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Profile

Methods for integrated design of sustainable buildings.
Methods to calculate energy consumption and indoor environment for whole buildings and building components.
Especially interested in detailed modeling of ventilation systems.

Qualifications

Ph.D., Technical University of Denmark
1999 → 2003

M.Sc.(Eng), Technical University of Denmark
1993 → 1998

Employment

Head of Section, Associate Professor

Department of Civil and Mechanical Engineering
Technical University of Denmark
Kgs. Lyngby, Denmark
2 Jun 2022 → present

Energy and Services

Technical University of Denmark
Kgs. Lyngby, Denmark
8 Nov 2022 → present

Journal articles

Evaluation of cost-effective measures for the renovation of existing dwellings in the framework of the energy certification system: A case study in Norway
Gonzalez-Caceres, A., Karlshøj, J., Vik, T. A., Hempel, E. & Nielsen, T. R., 2022, In: Energy and Buildings. 264, 18 p., 112071.

Barriers and challenges of the recommendation list of measures under the EPBD scheme: A critical review
Gonzalez Caceres, A. A., Lassen, A. K. & Nielsen, T. R., 2020, In: Energy and Buildings. 223, 17 p., 110065.

Comparing predictions by existing explicit emission models to real world observations of formaldehyde emissions from solid materials
Johnston, C. J., Nielsen, T. R. & Toftum, J., 2020, In: Building Simulation. 13, p. 185–195

Effect of formaldehyde on ventilation rate and energy demand in Danish homes: Development of emission models and building performance simulation
Johnston, C. J., Andersen, R. K., Toftum, J. & Nielsen, T. R., 2020, In: Building Simulation. 13, p. 197–212

Energy flexibility potential of a small district connected to a district heating system
Luc, K. M., Li, R., Xu, L., Nielsen, T. R. & Hensen, J. L. M., 2020, In: Energy and Buildings. 225, 14 p., 110074.

Building energy optimization in the early design stages: A simplified method
Negendahl, K. & Nielsen, T. R., 2015, In: Energy and Buildings. 105, p. 88-89

Indoor environment in bedrooms in 79 Greenlandic households
Kotol, M., Rode, C., Clausen, G. & Nielsen, T. R., 2014, In: Building and Environment. 81, p. 29-36 8 p.

Simulation of annual electric lighting demand using various occupancy profiles
Iversen, A., Andersen, P. H. D., Svendsen, S. & Nielsen, T. R., 2013, In: Lighting Research and Technology. 45, 5, p. 538-549

The effect of different weather data sets and their resolution on climate-based daylight modelling
Iversen, A., Svendsen, S. & Nielsen, T. R., 2013, In: Lighting Research and Technology. 45, 3, p. 305-316

Illuminance Level in the Urban Fabric and in the Room
Iversen, A., Nielsen, T. R. & Svendsen, S., 2011, In: Indoor and Built Environment. 20, 4, p. 456-463

System Design for Demand Controlled Ventilation in Multi-Family Dwellings
Mortensen, D. K. & Nielsen, T. R., 2011, In: International Journal of Ventilation. 10, 3, p. 205-216

Energy efficient demand controlled ventilation in single family houses
Nielsen, T. R. & Drivsholm, C., 2010, In: Energy and Buildings. 42, 11, p. 1995-1998

Dynamic model of counter flow air to air heat exchanger for comfort ventilation with condensation and frost formation
Nielsen, T. R., Rose, J. & Kragh, J., 2009, In: Applied Thermal Engineering. 29, 2-3, p. 462-468

Quasi-steady-state model of a counter flow air-to-air heat exchanger with phase change
Rose, J., Nielsen, T. R., Kragh, J. & Svendsen, S., 2008, In: Applied Energy. 85, 5, p. 312-325

Simple tool to evaluate the impact of daylight on building energy consumption
Hviid, C. A., Nielsen, T. R. & Svendsen, S., 2008, In: Solar Energy. 82, 9, p. 787-798

Måling af bygningers lufttæthed
Nielsen, T. R. & Tommerup, H. M., 2007, In: H V A C Magasinet. 10, p. 32-36

New counter flow heat exchanger designed for ventilation systems in cold climates
Kragh, J., Rose, J., Nielsen, T. R. & Svendsen, S., 2007, In: Energy and Buildings. 39, 11, p. 1151-1158

Prototypeløsninger på ventilationsaggregater
Nielsen, T. R. & Drivsholm, C., 2007, In: H V A C Magasinet. 5, p. 36-38

The International Building Physics Toolbox in Simulink
Sasic Kalagasisidis, A., Weitzmann, P., Rode, C., Nielsen, T. R., Peuhkuri, R. H. & Hagentoft, C-E., 2007, In: Energy and Buildings. 39, p. 665-674

