



GREEN  BERTH

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*Promotion of Port Communities SMEs role in Energy Efficiency
and
GREEN Technologies for BERTHing Operations*

**Greenberth, initiative focus on the energy reduction related to
passenger mobility solution in cruise sector**



Projet cofinancé par le Fonds Européen de
Développement Régional

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PORT OF VENICE

**Porto Marghera
(commercial area)**

**Marittima – S. Basilio
Passengers facilities**

Sea Motorways (MoS)

Lido Inlet

**S. Leonardo
(oil terminal)**

Malamocco Inlet

- ✓ Surface: 2.045 hectares
- ✓ Channels: 16 km²
- ✓ 30 km quayside
- ✓ 163 berths
- ✓ 27 terminals
- ✓ 70 km internal road
- ✓ 205 km of railways

MARITTIMA PASSENGER TERMINAL



PORT PASSENGERS MARITTIMA

MARITTIMA

PASSENGER TERMINAL

- 2.000.000 passengers
- 8 berths
- 200 mega yachts/year
- First Mediterranean cruise home port
- Value: € 500 mil.
- VPA investments (since 1997 to 2013): more than € 70 mil



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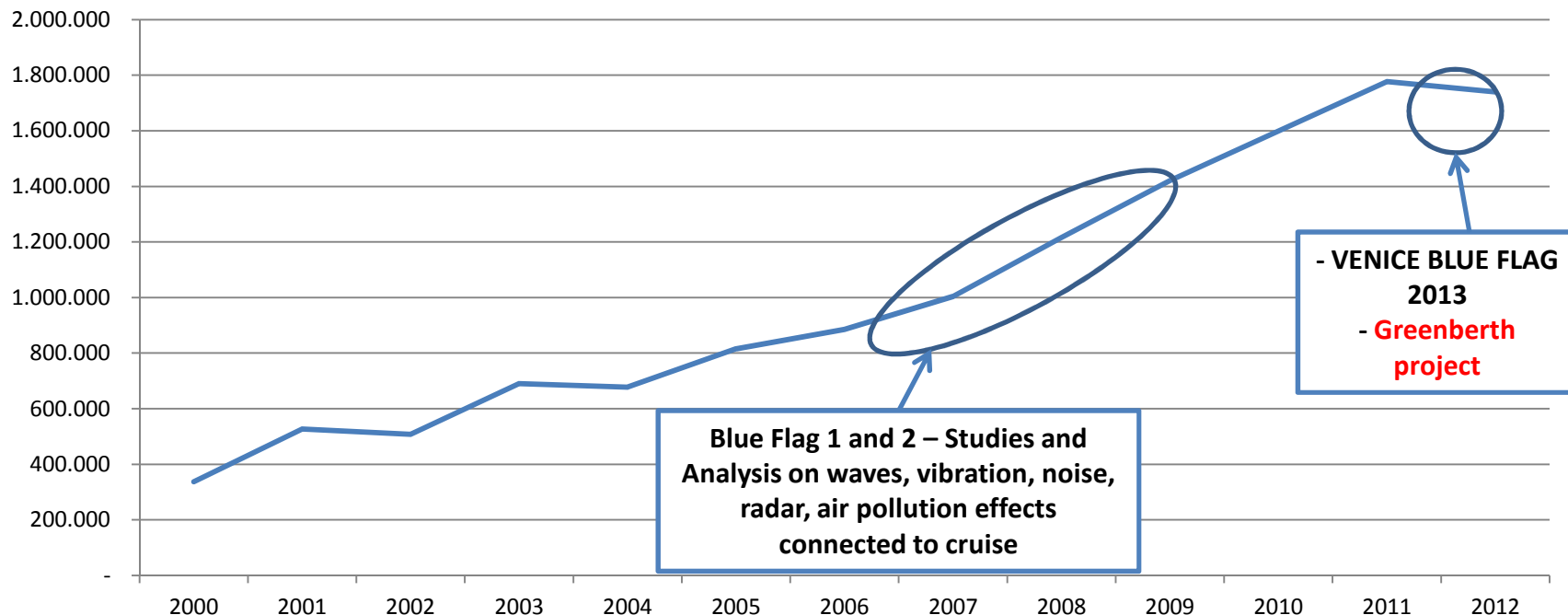
CRUISE IN VENICE



