

**I. IDENTIFICATION DATA**

<b>Title of thesis:</b>	<b>Noise Generated by Air Discharged from Small Openings</b>
<b>Name of author:</b>	<b>Hassan Ahmed Zakaria</b>
<b>Type of thesis:</b>	bakalářská
<b>Faculty:</b>	Fakulta strojní (FS)
<b>Department:</b>	Environmental Engineering
<b>Name of reviewer:</b>	Ing. Vojtěch Zavřel, Ph.D.
<b>Opponent affiliation:</b>	Department of Environmental Engineering, Faculty of Mechanical Engineering CTU in Prague

**II. INDIVIDUAL CRITERIA EVALUATION**

<b>Thesis assignment</b> <i>Evaluate difficulty level of thesis assignment</i> The thesis focuses on empirical evaluation of the aerodynamic noise generated by narrow openings and leaks in duct system.	<b>náročnější</b> <i>difficult</i>
<b>Thesis assignment fulfillment</b> <i>Evaluate fulfilment of thesis assignment</i> The thesis fulfills the given assignment.	<b>splněno</b> <i>fulfilled</i>
<b>Methodology</b> <i>Evaluate research methodology applied in thesis</i> Even Though the methodology is not particularly mentioned in the theoretical part, it is relatively clear from the structure of the thesis.	<b>správný</b> <i>correct</i>
<b>Level of expertise</b> <i>Evaluate the level of expertise, applied methods and usage of knowledge gained during the studies or from literature.</i> The student presents sufficient knowledge of the topic regarding noise evaluation. The student executes relatively large number of experiments to empirically assess the aerodynamic noise of narrow opening or cracks, that may occur in the ventilation duct system. Several gap dimensions were investigated for various settings of the inlet air velocities. As first, the velocity pattern from the narrow openings was studied. As second, the acoustic measurements were performed and evaluated. Cases were compared using unitless indicators (Strouhal number) and the correlation between total sound power level and inlet air velocity.	<b>B - velmi dobře</b> <i>B – very good</i>
<b>Presentation, grammar and stylistics</b> Even though these mistakes are not important for understanding, there are relatively large number of the minor mistakes and typos (e.g. no gaps between words etc.). Also in some parts, the used language could have been more formal or technical (e.g. "Aerodynamic noise measurements proved to be quite interesting", "I will start by introducing...", etc.). Except minor stylistic mistakes, the presentation of the thesis is good.	<b>C - dobře</b> <i>C - good</i>
<b>Citation and reference management</b> Although the citation management is relatively good from the stylistic perspective, the theoretical part does not support well the studied issue. The theoretical part is too generic and vague. Sometimes references could have been expected. E.g. P10 "There have only been few studies that tried to tackle that problem ...". It is not clear which studies are meant.	<b>D - uspokojivě</b> <i>D – satisfactory</i>
<b>Additional comment.</b> The labels of figure 4-7, 4-10, 4-12 are confusing. I understood that the labels refer to fan's frequency converters setting, but the velocity given in Hz is odd.  Is there any explanation for the outlier point of the tunnel constant for diameter 2,2 and fan frequency 20 in Table 3-1?	

### III. FINAL EVALUATION, QUESTION FOR DEFENSE, MARK PROPOSAL

The bachelor thesis presents comprehensive experimental work regarding aerodynamic noise generated by narrow openings and leaks that fulfilled the assignment of the bachelor thesis. The weak point of this thesis is the theoretical part. This part is too general, vague and it does not support well the studied issue. The theoretical part somewhat lacks the reasoning regarding motivation and the clear statement of the methodology for this research. On the other hand, the experimental part provided many results from relatively large number of experiments. Moreover, these results were post-processed into correlation charts that characterize the gap noise level versus Strouhal number or inlet air velocity.

The master thesis is evaluated by classification grade **C - dobře.**  
**C - good**

Questions 1: As written at P43, vibration of the plates should not impair the measurements, however the measurements depict that the noise level is still influenced by the choice of the material (Plexiglass or iron plat). Please could elaborate on that and extend the explanation that is provided in thesis?

Question 2: The linear correlation was selected in figures 4-19 and 4-20. Could you quantify the error of the given dataset linearization and provide a reasoning for the choice of linear correlation?

Datum: 22.1.2019

Signature: Vojtěch Zavřel

