

PORTFOLIO

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Date of Birth December 8, 1976
Profession Environmental Remediation Specialist
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Nationality Finland



Core Expertise:

Remediation of contaminated soil, groundwater and sediment by various methods as an expert in Finland and internationally; industrial wastewater treatment, hydrological and geochemical computer modelling, environmental permitting procedures, landfill construction and hazardous waste management.

Reference projects:

Contaminated soil, groundwater and sediment remediation

- Remediation of oil hydrocarbon, PAH-compounds, cyanide and heavy metals contaminated site by *In-Situ* Geochemical Stabilization as Project Manager in Helsinki (Finland) 2018-
- Remediation of oil contaminated soil by excavation as Environmental Remediation Specialist in Järvenpää (Finland) 2018.
- Remediation of oil and heavy metal contaminated soil by excavation as Environmental Remediation Specialist in Pornainen (Finland) 2018.
- Remediation of dirty sediment by suction dredging as Environmental Remediation Advisor in Porvoo (Finland) 2018.
- Remediation of oil hydrocarbon and PAH-compound contaminated site by *In-Situ* EKOGRID™ and bioaugmentation methods as Environmental Remediation Specialist in Helsinki (Finland) 2017-2018
- Remediation of heavy metal contaminated soil by excavation as Environmental Remediation Specialist in Tuusula (Finland) 2017.
- Remediation of PCB and heavy metal contaminated soil by excavation as Environmental Remediation Specialist in Kerava (Finland) 2017.
- R&D project about *In-Situ* chemical remediation of heavy metal contaminated soil, including chemical and electro-osmotic remediation of heavy metal impacted mining site as Environmental Remediation Advisor in Finland 2017-2018.
- R&D and pilot project about *In-Situ* remediation of sediment contaminated by oil hydrocarbons as Environmental Remediation Advisor in Helsinki (Finland) 2017-2018.
- Pump & Treat of water contaminated by oil and chlorinated hydrocarbons and groundwater management as Environmental Remediation Advisor in Helsinki (Finland) 2017-
- Filtration and Neutralization of acidic drainage water contaminated by heavy metals As Project Geologist in Hämeenlinna (Finland) 2015-2017.
- *In-Situ* Chemical Oxidation of train depot site contaminated by oil hydrocarbons as Project Geologist in Tallinn (Estonia) 2015.

