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## Qualifications

Doctoral degree, Engineering and Technology, Aalto University  
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Licentiate degree, Engineering and Technology, Helsinki University of Technology  
Award Date: 17 Dec 2007

Master's degree, Engineering and Technology, Helsinki University of Technology  
Award Date: 16 Dec 1996

## Employment

### Staff Scientist

Staff Scientist  
Department of Civil Engineering  
Aalto University  
1 Jun 2016 → present

### Staff Scientist

Staff Scientist  
Mineral Based Materials and Mechanics  
Aalto University  
1 Jan 2019 → present

## Research output

**AI-based framework for concrete durability assessment using generative adversarial networks and Bayesian neural networks**  
Ragaa, A. B., Al-Neshawy, F. & Noureldin, M., 11 Apr 2025, In: Construction and Building Materials. 471, 18 p., 140722.

### Effect of Slag Content and Carbonation/Ageing on Freeze-Thaw Resistance of Concrete

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### Non-Destructive Evaluation of Concrete in Nuclear Applications

Ferreira, M. (Editor), Niederleithinger, E. (Editor), Al-Neshawy, F. (Editor), Lay, V., Kessler, S. (Editor), Villalobos, S. (Editor) & Sanchez, J. M. (Editor), 2024, In: Journal of Advanced Concrete Technology. 22

### Determining the Location of Steel Reinforcement in Thick Concrete Walls by Non-Destructive Inspection

Al-Neshawy, F. & Puttonen, J., 1 Dec 2023, In: Nordic Concrete Research. 69, 2, p. 55-71 17 p.

### Investigation of the Internal Structure of Hardened 3D-Printed Concrete by X-CT Scanning and Its Influence on the Mechanical Performance

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### Assessment procedure of determining compressive strength of hardened reinforced concrete structures

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**Comprehensive state-of-the-art report for long-term behaviour of concrete structures in repository environment**

Al-Neshawy, F., Ba Ragaa, A. & Punkki, J., 2023, Aalto-yliopisto. 85 p. (Aalto University publication series SCIENCE + TECHNOLOGY; vol. 2023, no. 4)

**Laboratory study on corrosion of steel rebars in anoxic environments - Deliverable 2.2: ConLoT project – Long-term testing of the durability of concrete at final disposal conditions**

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**Proceedings of the International Conference on Non-destructive Evaluation of Concrete in Nuclear Applications - NDE NucCon 2023**

Al-Neshawy, F. (Editor), Ferreira, M. (Editor), Bohner, E. (Editor), Kekäläinen, P. (Editor), Oey, T. (Editor), Lay, V. (Editor) & Niederleithinger, E. (Editor), 2023, Aalto-yliopisto. 393 p. (Aalto University publication series SCIENCE + TECHNOLOGY; vol. 2023, no. 3)

**Reduction of CO<sub>2</sub> Emission by Using Low Carbon Concretes with Accelerating Admixtures**

Illarionova, E., Antonova, A., Al-Neshawy, F. & Punkki, J., 2023, *International RILEM Conference on Synergising Expertise towards Sustainability and Robustness of Cement-based Materials and Concrete Structures. SynerCrete 2023*. Springer, p. 65-75 11 p. (RILEM Bookseries; vol. 44).

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**Using non-destructive testing methods for locating the steel reinforcement in reinforced concrete structures**

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**Investigation on the effect of entrained air on pore structure in hardened concrete using MIP**

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**Characteristics of Entrained Air Voids in Hardened Concrete with the Method of Digital Image Analysis Coupled with Schwartz-Saltykov Conversion**

Ojala, T., Chen, Y., Punkki, J. & Al-Neshawy, F., 1 May 2021, In: Materials. 14, 9, 20 p., 2439.

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**Betonin koostumuksen vaikutus sen tiivistettävyyteen: Raportti tilaustutkimusprojektista**

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**Construction of realistic NPP containment wall mock-up for challenging NDE methods**

Ferreira, M., Bohner, E., Sjöblom, V., Al-Neshawy, F. & Ojala, T., 1 Jan 2019, *Proceedings of the fib Symposium 2019: Concrete - Innovations in Materials, Design and Structures*. Derkowski, W., Krajewski, P., Gwozdiewicz, P., Pantak, M. & Hojdys, L. (eds.). International Federation for Structural Concrete (FIB), p. 1651-1658 8 p. (Proceedings of the fib Symposium 2019: Concrete - Innovations in Materials, Design and Structures).

**Early Age Autogenous Shrinkage of Fibre Reinforced Concrete**

Ullah, F., Al-Neshawy, F. & Punkki, J., Dec 2018, In: *Nordic Concrete Research*. 59, 2/2018, p. 59-72 5.

