EVALUATION OF A PRACTICAL AND EFFICIENT METHOD FOR DETERMINING ALTERNATIVE TIME-TEMPERATURE REGIMES FOR EFFECTIVE SANITATION IN DIGESTION TREATMENT PLANTS

Anaerobic digestion plants that treat cat. 3 (and/or manure) have to comply with the European regulations: EU (No) 1069/2009 and EU (No) 142/2011.

70°C , 1 hour particle size <12mm, or a process validation (*Prozessprüfung*).

The Netherlands: protocol (NTA8777:2011) to measure reductions of *Enterococcus faecalis* during exposure in reactors in a suitable test body,

More options available (input-output, other)

Results of 13 studies are presented (anonymously)

We are certified inspection body, methods are low cost, European patents

Elsinga
policyplanning and innovation

INSPECTIE
RvA I 245

ing.Willem Elsinga MBA www.policyplanning.eu
w.elsinga@policyplanning.eu T +31(0)341 564 112
M +31(0)6 1539 7696 F +31(0)341 564 116

Impression of preparations



DAkkS

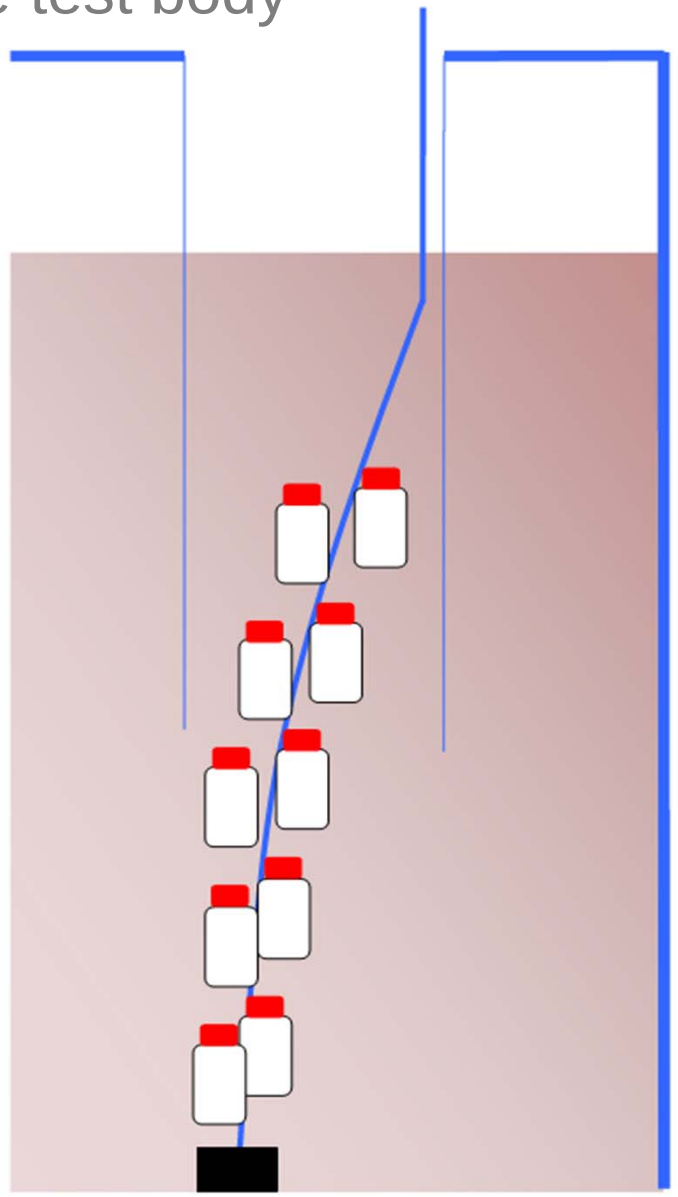
BELAC

Other EU members

Elsinga
policyplanning and innovation

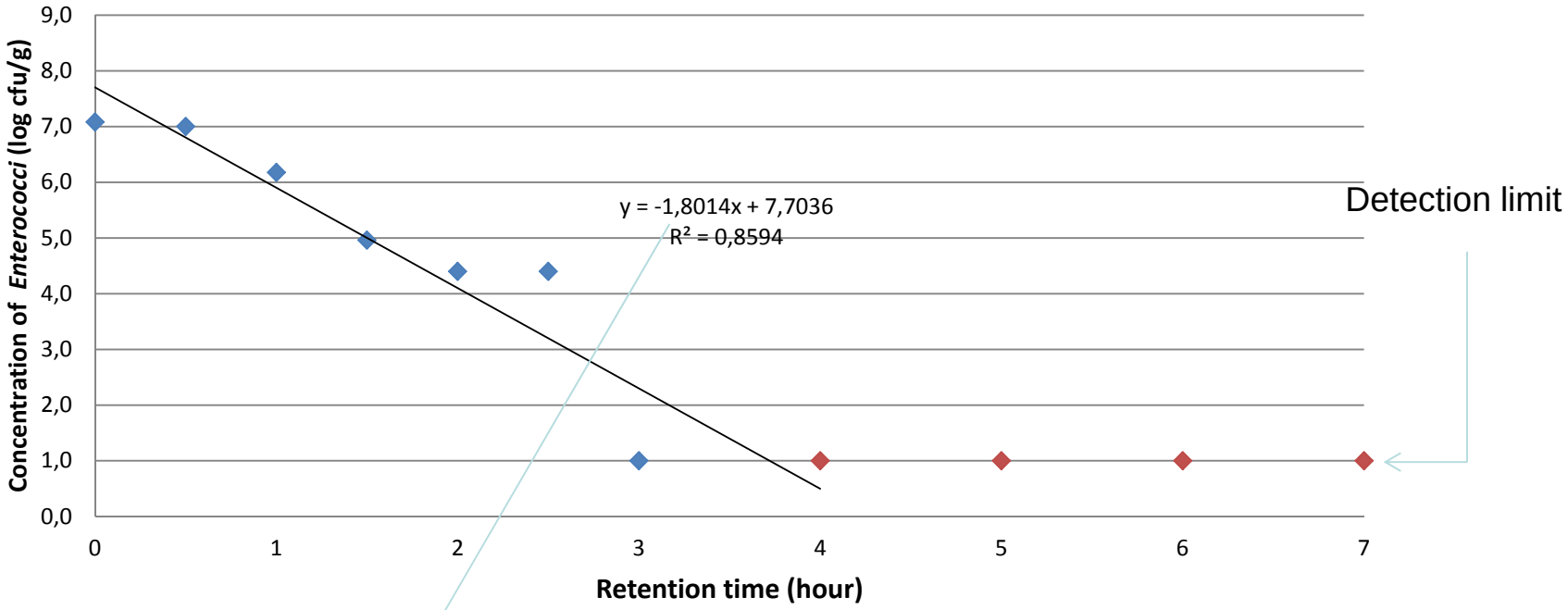
