LIMBURG.NET
DA’S PROPER GEDAAN

INNOVATIEF
VERANTWOORDELIJK
STERKE PARTNER
LIMBURG.NET IN NUMBERS

910k inhabitants in 43 municipalities

70 collection teams a day
213 000 ton in 9 fractions

40 recycling parks
270 000 ton in 29 fractions
THE OPTIMO SYSTEM

Before

After

Scheidingsinstallatie
PRINCIPLE
EFFICIENCY in collection speed data

- Optimo 6 fractions
- Bin pay per kg (residual)
**KILOMETERS/YEAR**

- bins 3 fractions (2 w)
- optimo 6 fractions (2w)
- optimo 6 fractions (every w)

Red: km collection  
Green: km transport
TON CO$_2$/year

bins 3 fractions (2w)  |  optimo 6 fractions (2w)  |  optimo 6 fractions (every w)

0  |  500  |  1000  |  1500  |  2000  |  2500  |  3000  |  3500  |
COST

- Collection cost
- Sorting cost
- Processing cost

bins 3 fractions (2 w)

optimo 6 fractions (2w)
Loss of bags?
Improving the system

Scheidingsinstallatie
Several brainstorm sessions with all major constructors on the European market, process guidance by PIO and Verhaert

Conclusive report:

“Optimalisation and innovation are feasible, and bear opportunities for the entire sector”
LAUNCH R&D TENDER

- Information sessions for all constructors involved
- Explaining the set-up:
  - 2 phase: PoP and PoC
  - Multiple parties possible
- Determining evaluation criteria and commission (PIO, Limburg.net, Bionerga, university)
GENERAL OBJECTIVE

Higher load of intact bags

Factors:

- Maximal tearing percentage < 4% (<2% including bag improvement)
- Load 280 kg/m3
- Safety compliance to norms/regulation
- Ergonomy load height = 1 m
- Load speed min ± 3 ton/h
- Dimensions H < 3m85
  L < 10m50
  W < 2m55

AND
No dependency on operators!
**PHASED APPROACH**

**January ’19**
- Conceive solutions

**“proof of principle”**
- Develop, simulate, compare, experiment...
- 2 parties: VDK and VDL

**End ’19**
- Prototyping & validation

**“proof of concept”**
- 1. Building prototypes
- 2. Validate in the everyday practice with Limburg.net
- 2 parties: VDK and VDL

**End ’20**
SET-UP: PRE-COMMERCIAL PURCHASE

Flanders
Max 250k

Limburg.net
Max 250k

Constructors
150k each
**VDL SIDE LOADER**

**Conceptual**

- Good results in stationary compaction block test
- Top loading: better than grabbing the waste with standard rear loader?
- Possibility to change containers

**Criteria**

**Intact bags**

- Only reasonable results below 4 tons

**Load volume**

- Possible efficiency gain by interchangeable containers
- But mitigated by tearing of bags over 4 tons loading weight

**Cost**

- + 50% extra capital investment
- Higher operational costs?

**Load speed**

- About 20% slower
VDL SIDE LOADER

Conceptual

- How to avoid cutting the bags with compaction plate by operators?
- More sensoring and setting up of fail-safes
- Enable compaction cycles while driving
- Enable automated compaction cycles with 3D fill grade cameras

Criteria

Intact bags
- Good results, comparable to reference
- Possible improvements on the table

Load volume
- $25m^3 \rightarrow 28m^3$

Cost
- Comparable to standard truck
- Efficiency gains by loading speed

Load speed
- Significantly faster than reference
Validation
**EVALUATION**

**Side loader**
- “sufficient”, but no further action

**Read loader**
- “sufficient”, but possibly succesful after new iterations on sensing
- 3D-camera and light screen (to enable compaction cycles while moving) technological innovations for the entire waste sector
SET-UP: INTELLECTUAL PROPERTY

1. No obligation to purchase a certain amount

2. Intellectual property for involved constructors, but “right of use” on new knowledge

3. Constructor has to market the technology at a fair price, if not there is cause for a “call-back” of this technology
COMMUNICATION ON THE RESULTS OF THE PROJECT

Information sessions in 2021:

• For the constructor market: preceding the tendering of Optimo collection trucks

• Private collection companies: preceding the tendering of Optimo collection contracts

“High level” information, no technical details
TENDER FOR TRUCKS
Limburg.net

New fleet:
• 16 rear loader (3 axles, 28m$^3$)
• 1 rear loader (2 axles, 21m$^3$)
ITERATIONS

VDK
- sensor on load edge (fail-safe)
- software update
- New IR-camera

Terberg
- tests with “HCT”
- suggestions
PARTICIPANTS

- VDK Mol cy
- Terberg Rosroca
- Geesink Norba
RESULT

Limburg.net
• 9x VDK Optimo truck
• 8x Terberg Optimo truck

1x BEV Optimo truck currently in tender (2024)
PRIVATE COLLECTORS

Renewi:
• 25x VDK Optimo truck

Veolia:
• 2x VDK Optimo truck

Inroads to monostream collection:
• 28m³ for plastics collection
• Light screen (collection speed ↑ ↑)