

## **Eduard N.J. van Ouwerkerk**

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### EDUCATION

B.S. of Built Environment, University of Applied Sciences Utrecht, The Netherlands,  
1971

### PROFESSIONAL EXPERIENCE

Assistant Scientist, Department of Agricultural and Biosystems Engineering, Iowa State University, Ames, IA, USA, 2002 – present

- Developed a web-based and database-driven simulation model on integrated farm management and biomass planning

Researcher and senior researcher, Institute of Agricultural and Environmental Engineering IMAG, Wageningen University and Research Centre, Wageningen, The Netherlands, January 1975 - September 2002

- Developed a simulation model on livestock and aquaculture farm energy, aerial emissions, and indoor climate evaluations
- Developed a simulation model on the heat and gaseous exchanges of swine
- Developed a simulation model of liquid and solid manure excretion and gaseous emissions of swine
- Developed a simulation model of gaseous exchanges of laboratory mice
- Developed a web-based budget model of dairy farm energy requirement
- Contributed as a researcher on the development of several experimental building designs and structures for livestock housing and potato storage, holding several patents
- Edited an international report on Aerial Environment in Animal Housing
- Edited a national report on ammonia emission measurement methods
- Organized a national conference on ammonia emission measurement techniques

Assistant researcher, Institute of Agricultural Buildings ILB, Wageningen, The Netherlands, August 1971 - December 1974

- Contributed as a structural engineer on the development of several experimental farm structures as floors, frames, foundations, silos, and product storages

### PROFESSIONAL AFFILIATIONS

Netherlands Society of Technology in Agriculture, NVTL, *member*

European Society of Agricultural Engineers, EurAgEng, *member*

International Commission of Agricultural Engineering, CIGR, *member*

American Society of Agricultural Engineers, ASAE, *member*

## PUBLICATIONS

Burkart, M., D. James, M. Liebman and **E. van Ouwerkerk**, 2006. Integrating principles of nitrogen dynamics in a method to estimate leachable nitrogen under agricultural systems. *Water Science & Technology*. Vol 53 No 2, pp 289-301. IWA Publishing.

Ketelaar-de Lauwere, C.C., A.H. Ipema, **E.N.J. van Ouwerkerk**, M.M.W.B. Hendriks, J.H.M. Metz, J.P.T.M. Noordhuizen & W.G.P. Schouten, 1999. Voluntary automatic milking in combination with grazing of dairy cows. Milking frequency and effects on behaviour. *Applied Animal Behaviour Science* 64:2, 91-109.

Aarnink, A.J.A., **E.N.J. van Ouwerkerk** & M.W.A. Verstegen, 1992. A mathematical model for estimating the amount and composition of slurry from fattening pigs. *Livestock Production Science* 31: 133-147

Machado, A.F. & **E.N.J. van Ouwerkerk**, 1989. Cooling fattening pigs with showers. In: Dodd & Grace (eds.), *Agricultural Engineering, Vol 2, Agricultural Buildings*, Balkema, Rotterdam, p. 1121-1123.

**van Ouwerkerk, E.N.J.** & J.A.M. Voermans, 1985. The effect of insulating broiler house floors on odour emission. In: V.C. Nielsen, J.H. Voorburg & P. l'Hermite (eds.), *Odour prevention and control of organic sludge and livestock farming*, Elseviers Applied Science Publishers, p. 175-180.

**Ouwerkerk, E.N.J. van**, 1977. Aluminium für landwirtschaftliche Betriebsgebäude in den Niederlanden (in German). *Aluminium* 53. Jahrg. 1977 . 7.

## PROCEEDINGS PAPERS, PRESENTATIONS, AND POSTERS

**van Ouwerkerk, E.N.J. van**, R.P Anex, and T.L. Richard, 2007. *Web based and Database Driven Biomass Planning Tool*. On: Farming Systems Design 2007, Int. Symposium on Methodologies on Integrated Analysis on Farm Production Systems, M. Donatelli, J. Hatfield, A. Rizzoli Eds., Catania (Italy), 10-12 September 2007, book 2 - Field-farm scale design and improvement, pag. 53-54.

**van Ouwerkerk, E.N.J. van**, T.L. Richard and R.P Anex, 2007. *Web based and Database Driven Support Tool for Integrated Farming*. On: Farming Systems Design 2007, Int. Symposium on Methodologies on Integrated Analysis on Farm Production Systems, M. Donatelli, J. Hatfield, A. Rizzoli Eds., Catania (Italy), 10-12 September 2007, book 1 - Farm-regional scale design and improvement, pag. 171-172.

**van Ouwerkerk, E.N.J. van**, 2007. *Breeze demonstration and presentation on biomass harvest features in I-FARM* for FSA/NRCS and Extension in Northern Iowa (Palo Alto County). January 4.