**Mock-up wall for NDT&E of NPP thick-walled reinforced concrete structures**

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**"NDT MATRIX" - A Tool for Selecting Non-Destructive Testing Methods for NPP Concrete Structures**

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**Robust Air – Tutkimus betonin ilmamäären kohoamiseen vaikuttavista tekijöistä**

Punkki, J. & Al-Neshawy, F., 2017, In: *Betoni*. 2017, 3, p. 74-79 6 p.

**Securing the stable protective pore system of concrete - Report for "Robust Air"**

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**Stability of air-entrainment with PCE-superplasticizers**

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**Selection Matrix for Non-Destructive Testing of NPP Concrete Structures**

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Al-Neshawy, F., Sistonen, E., Kari, O.-P., Eik, M. & Puttonen, J., 2015, *1st Workshop of TU1404 Ljubljana, Slovenia, April 16-17, 2015*. Schlicke, D., Trtnik, G., Bosiljkov, B. V., Azenha, M. & Staquet, S. (eds.). Ljubljana: University of Ljubljana, p. 28

**Ageing Management Platform for Finnish NPP Concrete Infrastructure**

Ferreira, M., Al-Neshawy, F. & Sistonen, E., 2015, *23rd Conference on Structural Mechanics in Reactor Technology Manchester, United Kingdom August 10-14, 2015*. UK: International Association for Structural Mechanics in Reactor Technology (IASMiRT), p. 10

**Ageing Management Platform For NPP Concrete Structures**

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**Implementation of a Contour Crafting System to a 3-Dimensional Concrete Printer**

Nylund, J., Järf, A., Kekälä, K., Rönnskog, J., Al-Neshawy, F., Kiviluoma, P. & Kuosmanen, P., 2015, *10th International DAAAM Baltic Conference "INDUSTRIAL ENGINEERING", 12 - 13th May 2015, Tallinn, ESTONIA*. Otto, T. (ed.). Tallin: Tallinn University of Technology, p. 168-173

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**SAFIR2014- The Finnish Research Programme on Nuclear Power Plant Safety 2011-2014 Final Report. 38.1 MANAGE summary report - Ageing management of concrete structures in nuclear power plants (MANAGE)**

Ferreira, M., Tuomisto, M., Stenlund, O., Sistonen, E. & Al-Neshawy, F., 2015, Kuopio, p. 592-603, (VTT Technology; no. 213).

**von Konow Academy Database (TvK-DB). A database based on the accurate field research and laboratory studies of mortars initiated by PhD Thorborg von Konow**

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**Ageing Mechanisms of Building Structures and their Management**

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Vesikari, E., Ferreira, M., Sistonen, E., Al-Neshawy, F. & Piironen, J., 31 Jan 2013, VTT Technical Research Centre of Finland, 52 p. (VTT Research Report; no. VTT-R-06496-12).

**Ydinvoimaloiden betonirakenteiden käytönaikainen tarkastus ja tarkastustietojen tallentaminen**

Vesikari, E., Ferreira, M., Sistonen, E., Al-Neshawy, F. & Piironen, J., 31 Jan 2013, VTT Technical Research Centre of Finland, 52 p. (VTT Research Report; no. VTT-R-06495-12).

**Ageing management of concrete structures in nuclear power plants (MANAGE)**

Ferreira, R. M., Vesikari, E., Tuomisto, M., Stenlund, O., Hradil, P., Al-Neshawy, F. & Sistonen, E., 2013, *SAFIR2014 - The Finnish Research Programme on Nuclear Power Plant Safety 20112014 - Interim Report, VTT Technology 80, Espoo 2013*, 447 p.. Simola, K. (ed.). Espoo: VTT Technical Research Centre of Finland, p. 363-372

**Computerised prediction of the deterioration of concrete building facades caused by moisture and changes in temperature**

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**Condition Assessments and Corrosion Measurements of Cooling Water Chambers in a Nuclear Power Plant**

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**Developing a Computerized Aging Management System for Concrete Structures in Finnish Nuclear Power Plants**

Al-Neshawy, F., Piironen, J., Sistonen, E., Vesikari, E., Tuomisto, M., Hradil, P. & Ferreira, M., 2013, *International Workshop NUCPERF 2012: Long-Term Performance of Cementitious Barriers and Reinforced Concrete in Nuclear Power Plant and Radioactive Waste Storage and Disposal (RILEM Event TC 226-CNM and EFC Event 351) . L'Hostis, V. & Gens, R. (eds.). EDP Sciences, p. 1-8 03001. (EPJ Web of Conferences ; vol. 56).*

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Al-Neshawy, F., Sistonen, E., Vesikari, E. & Ferreira, M., 2013, *IABSE Workshop on Safety, Failures and Robustness of Large Structures, Tuusula, Finland, February 14-15, 2013..* - International Association for Bridge, I. & Engineering, S. (eds.). Finland: Suomen rakennusinsinööriöni liitto RIL, p. 226-233

