

Gains résultant de l'implantation d'un système de suivi des odeurs et de leurs impacts hors site Étude de cas compostage

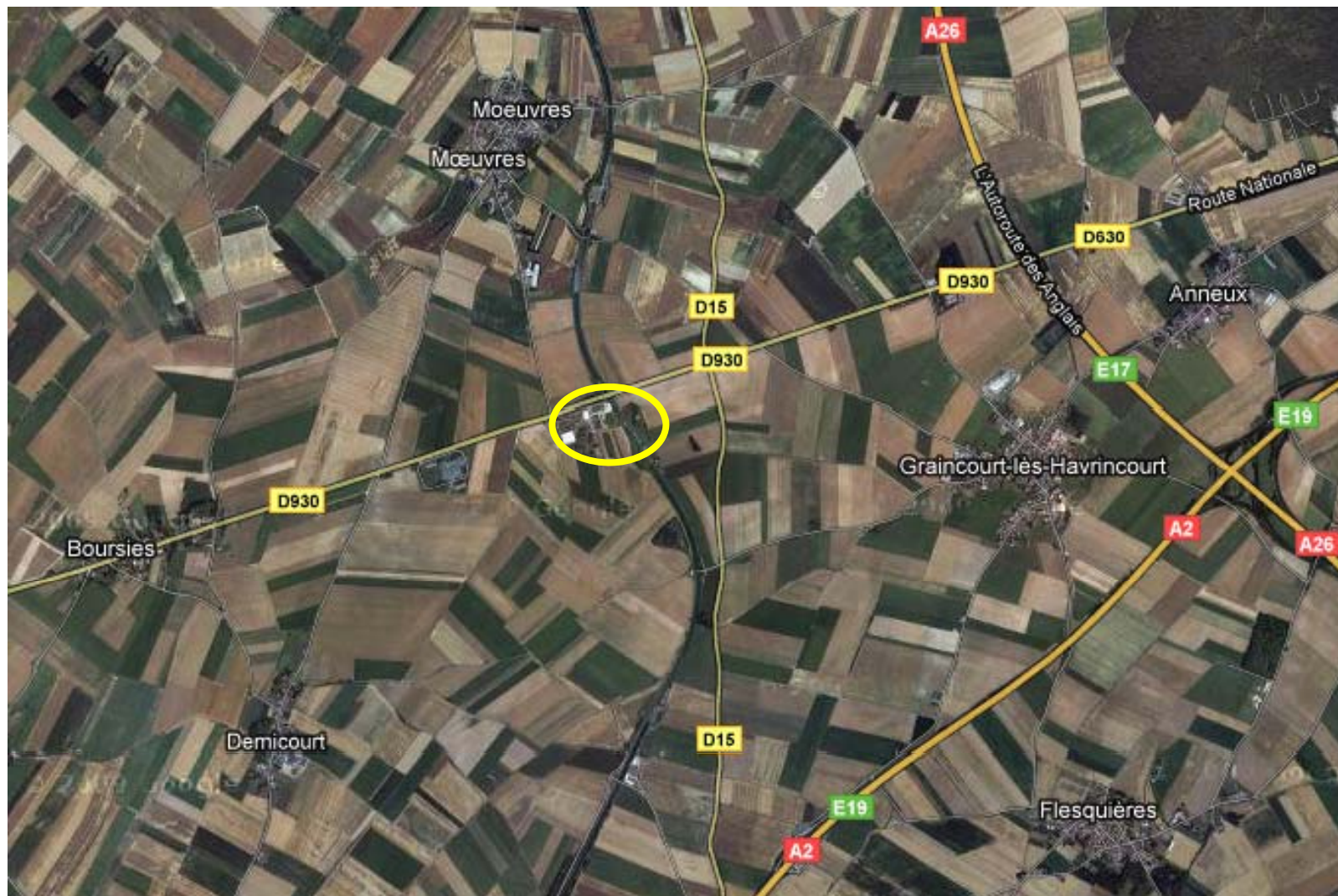
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Odotech: The Company

- *Provide the best available solutions to measure, analyze and solve odour problems*
- Since 1998
- European headquarter in Lyon
- 35 high-tech specialists
 - Engineers
 - Researchers
- Worldwide consumer base
- World leader in real-time odour monitoring solutions



