Master Thesis
Method Development for Automated Transient Engine Performance Simulation

WinGD is a leading developer of low-speed Gas and Diesel 2-stroke engines used for propulsion power in merchant shipping. These engines are utilized for the propulsion of all types of deep-sea ships worldwide, such as oil and gas tankers, bulk carriers, car carriers, general cargo ships and container ships. The company continues the long tradition of the Sulzer Diesel Engine business founded in 1898. WinGD’s headquarters is located in Winterthur, Switzerland.

Thesis Proposal
Frontloading and virtual development require more and more refined development processes – among others one of them is the transient-capable simulation of engine performance. Encountering an increasing number of requests in this area of simulation WinGD has decided to further automate its way of generating, calibrating and eventually running engine models. For this reason, an automated procedure for model calibration and simulation shall be built up. This will involve the development of calibration and modeling methodologies, the expansion of our model library and the subsequent integration into WinGD in-house automated control routine. Concluding with an obligatory validation to test data the outcome of this project will support WinGD’s frontloading strategy and in doing so significantly enhance the daily work flow throughout the whole company (Engine Performance, Sales and Digital Transformation & Technology departments).

Responsibilities
• Development of a method for preliminary prediction of engine load acceptance
• Development of automated calibration and simulation methodologies
• 1D-CFD engine modeling and expansion of WinGD GT-POWER model library
• Support of integration with Matlab Simulink and Python environment

Requirements
• Bachelor in mechanical engineering or similar
• Knowledge of internal combustion engines and fluid mechanics
• Knowledge of GT-SUITE/GT-POWER, Matlab Simulink and Python is a plus
• Fluent in English (oral and written)
• Standard requirement: Proactive personality and quick perception
• Standard requirement: Willing to move to Winterthur (or Zurich), Switzerland for 6-9 months

Our offer
• Dynamic and open working environment
• Extraordinary products
• Multi-cultural and interdisciplinary teams
• Modern working conditions

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