

## ASSIGNMENT

### MSc THESIS (FINAL PROJECT BMEGEÁTMWD2)

Title:	<b>Investigating wind turbines augmented by simple-shaped deflectors</b>
Author's name (code):	<b>Tamás MÁTÉ (CLNW0Q)</b>
Curriculum:	MSc in Mechanical Engineering Modelling / spec. Fluid Mechanics
Curriculum's code:	2N-MW0-FM
Supervisor's name, title:	Dr. Viktor SZENTE, assistant professor
Affiliation, address:	Department of Fluid Mechanics / BME Building AE H-1111 Budapest, Bertalan Lajos str. 4-6.
Advisor's name, title:	-
Affiliation, address:	-
Handed out / Deadline:	<b>8<sup>th</sup> of September 2014. / 12<sup>th</sup> of December 2014.</b>
Curriculum subjects (code), credits:	1. Computational Fluid Mechanics (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):	<b>Wind turbines augmented by simple-shaped deflectors</b>
Description / refinement of the Major Project (BMEGEÁTMWD1):	1. Study the currently available vertical axis wind turbine types. Evaluate the different fluid mechanical spoilers, guides, vanes, etc. that are used to enhance their efficiency and/or power output, then select the most promising constructions. 2. Select a wind turbine geometry, then establish its characteristics using CFD. 3. Investigate how the different constructions selected in Task 1 influence the analysed turbine's characteristics using CFD. 4. Propose one or more ways to further enhance the optimal construction. This can be one or more modifications on existing geometries, or new constructions. Verify the proposed configurations using CFD.
Description of the Final Project (BMEGEÁTMWD2):	1. Correct the mesh of the proposed enhancement used in wind turbines augmented by simple-shaped deflectors. Conduct the measurements on the corrected mesh using CFD and divulge results. 2. Investigate further shapes and enhancements either on the deflectors, or on the turbine. These modifications should be expressed with one parameter of the augmented wind turbine. 3. Evaluate the results and show how the changes are triggered by the different modifications. 4. Suggest further enhancements that may improve the parameters of the augmented wind turbines.



Budapest, 8<sup>th</sup> of September 2014.

(L.S.)

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supervisor

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Dr. János VAD, full professor  
Head of Department

Approved by:  
Budapest, 8<sup>th</sup> of September 2014.

(L.S.)

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Dr. Tibor CZIGÁNY  
Dean of Faculty

Received by:  
Budapest, 8<sup>th</sup> 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.

.....  
student

<b>Supervisor's declaration of acceptance:</b>	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.
<b>Supervisor's proposal for final grade of the MSc Thesis:</b>	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     The proposed final grade* of the MSc Thesis:                      .....                 </div> <p>* Please, select one: excellent (5), good (4), medium (3), acceptable (2), fail (1)</p>
<b>Date:</b>	Budapest, 12 <sup>th</sup> of December 2014.
<b>Name / Signature:</b>	..... supervisor

<b>Reviewer's proposal for final grade of the MSc Thesis:</b>	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     The proposed final grade* of the MSc Thesis:                      .....                 </div> <p>* Please, select one: excellent (5), good (4), medium (3), acceptable (2), fail (1)</p>
<b>Date:</b>	
<b>Name / Signature:</b>	..... reviewer

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