Simple tool to evaluate energy demand and indoor environment in the early stages of building design
Nielsen, T. R., 2005, In: Solar Energy. 78, 1, p. 73-83

Mekanisk ventilation kan give god energiøkonomi
Drivsholm, C., Olsen, H., Christiansen, J., Nielsen, T. R., Svendsen, S. & Jensen, J. S., 2003, In: VVS. 14, p. 26-34

Life cycle cost optimization of buildings with regard to energy use, thermal indoor environment and daylight
Nielsen, T. R. & Svendsen, S., 2002, In: International Journal of Low Energy and Sustainable Buildings. 2, p. 1-16

Conference papers

Potential of solar shading solutions for reducing overheating while maintaining acceptable levels of daylight in a refurbished Danish apartment building from the period 1950-1970
Zukowska-Tejsen, D., Kolarik, J. & Nielsen, T. R., 2021. 4 p.

Is the tailor recommendation useful? Policy suggestions to upgrade the EPC recommendation report
Gonzalez-Caceres, A. & Rammer Nielsen, T., 2020, In: IOP Conference Series: Earth and Environmental Science. 410, 10 p., 012080.

Solar control solutions for reducing overheating risks in retrofitted Danish apartment buildings from the period 1850-1900 – A simulation-based study

Zukowska-Tejsen, D., Ananida, M., Kolarik, J., Sarey Khanie, M. & Nielsen, T. R., 2019, In: E3S Web of Conferences. 111, 8 p., 03051.

Potential of mechanical ventilation for reducing overheating risks in retrofitted Danish apartment buildings from the period 1850-1890 – A simulation-based study

Zukowska-Tejsen, D., Kolarik, J., Ananida, M., Sarey Khanie, M. & Nielsen, T. R., 2018. 10 p.

An Evaluation Method for Façade Renovation Strategies in Residential Buildings Using Gaze Responsive Visual Comfort Assessments

Sarey Khanie, M., Ślipek, M., Zukowska-Tejsen, D., Kolarik, J. & Nielsen, T. R., 2017. 5 p.

Visual Comfort Evaluation in Residential Buildings: a Simulation-Based Study

Ślipek, M., Sarey Khanie, M., Zukowska-Tejsen, D., Kolarik, J. & Nielsen, T. R., 2017. 5 p.

Control strategies for demand controlled ventilation in dwellings

Nielsen, T. R. & Drivsholm, C., 2011, *Proceedings of the 9th Nordic Symposium on Building Physics*. Vinha, J., Piironen, J. & Salminen, K. (eds.). Tapere University of Technology, Vol. 2. p. 799-806

Obstacles and New Opportunities for Integrated design

Bjerregaard Jensen, L. & Nielsen, T. R., 2011, *Conference proceedings of 21st CIRP Design Conference: Interdisciplinary Design*. p. 32-36

Internal Insulation of Masonry Walls with Wooden Floor Beams in Northern Humid Climate

Morelli, M., Scheffler, G. A., Nielsen, T. R. & Svendsen, S., 2010, *Proceedings at Thermal Performance of the Exterior Envelopes of Whole Buildings XI*. p. 89

Household classification according to electricity consumption

Nielsen, T. R. & Nørgaard, J., 2009, *eceee 2009 Summer Study proceedings*. Broussous, C. & Jover, C. (eds.). Kph Trycksaksbolaget AB, Uppsala/Upplands Väsby, Sweden, Vol. Vol. 2. p. 1017-1026

Passive Houses for Arctic. Measures and Alternatives

Vladyková, P., Rode, C., Nielsen, T. R. & Pedersen, S., 2009, *13th International Passive House Conference 2009*.

Rational use of supply air in residential buildings

Mortensen, D. K., Nielsen, T. R., Svendsen, S. & Christoffersen, L. D., 2009, *Healthy Buildings (usb stick)*.

Simulated influence of the surrounding buildings on the daylight availability in the master plan and on the working plane

Iversen, A., Wille, L. F., Nielsen, T. R. & Svendsen, S., 2009, *Lux Europe 2009*.

Comparison of a Constant Air Volume (CAV) and a Demand Controlled Ventilation (DCV) System in a Residential Building
Mortensen, D. K., Nielsen, T. R. & Topp, C., 2008, *Proceedings of the 8th Symposium on Building Physics in the Nordic Countries*. Technical University of Denmark, Department of Civil Engineering, Vol. 1. p. 191-197

Comparison of a constant air volume system and a demand controlled ventilation system in a residential building
Mortensen, D. K., Nielsen, T. R. & Topp, C., 2008, *Indoor Air 2008 Conference Proceedings*. Technical University of Denmark

Demand controlled ventilation in a bathroom

Mortensen, D. K., Nielsen, T. R. & Topp, C., 2008, *Proceedings of the 29th AIVC conference in 2008: Advanced building ventilation and environmental technology for addressing climate change issues*. Vol. 2. p. 237-242

Evaluation of a dynamic model for a cold climate counter flow air to air heat exchanger

Nielsen, T. R., Kragh, J. & Svendsen, S., 2008, *Proceedings of the 8th Symposium on Building Physics in the Nordic Countries*. Kgs. Lyngby, Denmark: Technical University of Denmark, Department of Civil Engineering, Vol. 2. p. 511-518 (DTU Byg Report; No. R-189).