INSPECTIE RvA | 245

Impression of Enterococcus faecalis exposure in reactors in a suitable test body



Elsinga
policyplanning and innovation

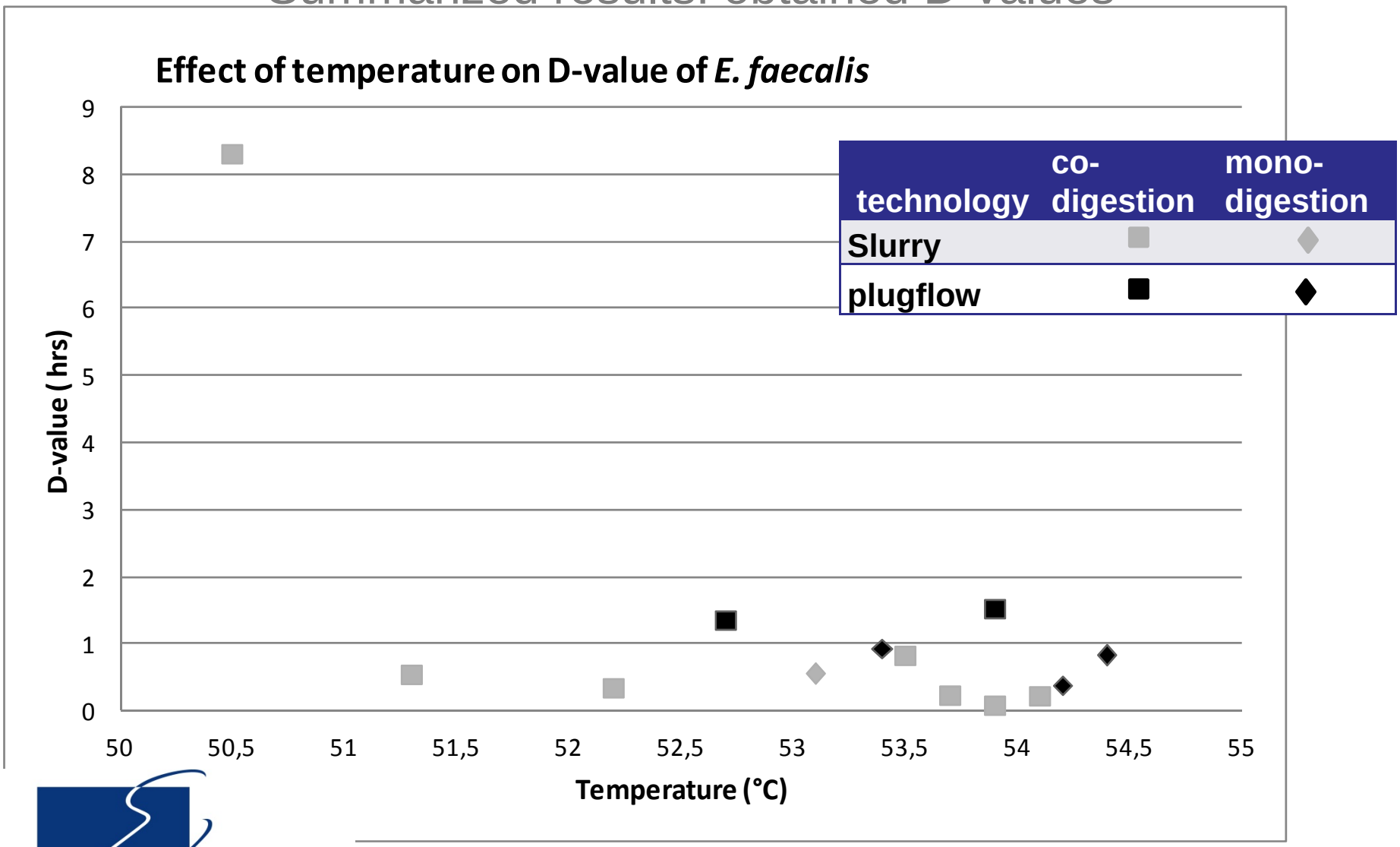
Results of a study: example calculation D-value



- D-value = (1 / 1,8014) =0,55 hrs = 33 minutes
- So we need 33 minutes to lower the concentration *Enterococcaceae* with 1 log-unit. Based on the D-value we can calculate that we need for a 5log10 reduction a Guaranteed Minimal Retention Time:
- GMRT: 5 x 0,55 = 2,75 hrs = 2 hrs and 45 minutes

