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## ASSIGNMENT

### MSc FINAL PROJECT (BMEGEÁTMWD2)

Title:	<b>Modelling of air dryer cartridge operation in air supply systems of commercial vehicles</b>
Author's name (code):	<b>Balázs TÓTH (SOK0TT)</b>
Curriculum :	MSc in Mechanical Engineering Modelling / Fluid Mechanics
Supervisor's name, title:	<b>Gergely KRISTÓF Ph.D.</b>
Affiliation, address:	Department of Fluid Mechanics / BME H-1111 Budapest, Bertalan L. 4-6.
Advisor's name, title:	<b>Gábor LICSKÓ</b> – Development engineer
Affiliation, address:	Knorr-Bremse Fékrendszerek Kft.
Handed out / Deadline:	<b>3<sup>rd</sup> of September 2012. / 7<sup>th</sup> of December 2012.</b>
Curriculum subjects (code):	1. Computational Fluid Dynamics (BMEGEÁTMW02) 2. Flow Measurements (BMEGEVGMW03) 3. Unsteady Flows in Pipe Networks (BMEGEVGMW02) 4. Aerodynamics and its Application for Vehicles (BMEGEÁTMW09)
Title of the Major Project (BMEGEÁTMWD1):	Modelling of air dryer cartridge operation in air supply systems of commercial vehicles
Description / refinement of the Major Project (BMEGEÁTMWD1):	1. Carry out a detailed literature review in the field of air treatment on commercial vehicles and the desiccant adsorption process in air dryer cartridges 2. Develop a simulation model in Matlab that is able to describe the adsorption/desorption process qualitatively. 3. Validate the model for the test measurements published by Gorbach et al. 4. Summarize the obtained results and suggest improvements for the regeneration strategy in actual air treatment systems.
Description of the Final Project (BMEGEÁTMWD2):	1. Validate the previously developed model for air dryer cartridges to bench test results. 2. Develop a measurement method suitable for model validation in regeneration direction. 3. Improve the model in order to being able to simulate desorption/regeneration. Carry out simulation using the validated model for different regeneration strategies (constant time, constant volume and constant rate). 4. Summarize the obtained results and suggest improvements for the regeneration strategy in actual air treatment systems.



Budapest, 3<sup>rd</sup> of September 2012.

(L.S.)

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supervisor

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Dr. János VAD, associate professor  
Head of Department

Approved by:  
Budapest, 3<sup>rd</sup> of September 2012.

(L.S.)

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Prof. Tibor CZIGÁNY  
Dean of Faculty

Received by:  
Budapest, 3<sup>rd</sup> of September 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

<b>Supervisor's declaration of acceptance:</b>	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.
<b>Supervisor's proposal for final grade of the thesis:</b>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     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, 7 <sup>th</sup> of December, 2012.
<b>Name / Signature:</b>	..... supervisor

<b>Reviewer's proposal for final grade of the thesis:</b>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     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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