

ASSIGNMENT

MSc FINAL PROJECT (BMEGEÁTMWD2)

Title:	Assessment of various design concepts for the improvement of the flow field of a motor cooling fan	
Author's name (code):	Gábor KISS (AG3JD4)	
Curriculum :	MSc in Mechanical Engineering Modelling / Fluid Mechanics major	
Supervisor's name, title:	Csaba HORVÁTH, assistant lecturer	
Affiliation, address:	Department of Fluid Mechanics / BME H-1111 Budapest, Bertalan L. 4-6.	
Handed out / Deadline:	6 th of February 2012. / 11 th of May 2012.	
Curriculum subjects (code):	1. Computational Fluid Dynamics	(BMEGEÁTMW02)
	2. Flow Measurements	(BMEGEÁTMW03)
	3. Unsteady flows in pipe networks	(BMEGEVGMW02)
	4. Aerodynamics and its application for vehicles	(BMEGEÁTMW09)
Title of the Major Project (BMEGEÁTMWD1):	Assessment of various design concepts for the improvement of the flow field of a motor cooling fan	
Description / refinement of the Major Project (BMEGEÁTMWD1):	<ol style="list-style-type: none">1. Review of the literature: fan design, motor cooling fan design, injection moulding and its limitations, aerodynamics and acoustics of turbomachinery2. Review of the criterions provided for the specified fan design3. Review of the present design and the associated design methodology4. Understanding the present model used for simulating the fan. Understanding the flow characteristics in the present results5. Learning the use of a blade geometry modelling tool6. Alteration of the present model used for simulating the fan, in order to improve the aerodynamic and acoustic characteristics of the flow7. Summarizing the literature, the methods applied, the results obtained as well as proposing further possible steps	
Description of the Final Project (BMEGEÁTMWD2):	<ol style="list-style-type: none">1. Investigation of the work flow and modelling possibilities available in ANSYS, which are to be applied in investigating the effect of the axial shroud-cover clearance gap in the computational fluid dynamic (CFD) simulation of the system2. Conducting tests in order to determine the computational domain and mesh criteria necessary to achieve successful CFD simulations (numerical domain variations, mesh topography and mesh independence investigations)3. Creation of finalized geometrical model and computational mesh variations to be used in the CFD simulations4. Conducting simulations for given gap clearance variations5. Assessment of the validity of the results with regard to CFD quality criteria and with the investigation of the flow field6. Summarizing the literature, the methods applied, the results obtained	



Budapest, 6th of February 2012.

(L.S.)

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 Dr. János VAD, associate professor
 Head of Department

Approved by:
 Budapest, 6th of February 2012.

(L.S.)

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 Prof. Gábor STÉPÁN
 Dean of Faculty

Received by:
 Budapest, 6th of February 2012.

The undersigned declares that all prerequisite subjects 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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 student

Supervisor's declaration of acceptance:	The submitted Thesis fulfils all requirements of the Department of Fluid Mechanics, Budapest University of Technology and Economics. The Thesis is accepted for review process and public defence.
Supervisor's proposal for final grade of the thesis:	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> The proposed final grade* of the MSc Thesis: </div> * Please, select one: excellent (5), good (4), medium (3), acceptable (2), fail (1)
Date:	Budapest, 11th of May, 2012.
Name / Signature: Csaba Horváth, assistant lecturer supervisor

Reviewer's proposal for final grade of the thesis:	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> The proposed final grade* of the MSc Thesis: </div> * Please, select one: excellent (5), good (4), medium (3), acceptable (2), fail (1)
Date:	
Name / Signature: reviewer

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