A Typical Situation



The Issue

- Repeated complaints from neighbours
- Relationship with elected officials and regulatory agencies degrading
 - 2 counties
 - 5 villages
- Facing a requirement to cover all operations
- Facing potential permit loss
- Imposed a limit of 5 u.o./m³ 98 % of the time at receptors
- Action plan required (with priorities)

The site

- Created in 1998
- Treats 50 000 tons of WwTW sludge and 70 000 tons of Green Waste per year
 - Once the biggest composting site in France
- Totally open-air
- Processes:
 - Sludge composting: ventilated windrow composting
 - Green Waste composting: static pile

The Processes

- Green Waste composting



The Processes

- Green Waste composting



The Processes

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The Processes

- Green Waste composting



The Processes

- Sludge composting: Sludge arrival and mixing



The Processes

- Sludge composting: Fermentation 3 weeks (ventilation)



The Processes

- Sludge composting: Fermentation 3 weeks (ventilation)



The Processes

- Sludge composting: Screening



The Processes

- Sludge composting: Maturation



The Processes

- Sludge composting: mature Compost Stockpiling



Odour Sources

- Elements of the processes



Odour Sources

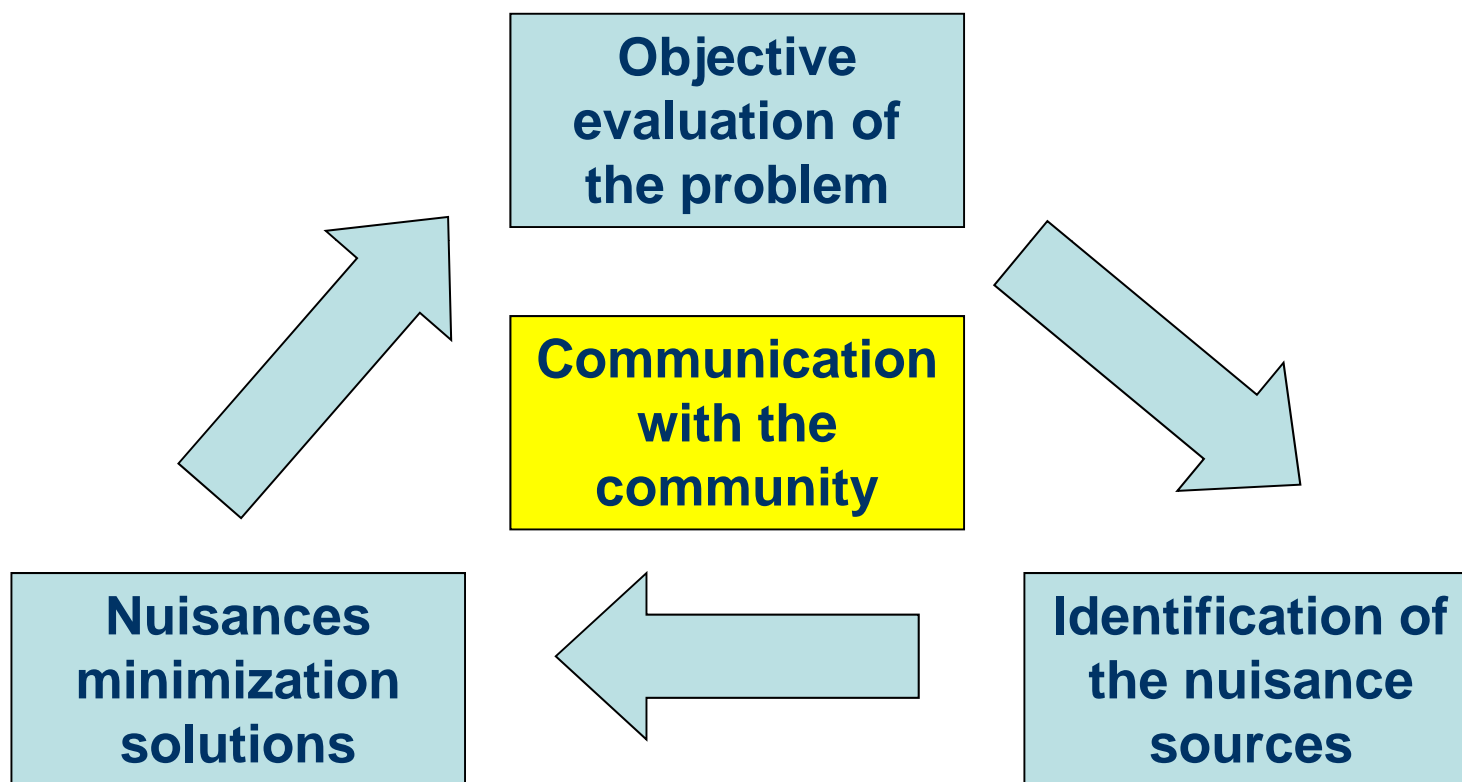
- Leachate Tanks



Proposed Action Plan

1. Installation of a real-time odour monitoring system
2. Diagnosis of the situation
3. Identification of possible solutions
 1. Operations
 2. Technologies
4. Implantation of the solutions adopted
5. Monitoring and continuous improvement
6. Evaluation of the improvement

Odour Management Plan



Constraints

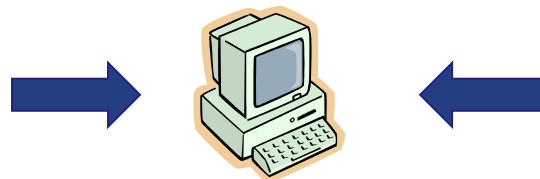
- Minimize investments
- Minimize footprint
 - Gain space, production increase possibility
- Minimize energy/consumables costs
- Find solutions that can be reproduced elsewhere

- Ensure that regulatory agencies and elected officials accept the plan

Odour Monitoring system



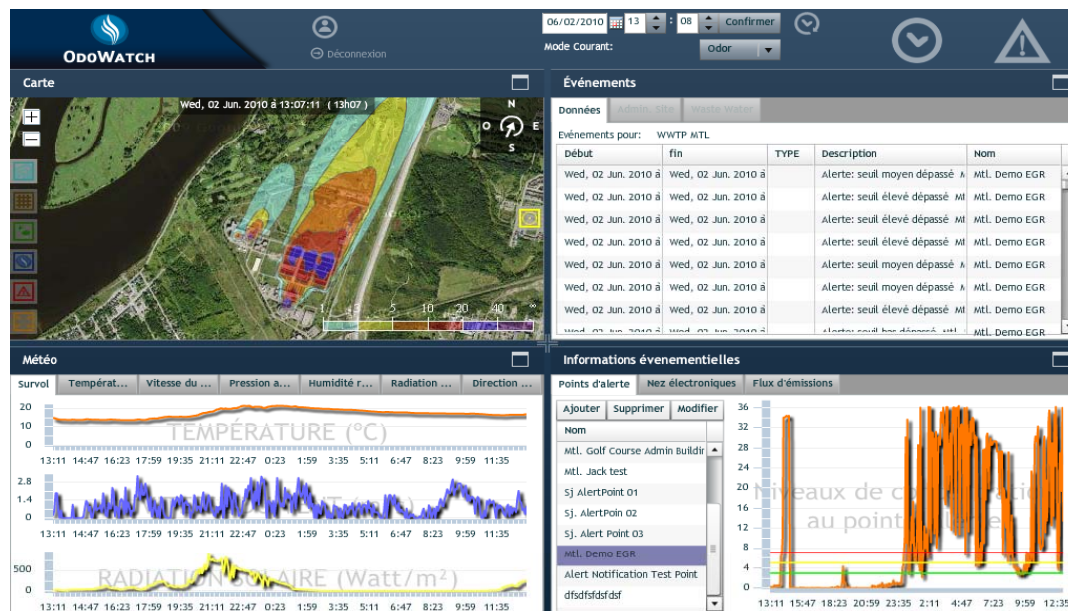
E-Nose)



