I. IDENTIFICATION DATA

<table>
<thead>
<tr>
<th>Title of thesis:</th>
<th>Optimisation of spray dryer with nebulisation head</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author:</td>
<td>Bc. Mathew David Dimmock</td>
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<tr>
<td>Thesis type:</td>
<td>Diploma</td>
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<tr>
<td>Faculty/department:</td>
<td>Faculty of Mechanical Engineering</td>
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<tr>
<td>Department:</td>
<td>Department of Process Engineering 12118</td>
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<tr>
<td>Opponent affiliation:</td>
<td>Department of Process Engineering 12118</td>
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</tbody>
</table>

II. EVALUATION OF THE PARTICULAR CRITERIA

Assignment extremely difficult

The assignment of the diploma thesis is demanding. It required to process the measured data, which were passed on to the graduate. However, this data was often incorrect or insufficient. The part concerning the model of air or particles flow in the drying chamber has an excellent level.

Fulfilling the assignment fulfilled

The assignment of the diploma thesis has been fulfilled.

Selected solution procedure excellent

The chosen solution procedure is correct and I have no reservations about it.

Professional level A - excellent

The professional level fully corresponds to the requirements for DT.

Formal and language level, scope of work A - excellent

The structure of the work is correct. The scope of work also fully meets the requirements of the assignment. I can't judge the thesis language level, because the graduate is a native Englishman.

Source Selection, Correct Quotation A - excellent

The used sources fully cover the requirements of the solved problem, also the citations are correct and extensive (61 sources).

More comments and ratings

My notes on the work and questions for explanations during the defense:

p. 9 There is not mentioned for example the belt drying in the chapter.

p. 24 Chapter 3 does not contain references to figures in the text.

p. 32 Fig. 5.1 is given without any description or comment.

p. 42 The text states that the dryer (variant A) has 4 tangential inlets, but only 1 is drawn in Fig. 7.1.

p. 49 Fig. 7.5 shows 2 HEPA filters (input and output). In the system model in Fig. 7.6, only 1 is drawn. How many HEPA filters are considered when specifying pressure losses in the system?
p. 50  The drying air flow estimated of 600 m³ / h, determined from the fans characteristics (sucking and compressing) and the system characteristic, corresponds to our estimations from 2018 (600 to 700 m³ / h).

p. 85  Fig. 7.14 lacks exponents at air velocities. They were probably lost during graphics processing. The same mistake is in Fig. 10.16 to 10.19 and 10.30 to 10.39.

p. 88  Measured values are very difficult to see in Figures 10.20 to 10.29.

p. 106  Was such high air leakage in the system (about 39 %) observable during the experiments? Was there overpressure or underpressure in the system? What were the parameters of both fans?

Note: In the text, the term "moisture" is usually used to determine the water content in a material. Sometimes the term "humidity" is used too. I thought the term "humidity" was used for air. What is right?

### III. TOTAL EVALUATION AND PROPOSAL FOR CLASSIFICATION

In conclusion, it can be stated that the graduate had a very difficult job. He tried to evaluate the results of the experiments, which were passed to him and whose accuracy was doubtful. I see the main benefit in the fact that he found these shortcomings (inaccurate measuring instruments, errors in the design of the experimental equipment or incorrect measurement procedure). Therefore, he proposed 2 variants of modification of the experimental equipment and the method of measuring the necessary parameters. The second important benefit of this work is in the development of the air and particles flow models inside the drying chamber. Due to inappropriate data, it was difficult to verify these models with sufficient accuracy. From a physical and logical point of view, it can be stated that these models are probably suitable to solve the problem.

**Questions that should be answered during the defense:**

See the previous paragraph.

**Conclusions:**
The submitted work meets all the requirements for master’s theses. The above comments do not affect the excellent level of this extensive and helpful work.

Due to its professional level, technical elaboration and formal level, I evaluate the master’s thesis with the following grade:

**A - excellent**

Date: 20.8.2020