- Pump & Treat of wastewater contaminated by arsene of timber impregnation site as Project Geologist in Tuulos (Finland) 2014.
- Design of permeable reactive barrier based on biological sulphate reduction of wastewater from mine tailings in Siilinjärvi (Finland) as Project Geologist 2014.
- Pump & Treat and Soil Vapour Extraction of industrial site contaminated by chlorinated solvents as Project Geologist in Ulvila (Finland) 2013.
- Design of surface run-off water treatment in Siilinjärvi (Finland) as Project Geologist 2012.
- Pump & Treat and Soil Vapour Extraction of fuel station site contaminated by oil hydrocarbons as Project Manager and Project Geologist in Karkkila (Finland) 2007-2013.
- Dewatering of contaminated sediments full-scale project as Project Geologist in Ramsund (Norway) 2012.
- Dewatering of contaminated sediments pilot project as Project Manager in Ramsund (Norway) 2011.
- Soil Vapour Extraction, Chemical Oxidation and Pump & Treat of service station site with soil contaminated by oil hydrocarbons as Project Geologist in Pyhäjärvi (Finland) 2011.
- Soil Vapour Extraction of gas works site with soil contaminated by VOC-compounds as Project Geologist in Helsinki (Finland) 2011.
- Soil Vapour Extraction of service station site with soil contaminated by oil hydrocarbons as Project Geologist in Pieksämäki (Finland) 2011.
- Fungal remediation pilot project on soil contaminated by PCCD/F-compounds as Project Manager in Riihimäki (Finland) 2011. Project was funded by Tekes.
- Fungal remediation pilot project on soil and sediment contaminated by oil hydrocarbons as Project Manager in Riihimäki (Finland) 2009-2010.
- Soil Vapour Extraction and Air Sparging of service station site with soil contaminated by oil hydrocarbons as Project Geologist in Pieksämäki (Finland) 2010.
- Phytoremediation pilot project design as Project Geologist in Valkeakoski (Finland) 2010.
- Bioventing pilot projects on sites contaminated by oil hydrocarbons as Project Geologist in Tuusula and Lahti (Finland) 2010.
- Pump & Treat of groundwater site contaminated by PAH-compounds in Mikkeli (Finland) 2009-2013. Participation in designing of wastewater purification system based on chemical oxidation enhanced by UV radiation.
- Pump & Treat of groundwater site contaminated by PAH-compounds and arsene as Project Manager in Vilppula (Finland) 2006-2008.
- Tendering and assistance in remediation works for soil pollution as Project Geologist in Porto Romano (Albania) 2009-2011. The project included also construction of a hazardous waste landfill.
- Pump & Treat of groundwater, Air Sparging and Soil Vapour Extraction of site contaminated by chlorinated solvents as Project Geologist in Säkö (Finland) 2007-2011.
- Design of contaminated soil remediation project based on excavation in Kemi (Finland) as Project Geologist 2009.
- Tendering and assistance in environmental clean-up and disposal of hazardous waste in the chlor-alkali plant as Project Geologist in Vlora (Albania) 2009. The project included also construction of a hazardous waste landfill.
- Soil Vapour Extraction of VOC-compounds tank farm site as Project Manager in Vantaa (Finland) 2008.
- On Site Chemical Oxidation pilot project of oil harbour site with soil contaminated by lubricant oil as Project Manager in Helsinki (Finland) 2008.
- Pump & Treat of groundwater site contaminated by chlorinated solvents as Project Manager in Lahti (Finland) 2008.
- Design of landfill restoration as well as contaminated soil and groundwater remediation works in Helsingborg (Sweden) as Project Geologist 2008.
- Design of contaminated soil remediation project based on excavation in Rauma (Finland) as Project Geologist 2008.

- Tendering and assistance in environmental clean-up and disposal of hazardous waste as Project Geologist in Fier (Albania) 2007-2008. The project included also construction of a hazardous waste landfill.
- Pumping tests of industrial site in connection to biological clean-up enhanced by injection of ethanol to groundwater contaminated by chlorinated solvents as Project Manager in Tampere (Finland) 2007.
- Pump & Treat of drainage water of construction site with high pH in Helsinki (Finland) 2007.
- Pump & Treat of fuel service station of site contaminated by oil hydrocarbons as Project Manager in Helsinki (Finland) 2007.
- Pump & Treat of fuel service station of site contaminated by oil hydrocarbons as Project Manager in Porvoo (Finland) 2007.
- Pump & Treat of fuel service station of site contaminated by oil hydrocarbons as Project Manager in Tuusula (Finland) 2007.
- Pump & Treat of drainage water of site contaminated by oil hydrocarbons, PAH-compounds, PCB and heavy metals as Project Manager in Helsinki (Finland) 2007.
- Soil Vapour Extraction of fuel service station site with soil contaminated by oil hydrocarbons as Project Manager in Vihti (Finland) 2007 and 2010.
- On-Site Thermal Remediation of Moto landfill site contaminated by oil hydrocarbons in Naantali (Finland) as Site Manager 2004-2006. Altogether ca. 172 000 tons of soil with mean oil hydrocarbon concentration of 70 000 mg/kg was remediated.
- On-Site Thermal Remediation of former Puistola oil harbour site contaminated by oil hydrocarbons in Kotka (Finland) as Site Manager 2005. Altogether ca. 20 000 tons of soil with mean oil hydrocarbon concentration of ca. 10 000 mg/kg was remediated.
- Off-Site Thermal Remediation of soil contaminated by oil hydrocarbons, PAH-compounds, TBT, PCB and PCDD/F-compounds in Vihti (Finland) as Site Manager 2006. Altogether ca. 10 000 tons of soil was remediated.