Centre de commande

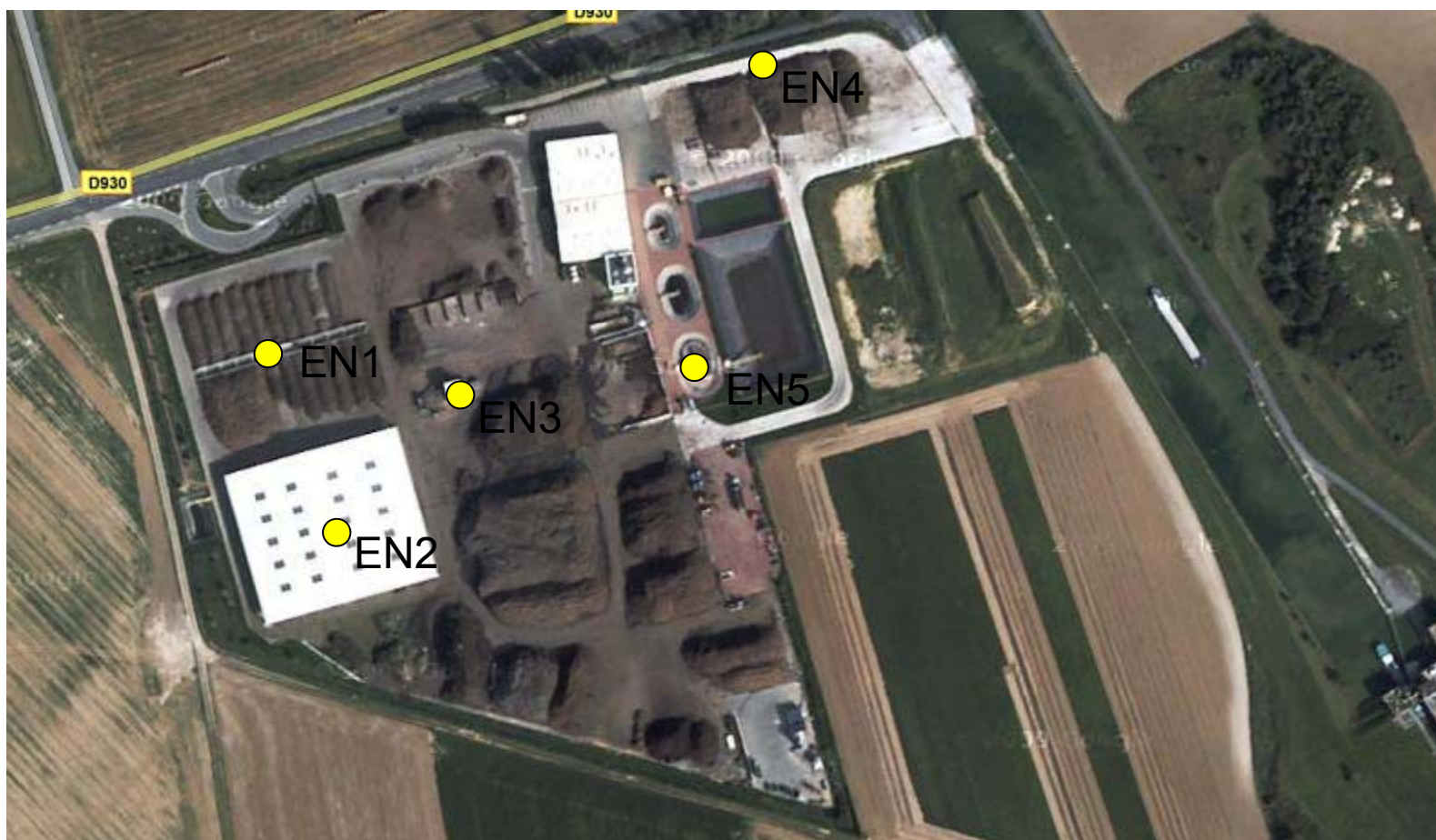


Weather station



Management Software

E-Nose positionning

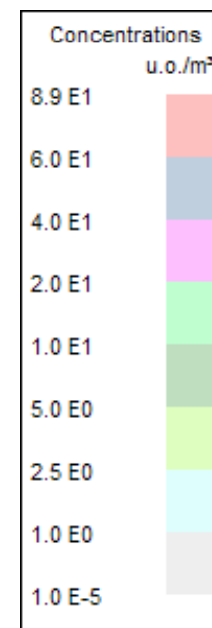
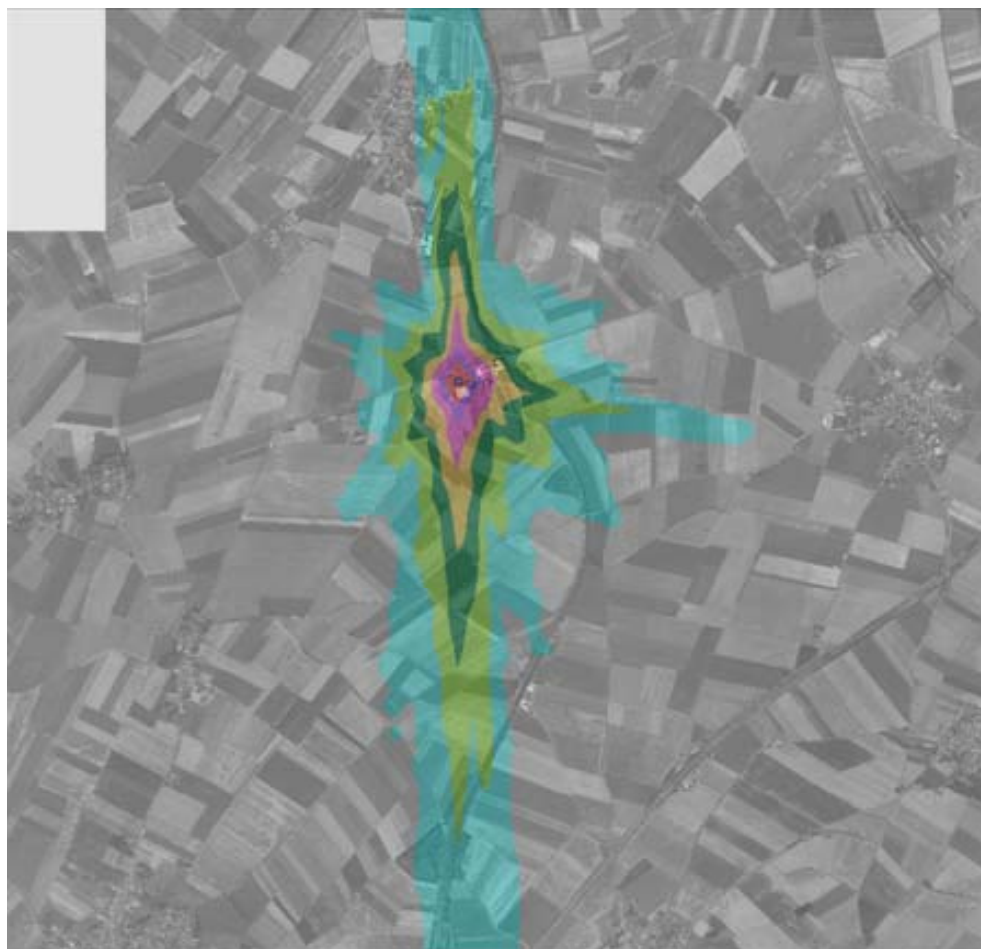


First results

	Odour Conc. [u.o./m ³]	EN 1	EN 2	EN 3	EN 4	EN 5
First Year	Minimum	83	10	10	10	10
	Average	918	269	183	154	770
	Maximum	1444	736	5039	300	3047

First results

- Percentile 98



First Results

Rank	Sources	Percentage of total emissions
1	Ferm. I	87%
2	Maturation	7%
3	Ferm. II	3%
4	Tanks	1%
5	Green Waste	1%
6	Screening	<input type="checkbox"/> 1%
7	Mixing	<input type="checkbox"/> 1%
8	Stockpiling	<input type="checkbox"/> 1%

Possible Solutions

- Ferm I:
 - Complete covering (building) with deodorization process
 - Gore-tex covering of the windrow
 - Mature compost covering of the windrow
 - Neutralizing/masking products
 - Reduction/modification of the ventilation
- Screening and mixing
 - Use of the odour monitoring system to determine best operation moments

Possible Solutions

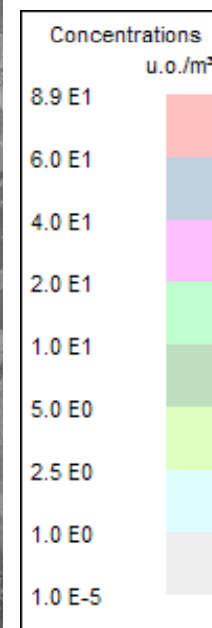
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- 6 months of trial and error, and tuning...