The fast growth of the cruise sector in Venice has determined a slow but unstoppable debate about all externalities connected to maritime traffic

The Venice Port Authority has addressed the issues deploying a lot of initiatives, Studies – Analysis – Environmental projects

Cruises – n° of passengers



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WP3.2 RESULT - ENERGY PLAN DESIGN

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To **evaluate** and **map** the actual DECISIONAL PROCESSES and CURRENT ENERGY SOLUTIONS

- To **design** an energy efficiency PLAN
- To **suggest** a PILOT PROJECT for SMEs



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CRITERIA FOR SELECTING ENERGY IMPROVING MEASURES AND INVOLVING SMES

Some measures may be preferred by the port, terminal operators or the port stakeholders in general. Some of the measures may be more along the line with port policies, than others.

Other considerations for selecting the proper measure(s) could be, for example:

- Local agreement with stakeholders;
- Quantity of energy saving and emissions reduction, related with relative investments;
- Feasible works in the immediate future;
- Payback investment time



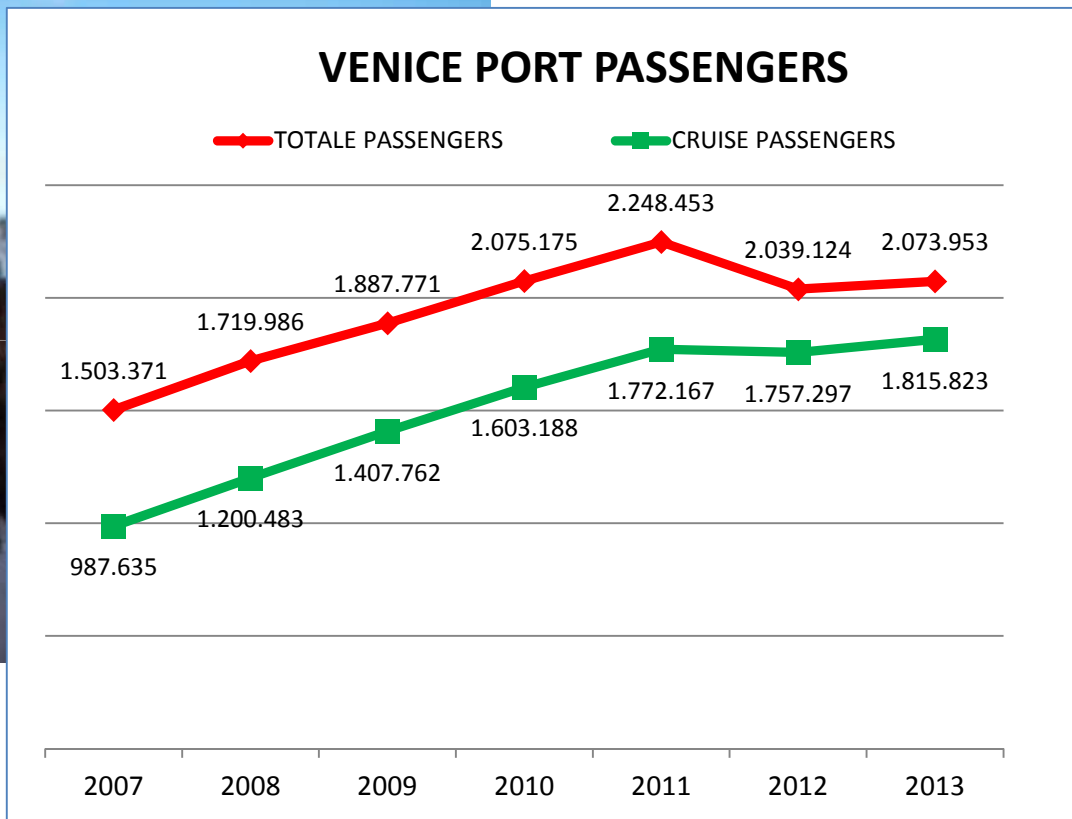
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CRUISE IN VENICE