Integrated design and Passive Houses for Arctic Climates

Vladyková, P., Rode, C., Nielsen, T. R. & Pedersen, S., 2008, *Proceedings of the 8th Symposium on Building Physics in the Nordic Countries*. Technical University of Denmark

Occupants' satisfaction with the visual environment in a single office with individual lighting and solar shading control
Iversen, A., Nielsen, T. R. & Svendsen, S., 2008, *Indoor Air 2008 Proceedings*. p. 475

Passive Houses for Arctic Climates

Vladyková, P., Rode, C., Nielsen, T. R. & Pedersen, S., 2008, *Passivhus Norden 2008*. Trondheim, Norway: SINTEF

Simple tool to evaluate the impact of daylight on building energy consumption

Hviid, C. A., Nielsen, T. R. & Svendsen, S., 2008, *Proceedings of the 8th Symposium on Building Physics in the Nordic Countries*. Copenhagen: Danish Society of Engineers, IDA, Vol. 1. p. 119-126 1436 p.

Calculation of daylight distribution and utilization in rooms with solar shadings and light redirecting devices

Nielsen, T., Nielsen, T. R. & Svendsen, S., 2005, *Proceedings of the 7th Symposium on Building Physics in the Nordic Countries*. Reykjavik, Iceland: The Icelandic Building Research Institute, Vol. Volume 2. p. 1011-1018

Simplified calculation of hourly temperatures, heating demands and cooling demands in buildings with thermo active constructions

Varming, N., Mølholm, C., Nielsen, T. R., Weitzmann, P. & Svendsen, S., 2005, *Proceedings of the 7th Symposium on Building Physics in the Nordic Countries*. Reykjavik, Iceland: The Icelandic Building Research Institute, Vol. Volume 2. p. 845-852

Simplified hourly calculation of energy performance in accordance with the Energy Performance of Buildings Directive

Nielsen, T. R. & Svendsen, S., 2005, *Proceedings of the 7th Symposium on Building Physics in the Nordic Countries*. Reykjavik, Iceland: The Icelandic Building Research Institute, Vol. Volume 2.

Presentation of the International Building Physics Toolbox for Simulink

Weitzmann, P., Sasic Kalagasisidis, A., Nielsen, T. R., Peuhkuri, R. H. & Hagentoft, C-E., 2003, *Proceedings of the Eighth IBPSA Conference and Exhibition*. International Building Performance Simulation Association, p. 1369-1376

Performance optimization of buildings

Nielsen, T. R. & Svendsen, S., 2002, *Proceedings of the 6th Symposium on Building Physics in the Nordic Countries*. Norwegian University of Science and Technology, p. 563-570

Optimal design of building envelopes

Rudbeck, C. C., Nielsen, T. R. & Svendsen, S., 2001, *ASHRAE Buildings VIII*. 1791 Tullie Circle, NE, Atlanta, GA 30329 U.S.A.: American Society of Heating, Refrigerating and Air-Conditioning Engineers

Other publications

Smarte Energisystemer er vejen frem: DTU Sektorudviklingsrapport

Nielsen, T. R., Kindler, E., Madsen, H., Christiansen, L. E., Riis, M. B., Frost, F., Bindner, H. W., Østergaard, J., Pinson, P., Bjørk, R., Hendriksen, P. V., Dittmann, L., Vesborg, P. C. K., Jacobsen, H. K., Skytte, K., Elmegaard, B., Sørensen, P. E., Mackenzie, G. A., Hansen, L. M., Kejlberg, J., & 5 others Hansen, L. F., Driscoll, P., Jørgensen, U. H., Morthorst, P. E. & Odgaard, M. H., 2020, Technical University of Denmark. 100 p.

Klimafacaden: Afsluttende rapport for 350-011

Ørsager, M., Nielsen, T. R., Dinesen, T., Horn, P. & Hansen, T. B., 2019, 35 p.

Potential of solar control solutions and ventilation for reducing overheating risk in retrofitted Danish apartment buildings from the period 1850-1970. Technical report

Zukowska-Tejsen, D., Kolarik, J., Sarey Khanie, M. & Nielsen, T. R., 2019, Technical University of Denmark, Department of Civil Engineering. 66 p.

