






TWO ALTERNATIVE VIEWS ON FLEET CHOICES IN NORDIC CITY STREET CLEANING

Current solution:

Typical street sweeping fleet & functions

Washing truck	Vacuum sweeper / Street scrubber	Dump truck	Loader/Tractor + Sweeper collector	Watering truck
				
Investment 70 000 eur	Investment 250 000 eur - 600 000 eur	Incremental Investment 0 eur(1)	Incremental investment 15 000 eur(2)	Investment 70 000 eur
Speed up to 10km/h	Speed 1-3km/h	Speed up to 40 km/h	Speed 1-5km/h	Speed up to 10km/h
Role: Washes the remaining 5-10% of fine dust to waste water funnels	Role: Sweeps and vacuums 80 - 95%(3) of the remaining fine dust off the ground.	Role: Serves as a mobile disposal point for the sweeper collectors and vacuum sweepers.	Role: Sweeps and collects larger debris and gritting sand from the ground. Required to protect the suction equipment of the vacuum sweeper.	Role: Waters the street in situations where sweeper collector's own dust control is not sufficient.
REMOVAL EFFICIENCY 0-15% of PM2,5/PM10 material	REMOVAL EFFICIENCY 80%-95% of PM2,5/PM10 material		REMOVAL EFFICIENCY Larger debris, gritting sand	

Fleet overall results



Fleet equipment investment (incremental)
= 405 000 eur - 700 000 eur



Fleet cleaning speed
= 1-3km/h






Energy-efficiency
= low, 5 heavy equipment units



Street cleaning performance
= high 80%- 95%+ of PM2,5 and PM10 material

Alternative solution:

Trombia street cleaning fleet & functions

Washing truck		Dump truck		Wheel loader + Trombia cleaning device
				
Investment 70 000 eur		Incremental Investment 0 eur(1)		Incremental investment 40 000 eur
Speed up to 10km/h		Speed up to 40 km/h		Speed 5-15 km/h
Role: Washes the remaining 5-10% of fine dust to waste water funnels		Role: Serves as a mobile disposal point for the sweeper collectors and vacuum sweepers.		Role: Serves as the heavy debris + fine dust sweeping unit.
REMOVAL EFFICIENCY 0-15% of PM2,5/PM10 material				REMOVAL EFFICIENCY Large debris + 95% of PM10 and PM2,5 material

Fleet overall results



Fleet equipment investment (incremental)
= 110 000 EUR



Fleet cleaning speed
= 5-10km/h



Energy-efficiency
= medium, 3 units in a fleet



Street cleaning performance
= high 95%+ of PM2,5 and PM10 material

1) Dump truck assumed to be in year-round use (not incremental to spring sweeping),

2) Wheel loaders assumed in year-round use (not incremental to spring sweeping)

3) Removal efficiency depending on the selected suction power of the street scrubber

4) Sources: EUnited PM10 Test 2018, City of Toronto 2015, Airuse 2016.