**van Ouwerkerk, E.N.J.**, T.L. Richard, and R.P. Anex, 2006. *I-FARM: A Web-based Model for Quantifying Farm and Regional Scale Impacts of Bio-refinery Feedstock Supply*. Soil Water Conservation Society Workshop "Managing Agricultural Landscapes", Kansas City, October 13.

Baali, E.H. and **E. van Ouwerkerk**, 2005. *Energy balance of wheat production in Morocco*. Tropentag 2005, Stuttgart-Hohenheim, Germany, October 11-13.

**van Ouwerkerk, E.**, T. Richard, and R. Anex, 2005. *I-FARM web based integrated farming and biomass planning and decision support tool*. ASAE Annual International Meeting 2005, session 301 on Modeling of Farm Systems, Tampa, Flo., July 17-20.

**van Ouwerkerk, E.**, T. Richard, R. Anex & A. Kang, 2005. *I-FARM database driven web application*. ASAE Annual International Meeting 2005, session 310 on Software Design for Agricultural and Biological Systems, Tampa, Flo., July 17-20.

**van Ouwerkerk, E.**, R. Anex, T. Richard, K. Shinnors, and S. Birrell, 2005. *I-FARM web based biomass planning and decision support tool for farmers and decision-makers*. Special Technical Session on 'Modeling tools for Biomass Supply Analysis and Optimization', Agricultural Equipment Technology Conference (AETC), American Society of Agricultural Engineers (ASAE), Louisville, KY, February 13-15.

**van Ouwerkerk, Ed**, Matt Liebman, Tom Richard, Gary May, Isabel Gutierrez-Montes & Dave James, 2004. *Farm and County Scale Scenarios for Sustainable Agriculture in Western Iowa*. Paper 043041, 2004 ASAE International Meeting, Ottawa, 10 pp.

**van Ouwerkerk, Ed**, 2004. *I-FARM, web-based and database-driven model on integration of crop and livestock production*. Lecture held at the 2004 Annual Meeting of the Soil and Water Conservation Society, 25-27 July 2004, St. Paul, MN.

**van Ouwerkerk, Eduard N.J.**, David E. James, Tom L. Richard, & Matt Liebman, 2003. *A multi-model approach for sustainable agriculture in the US corn belt*. Paper 033009, 2003 ASAE Annual International Meeting, Las Vegas, 12 pp.

**van Ouwerkerk, Ed**, 2001. *Heat balances of recirculation systems*. Lecture held at EUROLAbCourse 'Design and Operation of Recirculation Systems (Aqualabs 4)', Wageningen University, Fish Culture & Fisheries Group, Wagenigen, The Netherlands, 7 December 2001.

**van Ouwerkerk, Ed**, 2000. *Energy balances in aquaculture recirculation systems as a tool for building design*. Lecture held on Aqua 2000 Conference, Nice, France.

**van Ouwerkerk, E.N.J.**, J.P. Voskamp & Y. Aliskan, 1994. *Climate simulation and validation for an aviary system for laying hens*. Report N 94-C-063, AgENG, Milan, Italy, 18 pp.

**van Ouwerkerk, E.N.J.** & S. Pedersen, 1994. *Application of the carbon dioxide mass balance method to evaluate ventilation rates in livestock buildings*. CIGR XII World Congress on Agricultural Engineering, Milan, Italy, August 29 - September 1, Proceedings, p. 516-529.

Aarnink, A.J.A. & **E.N.J. van Ouwerkerk**. 1990. *A mathematical model to estimate volume and composition of slurry from fattening pigs (MESPRO)*. Paper 16th International Conference of CIGR section IV, Budapest, Hungary, proceedings, p. 48-59

**van Ouwerkerk, E.N.J.** & A.J.A. Aarnink, 1990. *A critical summer temperature for pigs' behaviour*. Paper 16th Int. Conf. CIGR section IV, Budapest, Hungary, p. 17.

**van Ouwerkerk, E.N.J.**, 1988. *Modeling the heat balance of pigs at animal and housing levels*. Paper 88.012 AgEng '88, Paris, France, 11 pp.

Swierstra, D. & **E.N.J. van Ouwerkerk**, 1985. *A model estimating the effectiveness of shade structures on the production of dairy cows in hot climates*. Paper for the Seminar of the 2nd Technical Section of the CIGR on Agricultural Buildings in hot climate countries, Catania, Italy, 12 pp.

## REPORTS

**van Ouwerkerk, E.N.J.**, 1999. *ANIPRO climate and energy simulation software for livestock buildings (in Dutch)*. IMAG-DLO Note V 99-109, Wageningen, The Netherlands, 87 pp.

