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Specific heat consumption per one kilogram of transpiration water during 11 years of running drying-plant represents an average value 5.54 MJ, which is not a good result (Tab. 3). Heat consumption per kilogram of transpiration water in individual years is in range from 4.37 to 6.41 MJ (Tab. 3), it represents 100% dispersion. The listed facts require a deep analysis of consumption reasons.

The listed heat consumption difference is caused by the fact, that a drying-plant works also in November and December, when the processed grain maize has a low temperature (7–10°C), and the air temperature is also low (5–9°C), Table 2. The other factors are measurement accuracy of control system, drying uniformity, technological discipline and special knowledge of operators.

Heat consumption per heating air for hot drying-plant according to Pawlicu [1988] should not go over 4.80 MJ•Kg<sup>-1</sup> of transpiration water. Jurik [2005] gives a classification of drying-plants according to the measured heat consumption:

- specific heat consumption higher than 4.0 MJ•Kg<sup>-1</sup> -uneconomical old drying-plants,

- specific heat consumption lower than  $3.0 \text{ MJ} \cdot \text{Kg}^{-1}$  - the most economical dryingplant,

- specific heat consumption lower than 2.7 MJ•Kg<sup>-1</sup> – technically unrealistic.

According to the presented drying-plants classification, the measured drying-plant SCHIEF belongs already to the group of rusty drying-plants.

The efficiency of drying-plant in the year 2005 was in the range from 11 to 15  $t \cdot h^{-1}$ .

An average hour efficiency per whole season was 8.35 t. Gas and electric energy consumption are listed in Table 3.

## ENERGY CONSUMPTION AT DRYING COMPARISON OF DRYING-PLANT SELECTION

An evolution in construction and technology of grain drying is markedly progressing. Drying-plants with new constructional and technological parameters are coming to practice. The technical information about these new drying-plants is very interesting and markedly reduces energy consumption at grain drying.

Type of drying house	Measurement of warm transpiration water consumption, KJ·kg <sup>-1</sup> t. w.	Evaporation, $kg \cdot h^{-1}$
MEYER 2000	4765	1833.46
TSM Pardubice	4360	
CHIEF CBS 14-6	4250	2000
PETKUS IDU 4000-14	4200	
LAW	3977-4186.8	
STELA MDB	3558	1833.46
KONGSKILDE	3334.6	820.31
Mathews Company (M-C)	2991.99	1590.91
model 1075		
STELA MUF 70	2992	

Table 4. Comparison of working parameters in the selected types of drying-plants

For comparison of the listed drying-plant SCHIEF with others, a few drying-plants types were selected according to available material (Tab. 4). According to the listed values the measured heat consumption per kilogram of transpiration water was in the range from 2.99 to 4.76 MJ.

On the basis of the listed facts it can be said, that the measured heat consumption for drying is reduced by using a drying-plant with new constructional and technological solutions. The trend in a new modern drying-plant reaches the value of 3.0 MJ per kilogram of transpiration water.

The obtained knowledge points out, that a ten-year-old drying-plant is rusty and needs innovation in view of heat consumption.

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