**Integral approach to service life management of NPP concrete infrastructure: From inspection database to predictive durability performance**

Ferreira, M., Vesikari, E., Al-Neshawy, F. & Sistonen, E., 2013, *22nd International Conference on Structural Mechanics in Reactor Technology, SMiRT-22, San Francisco, California, USA, August 18-23, 2013..* Ostadan, F. (ed.). USA: International Association for Structural Mechanics in Reactor Technology (IASMiRT), p. 10

**Monitoring, Evaluation and Long-term Forecasting of Hygrothermal Performance of Thick-walled Concrete Structure**

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**Computerized assessment of the moisture and thermal originated deterioration of concrete facades**

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### **Using Self-compacting Concrete in Repairs**

Sistonen, E., Al-Neshawy, F., Piironen, J. & Huovien, S., 2006, *Concrete Solutions 2006, Proceedings of the Second International Conference on Concrete Repair, St-Malo, Brittany, France, June 27-29, 2006.*

### **Effect of Maintenance Measures on Service Life of Concrete Facades.**

Sistonen, E., Al-Neshawy, F., Piironen, J. & Huovinen, S., 2005, *XIX Symposium on Nordic Concrete Research & Development - A meeting place for research and practice; Norway, Sandefjord: 12.-15.6.2005.* p. 217-219

**RH and temperature Measurement (the communication software) Tietokoneohjelma, joka mittaa, kerää ja tallentaa kosteusmonitorioinnin tiedot**

Al-Neshawy, F., 2005

### **Itsetiivistyneiden betonien suhteitus, valmistustekniikka ja perusominaisuudet**

Mannonen, P., Al-Neshawy, F. & Räsänen, V., 2004, Espoo, p. 123, (Teknillinen korkeakoulu Rakennusmateriaalitekniikka; no. Julkaisu 16).

### **Internal and surface deterioration of concrete due to frost action**

Pentala, V., Al-Neshawy, F., Lehtinen, T. & Räsänen, V., 2003, *15. Internationale baustofftagung, Weimar, Germany 2003.* Fisher, H. B. (ed.). Weimar, Germany: Bauhaus-Universität Weimar, p. 2-0601

### **Ice Formation and Pore Water Redistribution During 2-Cycle Freezing and Thawing of Concrete Mortars**

Pentala, V. & Al-Neshawy, F., 2002, *Frost Damage in Concrete, Minneapolis, USA 28-30 June 1999.* Janssen, D. J., Setzer, M. J. & Snyder, M. B. (eds.). France: RILEM - International Union of Laboratories and Experts in Construction Materials, Systems and Structures, p. 115-126 (RILEM Proceedings; no. PRO 25).

### **Stress and strain state of concrete during freezing and thawing cycles**

Pentala, V. & Al-Neshawy, F., 2002, In: Cement and Concrete Research. 32, 9, p. 1407-1420

### **Sementtimäärällä ja vesisementtisuhdeella merkittävä vaikutus betonin kuivumisnopeuteen**

Al-Neshawy, F., 1997, In: Rnet. 1, p. 51

## **Activities**

### **Ernst Niederleithinger**

Al-Neshawy, F. (Host)

24 Oct 2018 → 26 Oct 2018

### **NDT&E Advanced Training Workshop**

Al-Neshawy, F. (Member)

27 Jun 2018 → 3 Jul 2018

### **Stability of air-entrainment with PCE-superplasticizers**

Al-Neshawy, F. (Contributor) & Punkki, J. (Speaker)

25 Aug 2017

### **Mapei AS**

Al-Neshawy, F. (Visiting researcher) & Punkki, J. (Visiting researcher)

2017

### **IABSE Workshop, Helsinki, Finland, February 11-12, 2015, Finland**

Al-Neshawy, F. (Contributor)

2015

**SAFIR2014 FINAL SEMINAR, Hanasaari, Helsinki, Finland, 19.-20.3.2015, Finland**  
Al-Neshawy, F. (Contributor)  
2015

**SMiRT-23 2015, 23rd International Conference on Structural Mechanics in Reactor Technology, SMiRT-23, Manchester, United Kingdom - August 10-14, 2015, United Kingdom**  
Al-Neshawy, F. (Contributor)  
2015

**David Lange**  
Al-Neshawy, F. (Host)  
1 Jan 2014

**1st International Conference on Ageing of Materials & Structures, AMS'14, Delft, Netherlands, 26 – 28 May 2014**  
Al-Neshawy, F. (Contributor)  
2014

**University (External organisation)**  
Al-Neshawy, F. (Chair)  
2014

**Vagelis Papadakis**  
Al-Neshawy, F. (Host)  
1 Jan 2013

**IABSE Workshop, Helsinki, Finland, February 14-15, 2013, Finland**  
Al-Neshawy, F. (Contributor)  
2013

**OECD-NEA, CSNI Working Group on the Integrity and Ageing of Components and Structures Workshop, Prague, Czech Republic 17-19.9.2013, Czech Republic**  
Al-Neshawy, F. (Contributor)  
2013

