

Doctoral Researcher / Master's Thesis Worker RingO –
Piston Ring Dynamics Measurement for Understanding
and Reducing Lube Oil Transport
Aalto University

Direct Link: <https://www.AcademicKeys.com/r?job=264542>

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Posted Oct. 28, 2025, set to expire Feb. 27, 2026

Job Title Doctoral Researcher / Master's Thesis Worker RingO –
Piston Ring Dynamics Measurement for Understanding
and Reducing Lube Oil Transport

Department T212 Department of Energy and Mechanical
Engineering

Institution Aalto University
, , Finland

Date Posted Oct. 28, 2025

Application Deadline Open until filled

Position Start Date Available immediately

Job Categories Graduate Student

Academic Field(s) Mechanical Engineering

Job Website https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Doctoral-Researcher---Master-s-Thesis-Worker-RingO---Piston-Ring-Dynamics-Measurement-for-Understanding-and-Reducing-Lube-Oil-Transport_R44486-1

Apply By Email

Job Description

Aalto University is where science and art meet technology and business. We shape a sustainable future by sparking the game changers of tomorrow and by creating novel solutions to major global challenges. Our community is made up of 13,000 students, 400 professors and close to 4 500 other staff members working on our vibrant campus in Espoo, Greater Helsinki, Finland. We actively work to ensure our community's diversity and inclusiveness. This is why we warmly encourage qualified candidates from all backgrounds to join our community.

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The School of Engineering drives science and innovation in industrial and built environment technologies. We are committed to educating a new generation of experts who combine technical excellence with a deep understanding of sustainable development in shaping societies. Our research focuses on sustainable built environment, mechanics and materials, multidisciplinary energy technology, and design and implementation of technical systems. The strength of our school lies in close collaboration with stakeholders across research and education. About 45 doctoral candidates and 350 master's students graduate from the school every year. The school is home to 700 staff members, including 70 professors. To learn more, please visit eng.aalto.fi.

ARotor Lab at the Department of Energy and Mechanical Engineering in collaboration with our industrial partner Wärtsilä is looking for a

Doctoral Researcher / Master's Thesis Worker

RingO - Piston Ring Dynamics Measurement for Understanding and Reducing Lube Oil Transport

Description of the project
Lubrication is essential in internal combustion engines to reduce wear and friction between sliding components, particularly the piston-liner system. Inevitably, some of the lubricating oil enters the combustion chamber, leading to carbon deposits, coke formation, particulate emissions, and, in the case of alternative fuels such as hydrogen, severe risks of pre-ignition. Minimizing oil ingress while maintaining sufficient lubrication has become a major engineering challenge.

Despite extensive research and simulations, oil transport mechanisms are still insufficiently understood. Current models lack proper validation data. This project focuses on developing novel measurement techniques to capture piston ring dynamics and lube oil transport with high temporal and spatial resolution. The work will directly contribute to improving existing simulation tools used in both academia and industry.

The project is part of the Wärtsilä-Aalto Industrial D.Sc. program, ensuring strong industrial relevance and access to unique experimental setups. You will be employed by the University, but your work will be conducted physically both at Aalto University campus and Wärtsilä Vaasa STH laboratory, to provide best-possible methodological support for your doctoral dissertation project.

As an industrial Doctoral Researcher, you will be working closely with Wärtsilä engines research and development department to maintain the research relevance for industry, addressing real world challenges. Co-advising will be provided by related subject matter experts at Wärtsilä and your research outcome will be pressure tested in real world applications.

Research focus * Development of measurement methods for piston ring dynamics and lube oil leakage

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mechanisms * Investigation of sensor technologies for in-situ measurement of ring-liner gaps and piston top-land oil accumulation * Implementation in static rigs, motored engines, and single-cylinder research engines * Benchmarking against global oil consumption measurements (SO₂ method) to link local phenomena with overall transport * Use of experimental data to calibrate and validate simulation tools Skills we are looking for

Please note that these are considered assets, not strict requirements: * Background in mechanical engineering, electrical engineering (sensor technology), tribology, or engine technology * Experience with measurement techniques, measurement setups and sensor systems * Knowledge of machinery dynamics, vibrations, engine technology or piston-liner tribology * Programming, and data analysis skills (Python / Matlab), measurement programming skills (e.g. Labview, Dewesoft) * Interest in experimental research, prototyping, and laboratory work General eligibility criteria * Master's or Bachelor's degree in mechanical engineering, or other relevant field * Excellent written and oral skills in English * Finnish language skills are considered a benefit * Applicants must be able to work full-time and, for doctoral studies, meet the official eligibility requirements of the Aalto Doctoral Programme in Engineering during a trial period of 6 months: <https://www.aalto.fi/en/study-options/aalto-doctoral-programme-in-engineering> What we offer * Salary during Master's thesis phase: 2565 €/month (gross), full-time, max. 6 months for Aalto University Master student * After graduation, doctoral researcher starting salary: 2960 €/month (gross), with possible increases based on achievements * Annual workload: 1612 hours * Employment contract includes occupational health care; Finland has a comprehensive social security system * First doctoral contract: 2 years, followed by a midterm evaluation and extension for up to 4 years in total * Strong collaboration with Wärtsilä Vaasa (access to engines, test rigs, and experts) * International and multidisciplinary research environment with excellent facilities Ready to apply?

If you want to join our community, please submit your application through our recruitment system by November 30th 2025 at 23:59 Finnish time (UTC +2).

Please note: Aalto University's employees and visitors should apply for the position via our internal HR system Workday (Internal Jobs) by using their existing Workday user account (not via the external webpage for open positions). Aalto University's students and visitors should apply as external candidates with personal (not aalto) email.

The position will be filled as soon as a suitable candidate is identified.

Application materials (all in English, compiled into one pdf): * Motivation letter with contact information and preferred starting date (max. 1 page) * CV including academic merits (max. 3 pages) and contact details of two referees * Copy of most recent thesis (Bachelor's or Master's) * Degree certificate(s) and transcript of records with explanation of grading scale Further information

For additional information, please contact:

Assistant Professor Raine Viitala (firstname.lastname@aalto.fi)

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For recruitment system questions, please contact:

Paula Thomsson-Leva (paula.thomsson-leva@aalto.fi)

More about working at Aalto: <https://www.aalto.fi/en/careers-at-aalto>

Virtual campus tour: <https://virtualltour.aalto.fi/>

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Please reference Academickeys in your cover letter when
applying for or inquiring about this job announcement.

Contact

Finland