Landfill construction and other waste management

- Soil stability analysis with Swedish Method of Slices for two mining water pools in as Project Geologist in Siilinjärvi (Finland) 2013 and 2014.
- Transportation, treatment and disposal of fly ash and flue gas purification residues of waste-to-energy plant as Project Geologist in Estonia 2013.
- Soil stability analysis with Swedish Method of Slices for alternative surface structure of municipal landfill in as Project Geologist in Hyvinkää (Finland) 2013.
- Design of landfill gas collection and biological leachate treatment system as Project Geologist in Addis Ababa (Ethiopia) 2011.
- Design of landfill leachate treatment system as Project Geologist in Máhe (Seychelles) 2011.
- Tendering and assistance in construction of sanitary landfill and waste transfer station as Project Geologist in Güngör (Turkish Cypriot Community) 2010-2011.
- Procurement and forwarding of shredded tyres from Norway and Germany to various landfill construction projects in Finland as Project Geologist in 2009-2014.

International business development

- Remedial design of oil and gas extraction waste as Environmental Remediation Advisor in Ukraine 2018
- Tendering and design of On-Site treatment of soil contaminated by crude oil as Environmental Remediation Advisor in Oman 2018
- Tendering and design of large-scale On-Site treatment of soil contaminated by crude oil as Project Manager in Kuwait 2017
- Tendering and design of On-Site treatment of soil contaminated by crude oil as Environmental Remediation Advisor in Kazakhstan 2017
- Tendering and design of On-Site treatment of soil contaminated by crude oil as Environmental Remediation Advisor in Ukraine 2017

- Assessment of Swedish hazardous waste treatment company SAKAB (currently Ekokem AB) about acquisition of the company in 2011
- Assessment of environmental construction markets in 12 countries in 2008-2012
- Registration for eligibility to provide services for United Nations organizations in 2011-2012
- Framework agreement negotiations with Shell in 2008-2009 and 2010
- Framework agreement negotiations with Neste Oil in 2011

Flow and transport modeling

- Design of Modflow transport model of brackish water body near leachate discharge pipe as freelancer in Pori Peittoo (Finland) 2016-2017. Modeling includes input, calibration, transient-state simulation type. Model includes various hydrological elements of river delta and brackish water (*different location than in the model made in 2015*).
- Design of Modflow transport model of brackish water body near leachate discharge pipe as Project Manager in Pori Mäntyluoto (Finland) 2015 and 2017. Modeling includes input, calibration, transient-state simulation type. Model includes various hydrological elements of river delta and brackish water.
- Design of Modflow flow model of groundwater in waste treatment plant premises as Project Manager in Hausjärvi (Finland) 2014 and 2017. Modeling includes input, calibration, steady-state simulation type. Model includes unconfined and confined layers as well as design of underdrain dewatering system.
- Design of Modflow flow model of groundwater in waste treatment plant premises as Project Geologist in Riihimäki (Finland) 2013-2014 and 2017. Modeling includes input, calibration, particulate tracking, steady-state and transient simulation types. Model includes unconfined and confined layers and various periods to simulate annual seasonal variations.
- Aqueous geochemical modeling of mine wastewater with high ionic strength by program PHREEQC as freelancer in Finland 2016.
- Landfill leachate modelling as Project Geologist in Kuopio (Finland) 2013.
- Design of Modflow flow model for pump & treat of groundwater contaminated by oil hydrocarbons in Pieksämäki (Finland) as Project Geologist 2011.
- Design of *Modflow* transport model to pump DNAPL from groundwater in Mikkeli (Finland) 2009-2013.

