ASSIGNMENT

MSc THESIS (FINAL PROJECT BMEGEÁTMWD2)

Title:	**Investigation of discharge valves applied in rotary compressors in meaning of Fluid-Structure Interaction**
Author's name (code):	**Dávid MOLNÁR (HFG3S3)**
Curriculum:	MSc in Mechanical Engineering Modelling / spec. Fluid Mechanics
Curriculum's code:	2N-MW0-FM
Supervisor's name, title:	Balázs FARKAS, Ph.D. student
Affiliation, address:	Department of Fluid Mechanics / BME
	H-1111 Budapest, Bertalan L. 4-6.
Advisor's name, title:	Tamás KALMÁR-NAGY, Ph.D., Senior Consultant
Affiliation, address:	Department of Fluid Mechanics / BME
	H-1111 Budapest, Bertalan L. 4-6.
Handed out / Deadline:	**8th of September 2014. / 12th of December 2014.**

Curriculum subjects (code), credits:

1. Computational Fluid Dynamics   (BMEGEÁTMW02), 5 cr
2. Flow Measurements   (BMEGEÁTMW03), 5 cr
3. Building Aerodynamics   (BMEGEÁTMW08), 3 cr
4. Aerodynamics and its Appl. for Vehicles   (BMEGEÁTMW19), 3 cr

Title of the Major Project (BMEGEÁTMWD1):

Investigation of discharge valves applied in rotary compressors in meaning of Fluid-Structure Interaction

Description / refinement of the Major Project (BMEGEÁTMWD1):

1. Search and summarize technical literature on Fluid-Structure Interaction models of discharge valves, with emphasis on those applied in rotary compressors!

2. Create a 2D ANSYS-Fluent model with rigid valve and compare different dynamic meshing methods!

3. Create a 2D ANSYS-Fluent model with elastic valve. Investigate the small and large deformation cases!

4. Based on the preliminary results conduct a parametric study!

5. Derive a preliminary analytical model using the Euler-Bernoulli beam model!

6. Prepare a report in the required document format!

Description of the Final Project (BMEGEÁTMWD2):

1. Create a 2D ANSYS-Fluent model that considers the valve as a pitch & plunge model!

2. Create a 2D ANSYS-Fluent model using a discretised beam model! Compare the results with those of the previous models!

3. Describe the relevant parameter/dynamics that governs the behaviour of the discharge valve!

4. Summarize the results in the required document format!

Budapest, 8th of September 2014.

	……………………………..	………………………………….
(L.S.)	supervisor	Dr. János VAD, full professor Head of Department

Approved by:
Budapest, 8th of September 2014.

	………………………….
(L.S.)	Dr. Tibor CZIGÁNY Dean of Faculty

Received by: Budapest, 8th of September 2014.	The undersigned declares that all prerequisite subjects of the Final Project have been fully accomplished. Otherwise, the present assignment for the MSc Thesis and the subject's registration for BMEGEÁTMWD2 are considered to be invalid.

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student

Supervisor's declaration of acceptance:	The submitted MSc Thesis fulfils all requirements of the Department of Fluid Mechanics, Budapest University of Technology and Economics. The MSc Thesis is accepted for review process and public defence.
Supervisor's proposal for final grade of the MSc Thesis:	The proposed final grade* of the MSc Thesis: ………………………….... * Please, select one: excellent (5), good (4), medium (3), acceptable (2), fail (1)
Date:	Budapest, 12th of December 2014.
Name / Signature:	………………………………… supervisor

Reviewer's proposal for final grade of the MSc Thesis:	The proposed final grade* of the MSc Thesis: ………………………….... * Please, select one: excellent (5), good (4), medium (3), acceptable (2), fail (1)
Date:	
Name / Signature:	………………………………… reviewer

Budapest University of Technology and Economics
Faculty of Mechanical Engineering
Department of Fluid Mechanics

Hungary, 1111 Budapest, Bertalan L. u. 4-6.
Telefon: (36-1) 463-4072 Fax: (36-1) 463-3464
http://www.ara.bme.hu