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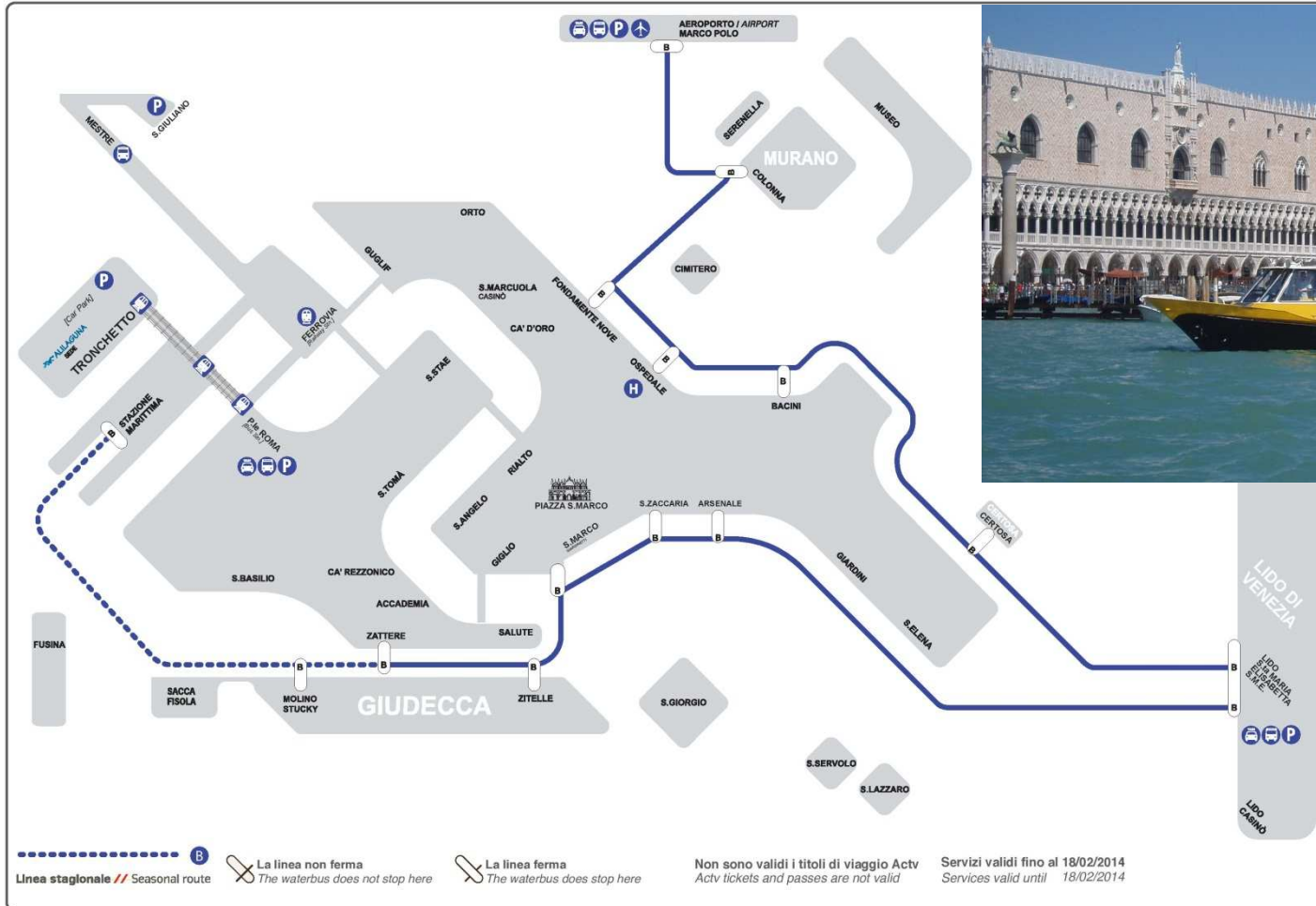
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CRUISERS TRANSPORTATION ALI LAGUNA ROUTE IN THE HISTORICAL CENTRE