Completed environmental permitting procedures

- Risk assessment of oil contaminated soil under detached house in Tammisaari (Finland) 2018
- Ecological risk assessment and remedial design of mineral exploration protected site contaminated by oil hydrocarbons in Sodankylä (Finland) 2018.
- Risk assessment and remedial design of elementary school building affected by major oil spill incident in Rovaniemi (Finland) 2018.
- Risk assessment and remedial design of former industrial site contaminated by oil hydrocarbons and heavy metals in Tuusula (Finland) 2017.
- Hydrogeological Statement for construction of energy well in Hattula (Finland) 2017.
- Environmental permit application of industrial waste treatment centre in Kuopio (Finland) 2015.
- Environmental permit application process of recovered fuel (REF) treatment plant in Valkeakoski (Finland) 2015.
- Environmental permit application process to transform hazardous waste disposal cell to drainage water buffer pool in Riihimäki (Finland) 2015.
- Soil and groundwater base line study of hazardous waste treatment estate in Riihimäki (Finland) 2015.
- Waste acceptance procedures for various batches of waste to be landfilled; basic characterisation and compliance testing 2015.
- Internal audit of waste and water treatment sites in compliance with ISO-certificates 2015.
- Permit process for excavation of clay for landfill construction project in Siilinjärvi (Finland) as Project Geologist 2012 and 2015.

Education:

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| Institution | University of Oulu, Finland |
| Dates | May 31, 2016 |
| Degree/Diploma obtained | Refresher course (60 credits) of mining industry for engineers and geologists. Thesis "Geochemical Modeling of Mineral Crystallisation Produced by Evaporation of Wastewater of a Terrafame Metal Ore Mine". |

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| Institution | University of Tübingen, Faculty of Geoscience, Germany |
| Date | April 24, 2003 |
| Degrees obtained | M.Sc, International Masters Course "Applied Environmental Geoscience" (Thesis work Quantification of Groundwater Contamination at Field Scale in Heterogeneous Aquifers Considering Parameter Uncertainty) |

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|-------------------------|--|
| Institution | HAMK University of Applied Sciences, Finland |
| Dates | March 17, 2000 |
| Degree/Diploma obtained | B.Sc (Eng), Degree Programme "Environmental Engineering" (Thesis work Preliminary Study of Mellavaara Aquifer Conservation Plan) |

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| Institution | Oxford Brookes University, UK |
| Dates | 1998 (3 months) |
| Degree/Diploma obtained | Exchange student, courses on applied environmental geoscience, part of degree in HAMK University of Applied Sciences |

Professional Certificates:

- Water and sediment sampling course by Turku Polytechnic (Turku, Finland) in 2017
- Basic and special courses on contaminated soil and solid waste sampling by AEL, (Helsinki, Finland), 2004 and 2007, Certificate valid till 15 March 2020.
- Finnish Occupational Safety Card, 2007, valid till March 2022
- Finnish Emergency First Aid Card, 2007, valid till April 2020
- Road Safety 2 certification, valid till October 2021
- Finnish Hot Works License, valid till February 2023
- SoiliRisk 3.2 risk assessment training, Finnish Federation for Oil and Gas Industries in 2017
- Qualification as Internal Auditor of ISO 9001 & 14001 and OHSAS 18001 standards by Inspecta in 2014
- European Engineer Certificate in 2011.

Membership in Professional Societies:

- Finnish Society for Soil Investigation and Remediation MUTKU ry, deputy member of board 2008-2012, deputy operation's auditor 2012-2015, operation's auditor 2015-.

Employment Record:

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| Dates | May 2016 - |
| Location | Home-based / global |
| Company | Co-operative Bionautit / Lamor Corporation Ab, Ekokem Group and PBM Oy |
| Position | Environmental Remediation Advisor (Freelancer) |
| Description | Design, R&D, marketing and project management of contaminated sites remediation, hydrogeological modelling, primary clients have been Lamor Corporation Ab, Corena Group Ab (subsidiary of Lamor), Ekokem Group (now Fortum) and PBM Oy. |

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| Dates | September 2017 - |
| Location | Kerava, Finland |
| Company | PS-Palosaneeraus Oy |
| Position | Environmental Remediation Specialist. Part-time contract. |
| Description | Permit application, risk assessment, supervision and sampling of contaminated soil, groundwater and sediment sites in surveys and remediation projects. |

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| Dates | March 2016 – April 2016 (1 mn) |
| Location | Home-based |
| Company | Oulu Water Alliance Oy |
| Position | Project Geologist (Freelancer) |
| Description | Geochemical modeling of Terrafame mine wastewater of high ionic strength. |