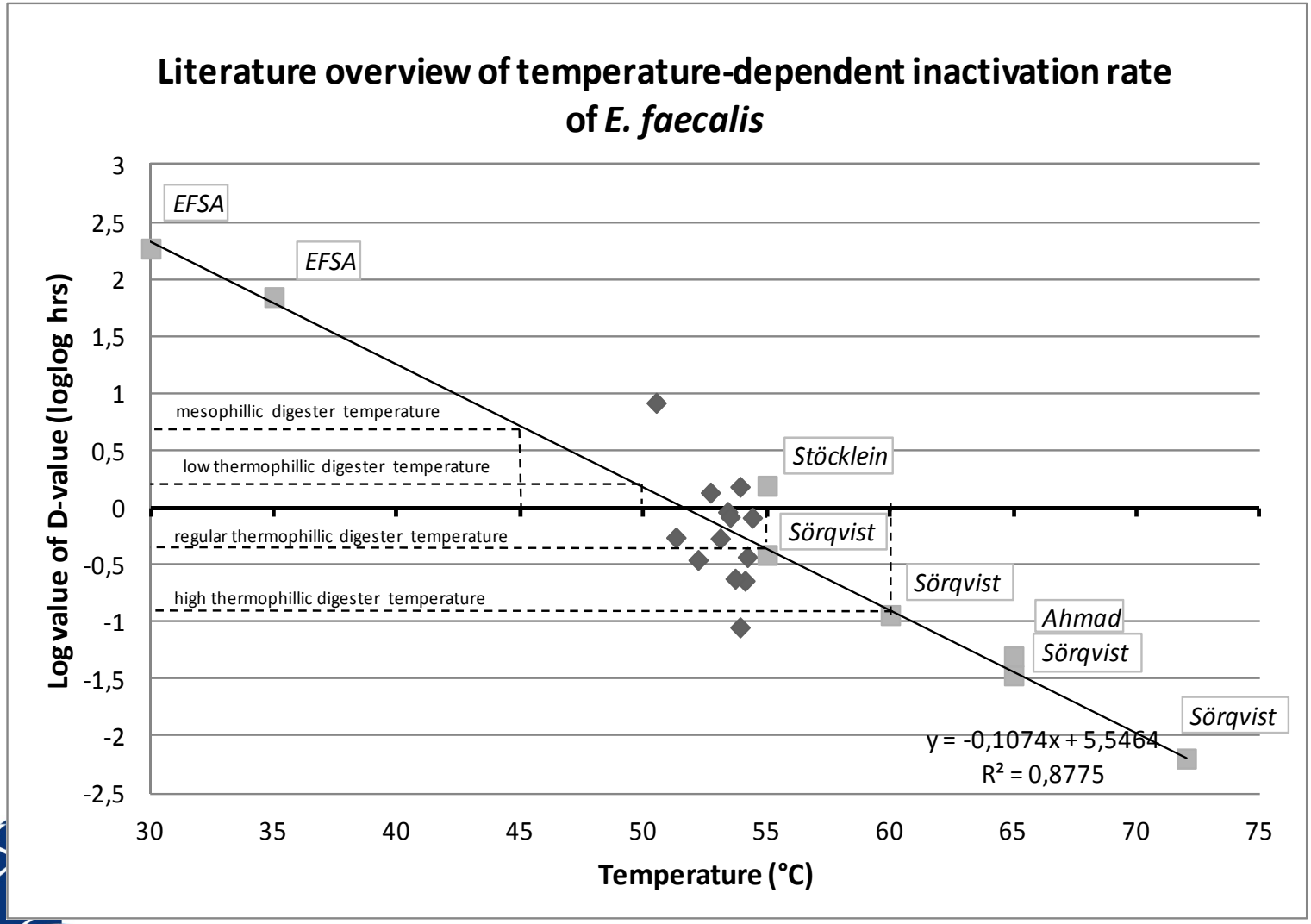
Elsinga
policyplanning and innovation

Summarized results: obtained D-values



Elsinga
policyplanning and innovation

Our results (♦) compared to literature (■)



Elsinga
policyplanning and innovation

Table with indicated relation between temperature, D-value and Minimal Guaranteed Retention Time (MGRT)