Reduktion af risiko for overtemperatur i etageboliger i forbindelse med facaderenovering: Afsluttende rapport

Kolarik, J., Zukowska-Tejsen, D., Sarey Khanie, M. & Nielsen, T. R., 2019, Technical University of Denmark, Department of Civil Engineering. 26 p.

Nye typer bygningsintegrerede ventilationsløsninger med flere funktioner

Hviid, C. A., Olesen, B. W., Nielsen, T. R. & Svendsen, S., Sept 2010, Kgs. Lyngby, Denmark: Technical University of Denmark.

Behovstyret ventilation til enfamiliehuse

Nielsen, T. R., Drivsholm, C., Hansen, M. P. R. & Kragh, J., 2009, Kgs. Lyngby: DTU Byg, Danmarks Tekniske Universitet . 91 p. (DTU Byg-Rapport; No. R-212).

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Nielsen, T. R., Rosenfeld, J., Duer, K. & Svendsen, S., 2007, International Energy Agency.

Udvikling af energiøkonomisk ventilationsløsning med varmegenvinding til boliger

Drivsholm, C., Olsen, H., Larsen, C. G., Jensen, J. S., Nielsen, T. R., Kragh, J. & Svendsen, S., 2005, Danmarks Tekniske Universitet: DTU Byg, Danmarks Tekniske Universitet. 67 p. (BYGDTU Rapport; No. R-118).

Energibesparelser i bygninger: Satatus over fosknings- og udviklingsaktiviteter ved DTU vedrørende energibesparelser i bygninger

Reimann, G. P., Tommerup, H. M., Laustsen, J. B., Kragh, J., Rose, J., Weitzmann, P., Nielsen, T. R. & Svendsen, S., 2004, DTU Byg, Danmarks Tekniske Universitet. (Byg Rapport; No. R-088).

Optimization of buildings with respect to energy and indoor environment

Nielsen, T. R., Jan 2003, Kgs. Lyngby, Denmark: Technical University of Denmark. 124 p. (Byg Rapport; No. R-036).

A simple energy rating for solar shading devices

Nielsen, T. R., Rosenfeld, J. & Svendsen, S., 2003, DTU Byg, Danmarks Tekniske Universitet. (Sagsrapport; No. SR 03-02).

Harmonisering af grundlaget for beregning af energitilskud fra vinduer

Nielsen, T. R. & Svendsen, S., 2003, (BYG Sagsrapport; No. SR 03-03).

Optimale vinduessystemer-1. fase: Dansk deltagelse i IEA Task 27

Holck, O., Nielsen, T. R., Rosenfeld, J., Svendsen, S. & Duer, K., 2003, (Byg Rapport; No. r-053).

Udvikling af et energieffektivt straightner ventilationsaggregat med indbygget chopper varmeveksler
Jensen, J. S., Nielsen, T. R., Svendsen, S., Christiansen, J., Drivsholm, C. & Olsen, H., 2003, Taastrup, Danmark: Teknologisk Institut.

Udvikling og optimering af et energieffektivt straightner ventilationsaggregat med indbygget chopper varmeveksler
Jensen, J. S., Nielsen, T. R., Svendsen, S., Christiansen, J., Drivsholm, C. & Olsen, H., 2003, Teknologisk Institut. 142 p.

Building Physics Toolbox for Simulink: A (very) brief manual

Nielsen, T. R., Peuhkuri, R. H., Weitzmann, P. & Gudum, C., 2002, Department of Civil Engineering, Technical University of Denmark.

International Building Physics Toolbox: General report

Rode, C., Gudum, C., Weitzmann, P., Peuhkuri, R. H., Nielsen, T. R., Kalagasisidis, A. S. & Hagentoft, C-E., 2002, Gothenburg: Chalmers University of Technology, Department of Building Physics.

Modeling Building Physics in Simulink

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Modelling Building Physics in Simulink: Working draft

Weitzmann, P., Nielsen, T. R., Peuhkuri, R. H. & Gudum, C., 2002, DTU Byg, Danmarks Tekniske Universitet.

User's guide to the international building physics toolbox: A (very) brief manual

Weitzmann, P., Nielsen, T. R., Peuhkuri, R. H., Gudum, C., Rode, C., Kalagasisidis, A. S. & Hagentoft, C-E., 2002, DTU Byg, Danmarks Tekniske Universitet.

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Detaljerede metoder til bestemmelse af energimærkningsdata: Ruder og vinduers energimæssige egenskaber.

Kompendium 3

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Energirigtigt valg af energirigtige ruder og vinduer: Ruder og vinduers energimæssige egenskaber. Kompendium 5

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Kompendium 2

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Ruder og vinduers energimæssige egenskaber. Kompendium 1: Grundlæggende energimæssige egenskaber

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Ventilation

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