Budapest University of Technology and Economics

Faculty of Mechanical Engineering

Department of Fluid Mechanics

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F I N A L   P R O J E C T   A S S I G N M E N T

Publicly Available

Identification

Name: **Mammadli Tural**		ID: **73360935366**

Code of the Curriculum: 2NAAG0	Specialisation:		Document ref. number:
Curriculum: Bachelor of Science Degree Program in Mechanical Engineering	2NAAG0-PE		GEÁT:2022-1:2NAAG0:SZYLS6
Final Project issued by: Department of Fluid Mechanics	Final exam organised by: Department of Fluid Mechanics		
Supervisor: Dr. Joshua Patrick Davidson (71569852589), research fellow			

Project Description

Title

CFD modelling of a small scale thermal energy harvester using OpenFOAM

Kisméretű hőenergia-gyűjtő berendezés CFD modellezése OpenFOAM szimulációs környezetben

Details

Thermal energy harvesters scavenge energy from natural temperature gradients, to provide a robust power supply for autonomous wireless sensor networks in the environment. This project will involve optimising the design of a thermal energy harvesting device based on computer simulation of the system, incorporating all of the relevant physical processes (convection, conduction, radiation etc.).

1. Surveying and analysing relevant resources of technical literature

2. Create simple 2D model of the system considering internal conduction only

3. Extend model to include radiation and convective heat transfer with the environment

4. Extend the model to 3D

5. Perform simulations and optimise the design of the system

6. Summarize the work in the required document format of the BSc Thesis

Advisor

Advisor's Affiliation:

Advisor: —

Final Exam

1st subject (group)	2nd subject (group)	3rd subject (group)	4th subject (group)
ZVEGEVGAG4X Volumetric Pumps and Compressor	**ZVEGEVGAGFF** Fluid Flow Systems	**ZVEGEENAG71** Energy Processes and Equipments	

Authentication

Handed out: 6 September 2021		Deadline: 10 December 2021
Compiled by: Dr. Joshua Patrick Davidson (71569852589) Supervisor	Verified by: *Dr. János Vad* (signed) Head of Department	Approved by: *Dr. Gábor Györke* (signed) Vice-Dean

The undersigned declares that all prerequisites of the Final Project have been fully accomplished. Otherwise, the present assignment for the Final Project is to be considered invalid.

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Mammadli Tural