**van Ouwerkerk, E.**, A. Schomaker, A. van der Hem, A. van der Knijff & H. Oosterdijk, 1999. *Implementation of Renewable Energy Sources in the Agricultural Industry of Ukraine (PSO98/UK/4/3)*. Inception Report SENTER, Haskoning/IMAG-DLO, Nijmegen/Wageningen, The Netherlands, 41 pp.

**van Ouwerkerk, E.N.J.** & J.P. Voskamp, 1996. *Climate control*. In: H.J. Blokhuis & J.H.M. Metz (eds.), *Aviary housing for laying hens*, IMAG-DLO report 95-31, Wageningen, p. 140-153.

**van Ouwerkerk, E.N.J.**, 1996. *User manual for computer program STALKL; climate and energy balance of livestock buildings (in Dutch)*. IMAG-DLO Note P 96-11, Wageningen, The Netherlands, 62 pp.

**van Ouwerkerk, E.N.J.**, 1995. *Energy saving by improvement of climate control in piggeries (in Dutch)*. IMAG-DLO Note V 95-16, Wageningen, The Netherlands, 26 pp.

**van Ouwerkerk, E.N.J.** & A.J.A. Aarnink, 1995. *Gas production in piggeries; Model of source productions for estimating indoor gas and vapor concentrations and emissions; A pilot investigation (in Dutch)*. IMAG-DLO Report 94-32, ISBN-90-5406-099-9, Wageningen, The Netherlands, 43 pp.

**van Ouwerkerk, E.N.J.** & P. Knies, 1995. *Energy consumption and possibilities of energy saving on heating and ventilation in intensive livestock husbandry (in Dutch)*. IMAG-DLO report 94-30, ISBN 90-5406-102-2, Wageningen, The Netherlands, 77 pp.

Wagemans, M.J.M. & **E.N.J. van Ouwerkerk**, 1995. *Effect of cooling and ventilation methods in piggeries on energy consumption and ammonia emission (in Dutch)*. IMAG-DLO Note V 95-12, Wageningen, The Netherlands, 54 pp.

**van Ouwerkerk, E.N.J.** (ed.), 1994. *Aerial environment in animal housing*. CIGR Working Group Report Series No 94.1, CIGR and CEMAGREF, Rennes, France, 116 pp.

**van Ouwerkerk, E.N.J.** & G. Schauburger, 1994. *Air flow, air flow patterns, measurement and theory*. In: E.N.J. van Ouwerkerk (ed.), 1994. *Aerial environment in animal housing, concentrations in and emissions from farm buildings*, CIGR Working Group Series No, 94.1, Cemagref, Rennes (France), p. 17-24

van 't Ooster, A., **E.N.J. van Ouwerkerk** & E. Mulder, 1993. *Carbon dioxide measurement and carbon dioxide production estimation (in Dutch)*. In: E.N.J. van Ouwerkerk (ed.), 1993. Meetmethoden NH<sub>3</sub>-emissie uit stallen. Onderzoek inzake de mest en ammoniakproblematiek in de veehouderij 16, Dienst Landbouwkundig Onderzoek, Wageningen, The Netherlands, p. 84-95

**van Ouwerkerk, E.N.J.**, 1992. *Modelling the heat balance of pigs at animal and housing levels*. In: Second report of the CIGR working group on Climatization of Animal Houses (2nd edition), IWONL, State University of Ghent, p. 1-17.

**van Ouwerkerk, E.N.J.** & C.J.M. Scheepens, 1991. *Temperature and ventilation demand for weaned pigs (in Dutch)*. IMAG-DLO Report 91-17, Wageningen, The Netherlands.

Groenestein, C.M. & **E.N.J. van Ouwerkerk**, 1990. *Energy balance model of laying hens (KIP) (in Dutch)*. IMAG-DLO Report 227, Wageningen, The Netherlands, 36 pp.

**van Ouwerkerk, E.N.J.**, 1986. *Physical factors affecting diurnal variation in temperature demand for growing pigs (in Dutch)*. IMAG-DLO Report 88, Wageningen, The Netherlands, 8 pp.

Sterrenburg, P. & **E.N.J. van Ouwerkerk**, 1986. *Model to estimate the thermoneutral and comfort zone of pigs (BEZOVA) (in Dutch)*. IMAG-DLO Report 78, Wageningen, The Netherlands, 21 pp.

Hangelbroek, P.B. & **E.N.J. van Ouwerkerk**, 1980. *Building with self-supporting surface elements*. IMAG-DLO Research Report 80-2, Wageningen, The Netherlands.

#### PATENT

**van Ouwerkerk, E.N.J.**, 1983. Varkenstal en werkwijze voor het bedrijven daarvan. *Pig building and the method to operate (in Dutch)*. Nederlandse octrooiaanvraag inzake vloerkoeling, Nederlandsch Octrooibureau, indieningsnummer O.A. 83.03320 Ned., IMAG-DLO, Wageningen, The Netherlands.