GREEN BERTH



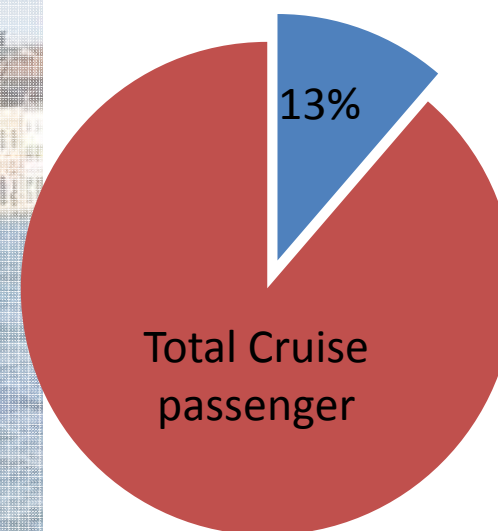
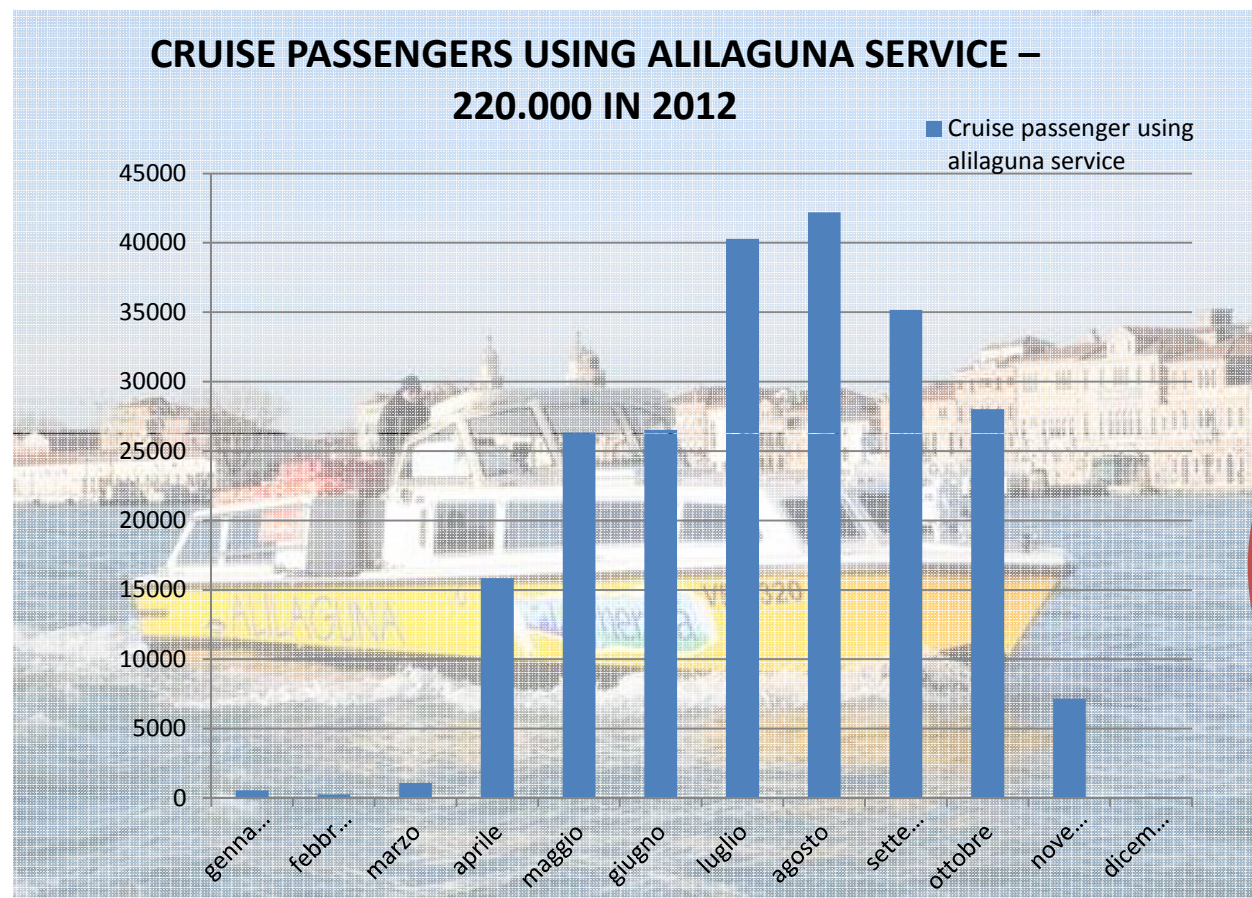
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CRUISERS TRANSPORTATION AIRPORT – PASSENGER TERMINALS