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|-------------|---|
| Dates | February 2016 – March 2016 (1 mn) |
| Location | Home-based |
| Company | Co-operative Bionautit |
| Position | Project Geologist (Freelancer) |
| Description | Hydrogeological transport modelling of wastewater discharge in brackish water environment |

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|-------------|--|
| Dates | December 2006 – April 2016 (9 yrs / 4 mn) |
| Location | Riihimäki, Finland |
| Company | Ekokem-Palvelu Oy |
| Position | Project Manager (from March 2014 till December 2015); Project Geologist (from December 2006 till March 2014) |
| Description | Remediation of contaminated sites by <i>In Situ</i> methods and excavation; project management, remediation design, marketing, bidding, participation in development work for new chemical and biological remediation methods, maintenance and installation field work, soil and water sampling as well as hydrogeological modelling, environmental permit applications. Assignments as environmental expert in various sites in Estonia, Latvia, Lithuania, Sweden, Norway, Turkish Cypriot Community, Bulgaria, Ethiopia, Kazakhstan, Seychelles, Israel and occupied Palestinian territories. |

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| Dates | May 2004 – November 2006 (2 yrs / 7 mn) |
| Location | Rovaniemi, Finland |
| Company | Savaterra Oy |
| Position | Project Engineer |
| Description | On Site and Off Site thermal remediation (HTTD) of contaminated soil; marketing, field work as a site manager, quality system build-up and management. Assignments in service of Savaterra Oy included marketing and tendering in Finland, Sweden, Norway and Russia. |

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| Dates | November 2003 – March 2004 (5 months) |
| Location | Lohja, Finland |
| Company | Envimetria Oy |
| Position | Environmental Engineer |
| Description | Environmental surveys; periodic industrial emission measurements, fall-out and groundwater monitoring sites, groundwater and soil sampling in Finland and Estonia. |

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|-------------|---|
| Dates | February 2003 – May 2003 (4 months) |
| Location | Brussels, Belgium |
| Company | Council of European Union in Brussels, Unit Industry & Research |
| Position | Stagiaire |
| Description | Monitoring implementation of Community policies in accession countries. |

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| Dates | November 2002 – January 2003 (3 months) |
| Location | Inari, Finland |
| Company | Municipality of Inari |
| Position | Project Engineer |
| Description | Development of local waste management system and closure of old landfill site. |

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| Dates | July 2000 (1 month) |
| Location | Latvia |
| Company | Nordic Council - Political Party Latvijas Ās |
| Position | Assistant |
| Description | Assistance in preparation for parliamentary elections |

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|-------------|--|
| Dates | May – August 1999 (4 months) |
| Location | Rovaniemi, Finland |
| Company | City of Rovaniemi, Environmental Protection Office |
| Position | Trainee |
| Description | Design of groundwater protection plan for an aquifer |

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|-------------|---|
| Dates | May – June 1997 and February – April 1998 (total 3 month) |
| Location | Rovaniemi, Finland |
| Company | Lapin Vesitutkimus Oy |
| Position | Trainee |
| Description | Design of Environmental Impact Assessment for new waste management system for city of Rovaniemi and work as a assistant in water analysis laboratory. |

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| Dates | June – July 1997 (1 months) |
| Location | Rovaniemi, Finland |
| Company | Juvegroup Oy |
| Position | Laboratory Assistant |
| Description | Work in laboratory that analyses contaminated soil and develops microbes for remediation of contaminated soil. |

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| Dates | January – April 1996 (4 months) |
| Location | Rovaniemi, Finland |
| Company | Nature Conservation Union of Finland |
| Position | Trainee |
| Description | Office work related to nature conservation issues in Northern Finland. |

Language skills:

| Language | Speaking | Reading | Writing |
|----------|---------------|-----------|-----------|
| Finnish | mother tongue | Excellent | Excellent |
| English | Excellent | Excellent | Excellent |
| German | Good | Good | Good |
| Swedish | Good | Good | Good |
| Russian | Fair | Poor | Poor |