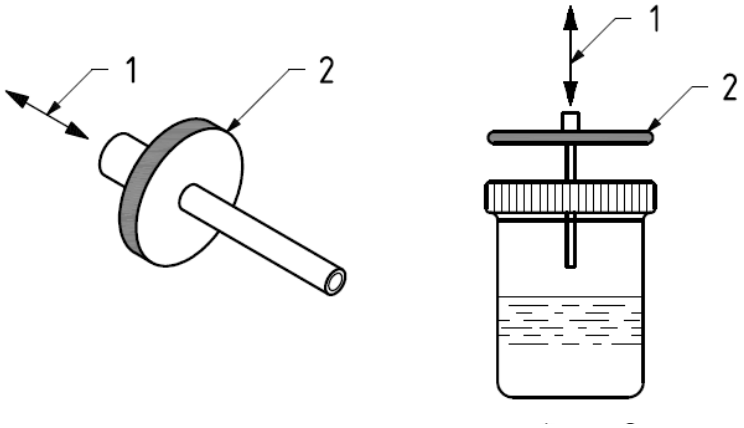
Temperature	log D-value	D-value	MGRT
(°C)	(log hr)	(hr)	(hr)
45	0,7	5,0	25,1
50	0,2	1,6	7,9
55	-0,3	0,5	2,5
60	-0,9	0,1	0,6

Elsinga
policyplanning and innovation

Process validation: procedure for composting NTA 8777

1. Inocculation composting material with culture *E. faecalis* (ATCC 29212)

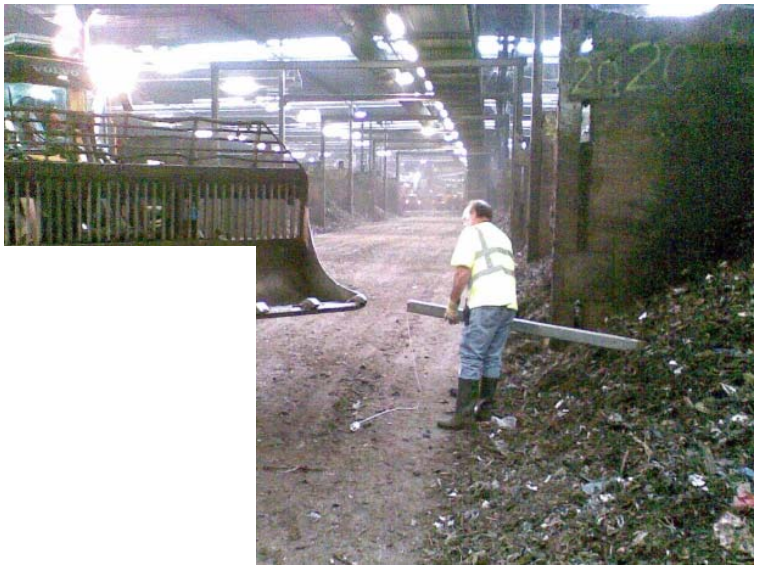
2. Pots with filter (0,2µm)