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AIRPORT SERVICE ALILAGUNA FLEET



<u>Unità Flotta Alilaguna</u> <u>SpA</u>	<u>Fuel consumption</u> <u>(€)</u>	<u>Fuel consumption</u> <u>(liters)</u>	<u>CO2 Emissions (</u> <u>ton)</u>	<u>Navigation</u> <u>hours/year</u>
Alilaguna 2 VE 7834	€ 60.410,00	35.535,29	90,12	5034
Alilaguna 4 VE 8686	€ 60.849,00	35.793,53	90,77	5070
Alilaguna 5 VE 8715	€ 58.184,00	34.225,88	86,80	4848
Alilaguna 7 VE 8883	€ 70.998,00	41.763,53	105,91	5916
Alilaguna 8 VE 8977	€ 62.519,00	36.775,88	93,26	5209
Alilaguna 9 VE 8216	€ 57.665,00	33.920,59	86,02	4805
Alilaguna 10 VE 9118	€ 21.749,00	12.793,53	32,44	1812
Alilaguna 11 VE 9149	€ 18.431,00	10.841,76	27,49	1535
Tessera VE 8816	€ 65.215,00	38.361,76	97,29	5434
F.ta Nuove VE 8828	€ 56.644,00	33.320,00	84,50	4720
S.i.t. 1 VE 8510	€ 60.459,00	35.564,12	90,19	5038
S.i.t. 2 VE 8517	€ 55.839,00	32.846,47	83,30	4653
S.i.t. 3 VE 8697	€ 71.349,00	41.970,00	106,44	5945
SUM	€ 720.311,00	423.712,35	1.074,53	60019

Alilaguna is working to renew the fleet: “Energia” hybrid vessels is sailing since 2010 and the second hybrid boat is in construction



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PILOT PROJECT TECHNICAL DATA: BOAT/CAR POWER SUPPLY

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Two charging points with double plug

Boat dedicated plug:
Requested power 8 kW
32 A
220 Volt

Car dedicated plug:
Requested power: 3,7 kW
16 A
220 V



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PILOT PROJECT DATA: BOAT POWER SUPPLY

VENEZIA - AEROPORTO M.POLO



	Da Venezia (00:00/10:00)	Da Venezia (11:00/16:00)	Da Venezia (17:00/00:00)
	00:00/10:00		
T.CROCIERE	-	-	-
GIUDECCA HILTON	-	04.35	05.35
ZATTERE	-	04.40	05.40
ZITELLE	-	-	-
S.MARCO	03.40	04.50	05.50
S.ZACCARIA	03.44	04.54	05.54
ARSENALE	03.48	04.58	05.58
LIDO S.M.E.	03.56	05.06	06.06
CERTOSA*	-	-	-
BACINI	-	-	-
OSPEDALE	04.16	05.24	06.24
FTE NOVE	04.21	05.29	06.29
MURANO COL.	04.29	05.37	06.37
AEROPORTO	05.03	06.07	07.07

