

Dissertation Release**Dissertation 05.02.2021**

Ductile iron optimisation

Title of the dissertation	Ductile iron modelling and optimisation for mechanically and thermally loaded components
Contents of the dissertation	The mechanical properties and thermal conductivity of spheroidal graphite cast irons depend on the microstructure and alloy contents. Higher perlite proportions and alloy concentrations typically increase mechanical properties and decrease thermal conductivity.
	The effects of perlite fraction and silicon content on thermal conductivity and strength properties at elevated temperatures were measured and modelled. The models were used for fatigue analysis of a thermally and mechanically loaded component with different perlite proportions and silicon concentrations. According to the results, the choice of the spheroidal graphite cast iron type is of great importance for the component's life.
Field of the dissertation	Mechanical engineering
Doctoral candidate	Jarkko Laine, M.Sc. (Tech.), born in 1968 in Pälkäne, Finland
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Place of the defence	Remote dissertation: https://aalto.zoom.us/j/69243981991
Opponent	Professor Alberto Molinari, University of Trento, Italy
Supervisor	Professor Juhani Orkas, Aalto University, School of Engineering, Department of Mechanical Engineering
Electronic dissertation	https://aaltodoc.aalto.fi/handle/123456789/101758
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