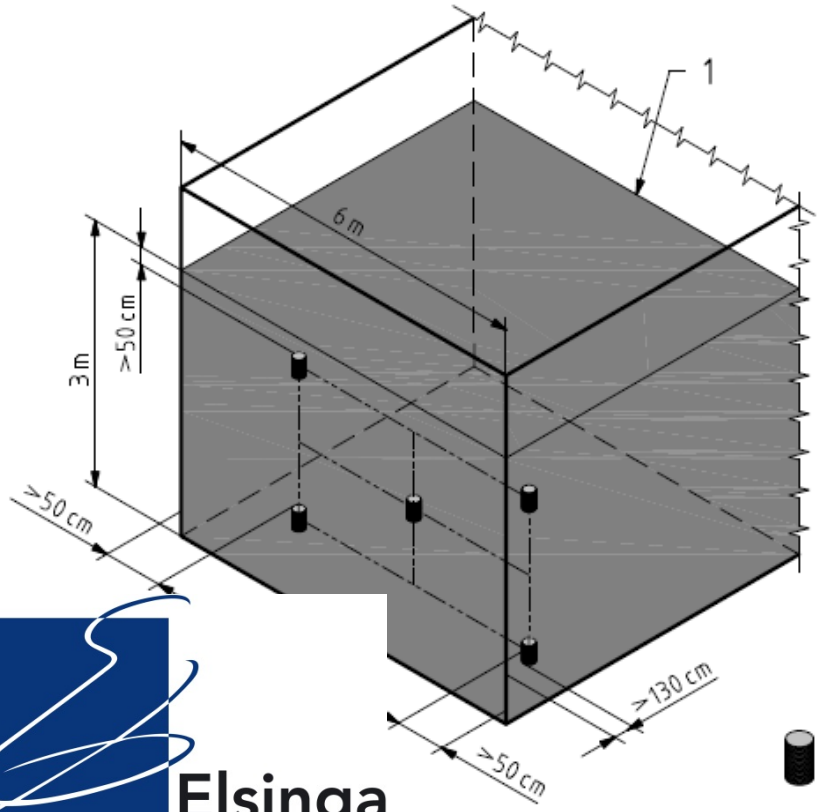


Elsinga
policyplanning and innovation

Process validation: procedure for composting NTA 8777

3. Placing pots in the process





Elsinga
policyplanning and innovation

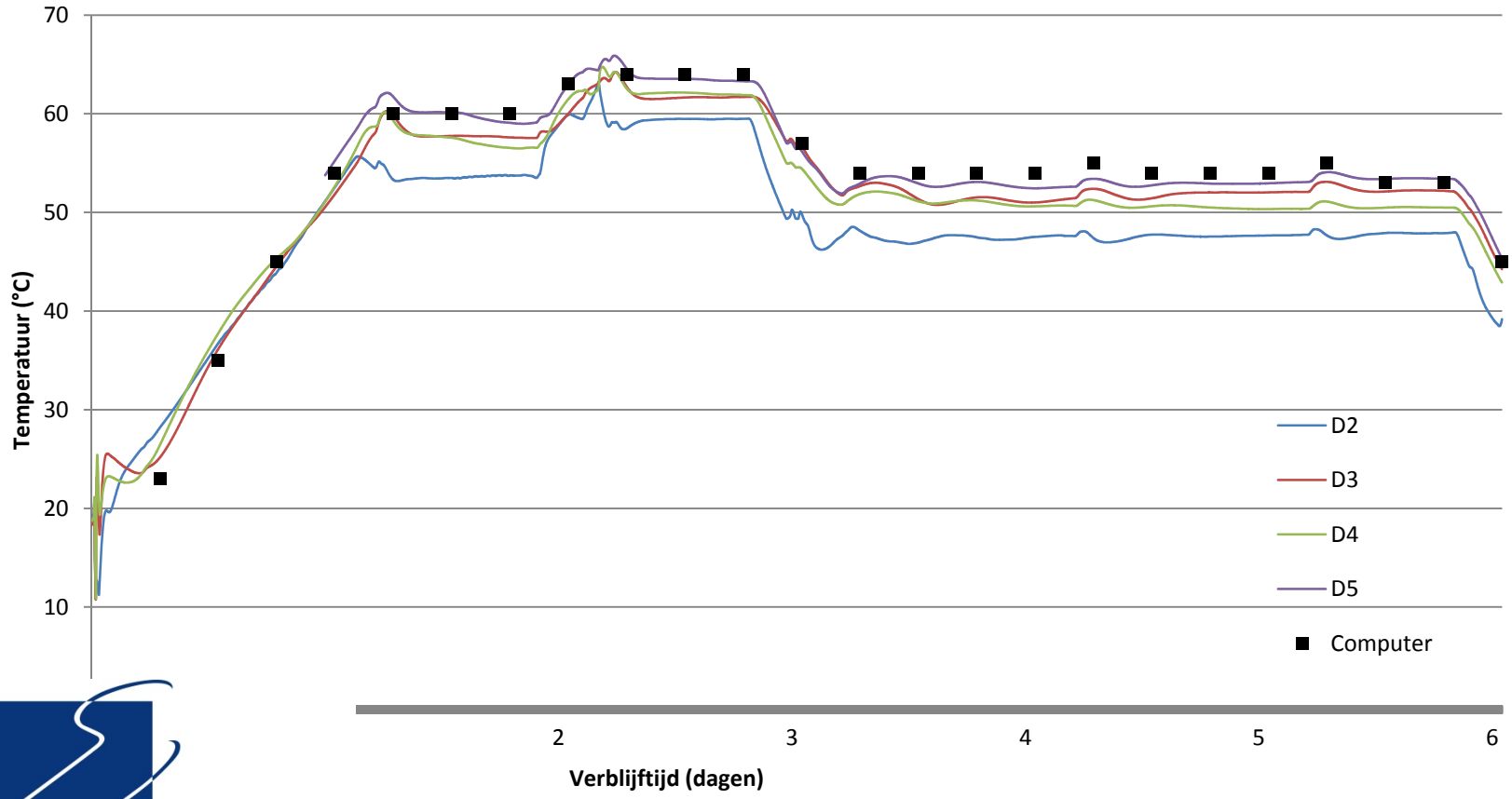
Process validation: procedure for composting NTA 8777