Service from - to the airport:
more than 1,5 hours per route

3,5 hours navigation
authonomy

Total navigation time per day:
7 hours per unit

Charging time:
4 hours (two charging phases
per day)



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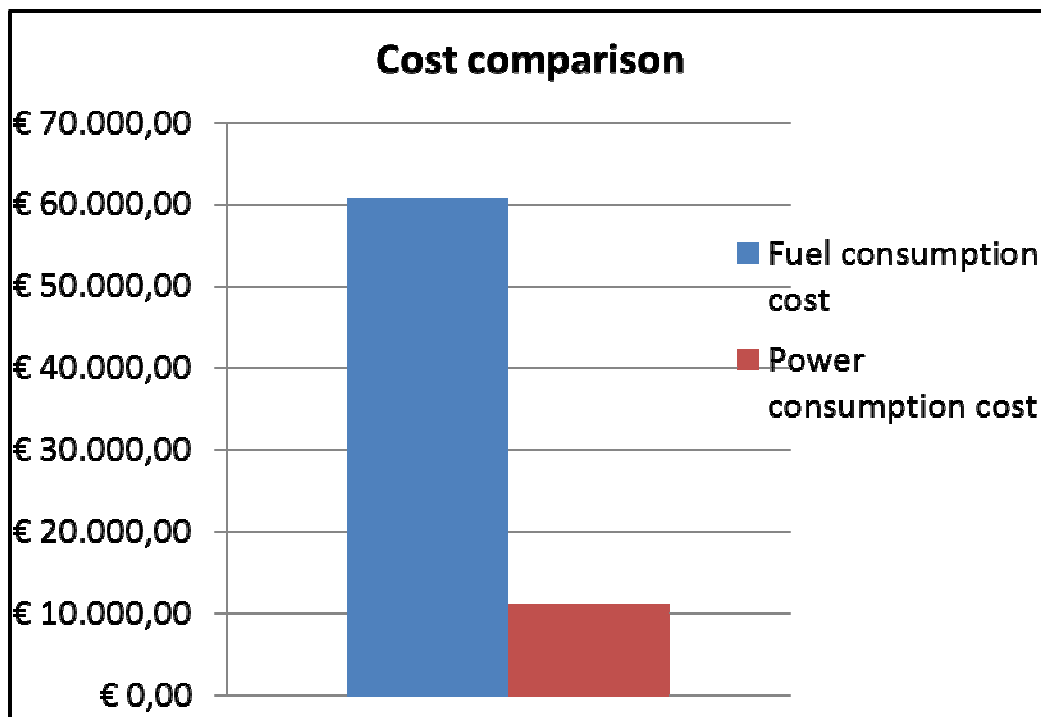




PILOT PROJECT DATA: BOAT POWER SUPPLY



Navigation hours per year	Power supply cost (€/kWh)	Charging time per day	Requested Power (KWh)	Daily cost (€)	Annual cost (€)	Equivalent service (2 hybrid boats) cost (€)
2.555	0,24	8	64	15,36	5.606,40	11.212,80



CO₂ emission reduction:
90,77 ton/year

82% money saving per year



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PILOT PROJECT DATA: OPERATIVE VEHICLES

POWER SUPPLY



Calculations are referred to operative vehicles covering 6.000 km per year within the terminal

VTP Electric vehicles	Fuel costs per year (€)	Power costs per year (€)	Money saving per year (€)	Money saving %	Annual CO2 emission reduction (ton)
Vehicle 1	910	166	744,00	82%	0,678
Vehicle 2	910	166	744,00	82%	0,678

Data collected from pilot project results would be used to identify possible future actions related to passenger mobility green solutions, taking into account Venice contest and its delicate environment



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