After 2 years

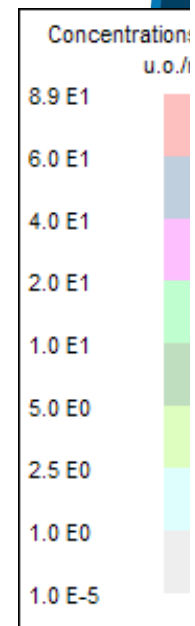
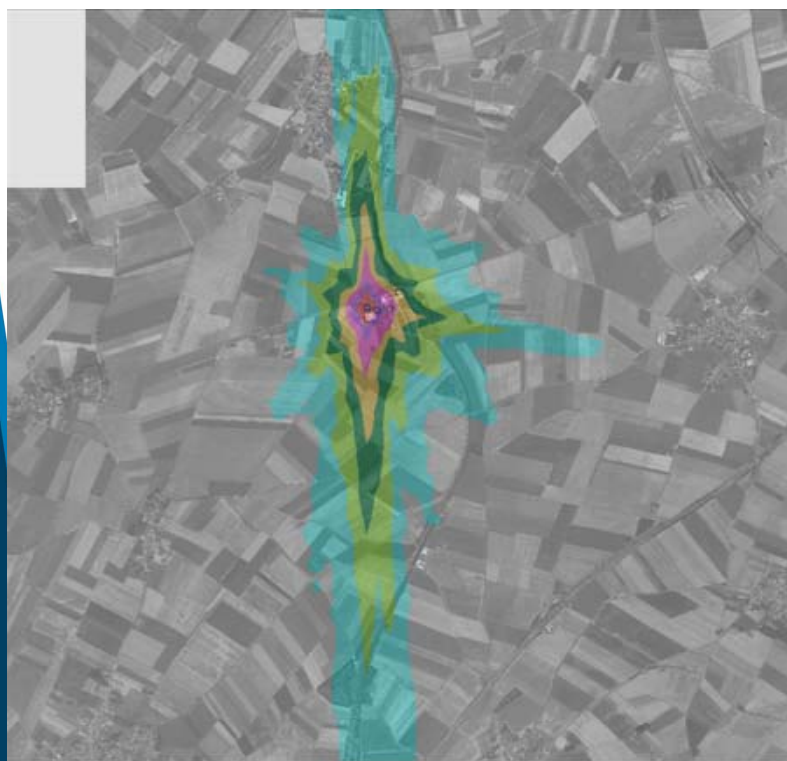
	Odour Conc. [u.o./m ³]	EN 1	EN 2	EN 3	EN 4	EN 5
2007	Minimum	83	10	10	10	10
	Average	918	269	183	154	770
	Maximum	1444	736	5039	285	3047
2008	Minimum	51	84	10	10	16
	Average	815	634	147	156	605
	Maximum	1175	745	426	317	611
2009	Minimum	10	10	10	10	10
	Average	306	370	65	22	372
	Maximum	1178	1439	246	66	633

First results

- Percentile 98



After 2 years



- ↓ nuisances by 40 %
- ↓ complaints (6/12 mois)

ROI

- No covering solution
 - Investment : environ 8 m€
 - Saved capital cost (rate: 5 %) : **400 K€ / year**
- Increase of the production capacity
 - New revenues : 30 € * 10 000 tons = **300 K€ / year**
 - Investment : roughly 500 K€
 - Saved capital cost (rate: 5 %) : **25 K€ / year**
- Decreased energy expenses
 - Expenses saved : **7 k€ / year**
- Stakeholders management
 - Human ressources: **6 k€ / year**

GAIN NET : 738 K€ / an

Odour Management Plan

- Added Value:
 - Improved relationship with stakeholders
 - Reduced complaints
 - Reduced risk of shutdown or scale-back of activities
 - Improved corporate image
 - Capital
 - Optimized production
 - Increased production capacity (with existing infrastructures)
 - Minimized abatement costs

Conclusion

- Taking time to understand the problem is the key to find the best solutions
- Often the best solutions may be hidden in the process itself
- Using real-time odour monitoring (or odour survey or diagnosis) is part of the solution
- The concept has been reproduced on 6 other composting sites owned by the company