4. Results: microbiological analyses

Tabel 1:					
Pot nr	time T=0 tunnel	time Tunnel out	time exposure	Enterococc Cfu/gr	Enterococc Cfu/gr
1A				41.000.000	7,61
2A				46.000.000	7,66
3A				31.000.000	7,49
4A				32.000.000	7,51
5A				49.000.000	7,69
Median reference pots				41.000.000	7,61
1	17-8-2012, 6:30	23-8-2012, 6:30	6 d	<1	<0
2	17-8-2012, 6:30	23-8-2012, 6:30	6 d	<1	<0
3	17-8-2012, 6:30	23-8-2012, 6:30	6 d	<1	<0
4	17-8-2012, 6:30	23-8-2012, 6:30	6 d	<1	<0
5	17-8-2012, 6:30	23-8-2012, 6:30	6 d	<1	<0
Median pots after exposure				<1	<0
Demonstrated reduction (log units):					>7,61

Process validation: procedure for composting NTA 8777

Results: temperature sensors in pots compared with process computer data



Elsinga
policyplanning and innovation

Process validation: input-output

Published 30 January 2013

Journal of Environmental Management

Volume 115, 30 January 2013, Pages 198–205

Spot test analysis of microbial contents during composting of kitchen- and garden biowaste: Sampling procedures, bacterial reductions, time–temperature relationships, and their relevance for EU-regulations concerning animal by-products

P.B. Bijlsma, D.H. de Wit, J.W. Duindam, G.J. Elsinga, W. Elsinga

Elsinga Policy Planning and Innovation Ltd., Horsterweg 127, 3853 JA Ermelo, The Netherlands

Abstract

This study was aimed to collect data and develop methodologies to determine if and how Dutch biowaste composting plants can meet the microbiological requirements set out in EU-Regulations (EC) 1774/2002 and (EC) 1069/2009, and to provide the European Food and Safety Authority (EFSA) with data and analysis for evaluation of these regulations. We examined twenty plant

Elsinga
policyplanning and innovation

EVALUATION OF A PRACTICAL AND EFFICIENT METHOD FOR DETERMINING ALTERNATIVE TIME-TEMPERATURE REGIMES FOR EFFECTIVE SANITATION IN DIGESTION TREATMENT PLANTS

Anaerobic digestion plants that treat cat. 3 (and/or manure) have to comply with the European regulations: EU (No) 1069/2009 and EU (No) 142/2011.

70°C , 1 hour particle size <12mm, or a process validation (*Prozessprüfung*).

The protocol (NTA8777:2011) gives reliable and reproducible results,
we have more validation options available (published JEM January 2013)

We are a European wide certified inspection body, methods are low cost, producers of equipment can offer the process validation of their systems in a joint offer. We can also validate existing or new digestion/composting/drying

Elsinga
policyplanning and innovation

INSPECTIE
RvA I 245

ing.Willem Elsinga MBA www.policyplanning.eu
w.elsinga@policyplanning.eu T +31(0)341 564 112
M +31(0)6 1539 7696 F +31(0)341 564 116