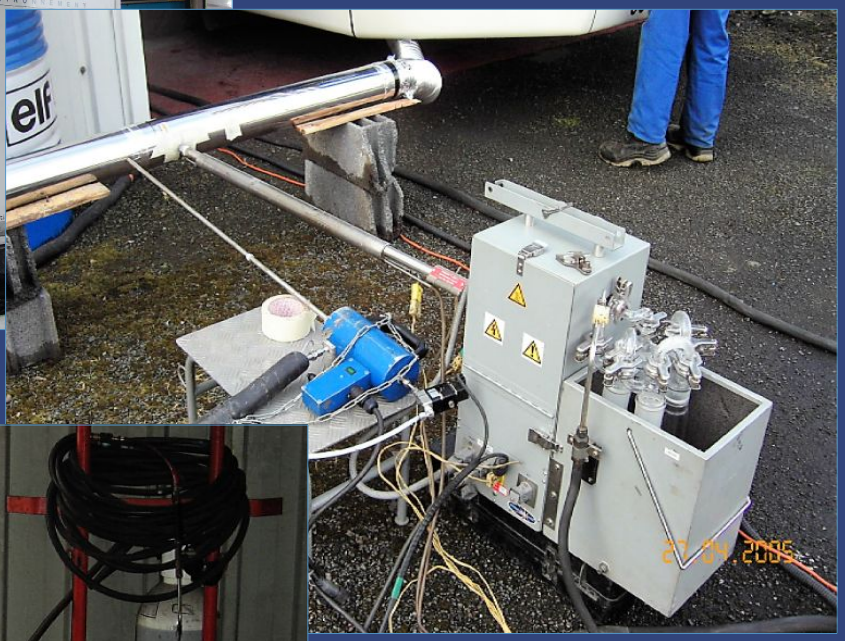
This sample of buses measured by an independent and accredited laboratory were the first proof of **XBEE Enzyme Fuel Technology** capacity to significantly reduce gas emissions in real operating conditions.

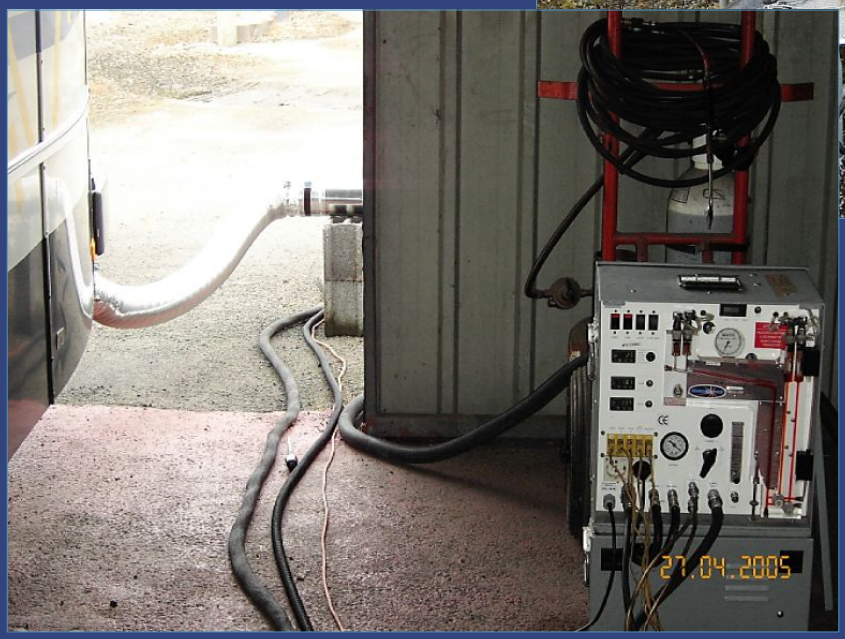
You are entitled to expect the best from **XBEE Enzyme Fuel Technology**.

We offer a wide range of benefits: cleaning fuel systems, saving money, reducing pollution.

Annex

GHG measuring equipment





Annex

CO_2 data report

ASCAL S.A.

Véhicule	1ère campagne	2nd campagne
325 VD 49 – Régime lent	Le 27/04/2005 De 15h52 à 17h22	Le 05/07/2005 De 18h36 à 20h06
9050 XT 49 – Régime lent	Le 28/04/2005 De 7h55 à 9h25	Le 06/07/2005 De 8h50 à 10h20
4434 YF 49 – Régime lent	Le 28/04/2005 De 12h15 à 13h45	Le 05/07/2005 De 16h50 à 18h20
9052 XT 49 – Régime lent	Le 28/04/2005 De 10h25 à 11h55	Le 06/07/2005 De 10h40 à 12h10
3126 WT 49 – Régime lent	Le 27/04/2005 De 17h45 à 19h15	Le 05/07/2005 De 14h55 à 16h25
9051 XT 49 – Régime 700 tr/min	Le 27/04/2005 De 9h40 à 11h10	Le 05/07/2005 De 8h30 à 10h00
9051 XT 49 – Régime 2000 tr/min	Le 27/04/2005 De 11h45 à 13h15	Le 05/07/2005 De 10h45 à 12h15
7688 WY 49 – Régime 700 tr/min	Le 27/04/2005 De 13h56 à 15h26	Le 05/07/2005 De 12h57 à 14h27

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ASCAL S.A.

Véhicule	1ère campagne			2nd campagne		
325 VD 49 Régime lent	Débit	170	Nm^3/h sur gaz sec	Débit	98	Nm^3/h sur gaz sec
	CO_2	29.5	g/Nm^3 sur gaz sec	CO_2	27.5	g/Nm^3 sur gaz sec
9050 XT 49 Régime lent	Débit	217	Nm^3/h sur gaz sec	Débit	143	Nm^3/h sur gaz sec
	CO_2	31.4	g/Nm^3 sur gaz sec	CO_2	27.5	g/Nm^3 sur gaz sec
4434 YF 49 Régime lent	Débit	109	Nm^3/h sur gaz sec	Débit	87	Nm^3/h sur gaz sec
	CO_2	37.3	g/Nm^3 sur gaz sec	CO_2	35.4	g/Nm^3 sur gaz sec
9052 XT 49 Régime lent	Débit	163	Nm^3/h sur gaz sec	Débit	136	Nm^3/h sur gaz sec
	CO_2	31.4	g/Nm^3 sur gaz sec	CO_2	27.5	g/Nm^3 sur gaz sec
3126 WT 49 Régime lent	Débit	129	Nm^3/h sur gaz sec	Débit	91	Nm^3/h sur gaz sec
	CO_2	27.5	g/Nm^3 sur gaz sec	CO_2	27.5	g/Nm^3 sur gaz sec
9051 XT 49 Régime 700 tr/min	Débit	148	Nm^3/h sur gaz sec	Débit	133	Nm^3/h sur gaz sec
	CO_2	35.4	g/Nm^3 sur gaz sec	CO_2	31.4	g/Nm^3 sur gaz sec
9051 XT 49 Régime 2000 tr/min	Débit	400	Nm^3/h sur gaz sec	Débit	210	Nm^3/h sur gaz sec
	CO_2	51.1	g/Nm^3 sur gaz sec	CO_2	33.4	g/Nm^3 sur gaz sec
7688 WY 49 Régime 700 tr/min	Débit	94	Nm^3/h sur gaz sec	Débit	59	Nm^3/h sur gaz sec
	CO_2	25.5	g/Nm^3 sur gaz sec	CO_2	19.6	g/Nm^3 sur gaz sec

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