**SAFIR2014 - Interim Seminar, Hanasaari, Swedish-Finnish Cultural Centre, 21.-22.3.2013, Finland**  
Al-Neshawy, F. (Contributor)  
2013

**University (External organisation)**  
Al-Neshawy, F. (Chair)  
2013

**Vagelis Papadakis**  
Al-Neshawy, F. (Host)  
1 Jan 2012

**IABSE Conference on Global Thinking in Structural Engineering: Recent Achievements, Sharm El Sheikh, Egypt, 7-9 May 2012, Egypt**  
Al-Neshawy, F. (Contributor)  
2012

**NUCPERF 2012 RILEM Event TC 226-CNM EFC Event 351, Cadarache, France 12-15 November 2012, France**  
Al-Neshawy, F. (Contributor)  
2012

**Concrete Solutions 2011, 4th International Conference on Concrete Repair 26-28. Sept. 2011, Dresden, Germany, Germany**  
Al-Neshawy, F. (Contributor)  
2011

**CIB W78 2010, 27th International Conference Applications of IT in the AEC Industry. Cairo, Egypt 16-18 November 2010., Egypt**  
Al-Neshawy, F. (Contributor)  
2010

**20th International Conference on Structural Mechanics in Reactor Technology, Dipoli Congress Center, Espoo, Finland, August 9-14, 2009**  
Al-Neshawy, F. (Contributor)  
2009

**3rd International Conference on Concrete Repair (Concrete Solutions 2009), Venice/Padova, Italy 29 June-2 July 2009, Italy**  
Al-Neshawy, F. (Contributor)  
2009

**Duralnt-Project Workshop: Effect of interacted deterioration parameters on service life of concrete structures in cold environments" March 2-4, 2009, VTT and TKK, Espoo, Finland, Finland**  
Al-Neshawy, F. (Contributor)  
2009

**Euroinfra 2009, International ECCE Conference, October 15-16, 2009, Helsinki, Finland**  
Al-Neshawy, F. (Contributor)  
2009

**Foreign Organisation**  
Al-Neshawy, F. (Visiting researcher)  
2009

**Foreign Organisation**  
Al-Neshawy, F. (Visiting researcher)  
2007

**Foreign Organisation**  
Al-Neshawy, F. (Visiting researcher)  
2007

**Foundit Nordic/Salford Workshop 8-9 October 2007, Iso-Britannia**  
Al-Neshawy, F. (Contributor)  
2007

**Foundit Nordic/Salford Workshop 8 - 9 October 2007, University of Salford, U.K., 2007., Iso-Britannia**  
Al-Neshawy, F. (Contributor)  
2007

**Foundit Seminar, 12.-13.12.2007, Helsinki University of Technology, Finland, Finland**  
Al-Neshawy, F. (Contributor)  
2007

**FOUNDIT SEMINAR, 3rd TWO-DAY SPRING WORKSHOP: MAPS, MODELS AND METHODS, Finland**  
Al-Neshawy, F. (Contributor)  
2007

**Found Seminar, Helsinki University of Technology, 12 - 13.12.2007., Finland**  
Al-Neshawy, F. (Contributor)  
2007

**Concrete Solutions, 2nd International Conference on Concrete Repair, 27 – 29, June 2006, St-Malo, Brittan, France**  
Al-Neshawy, F. (Contributor)  
2006

**European Symposium on Service Life and Serviceability of Concrete Structures, 12. - 14. June 2006, Helsinki, Finland**  
Al-Neshawy, F. (Contributor)  
2006

**Foreign Organisation**  
Al-Neshawy, F. (Visiting researcher)  
2006

**Foreign Organisation**  
Al-Neshawy, F. (Visiting researcher)  
2006

**Nordic construction IT seminar, 29. - 30.3.2006, Espoo, Finland**  
Al-Neshawy, F. (Contributor)  
2006

**The Nordic Graduate School for the Construction Sector, Lynby, DTU 12.12.2006**  
Al-Neshawy, F. (Contributor)  
2006

**The Nordic Graduate School for the Construction Sector ,Tukholma, KTH 22.09.2006**  
Al-Neshawy, F. (Contributor)  
2006

**XIX Symposium on Nordic Concrete Research & Development – A Meeting Place for Research and Practice, 12.-15.June, Sandefjord, Norway**  
Al-Neshawy, F. (Contributor)  
2005

## **Prizes**

**Student prize: Oskari Vilamon rahaston väitöskirjapalkinto 2014 Oskari Vilamon rahasto, Finland**  
Al-Neshawy, F. (Student prize recipient), 2014

## **Projects**