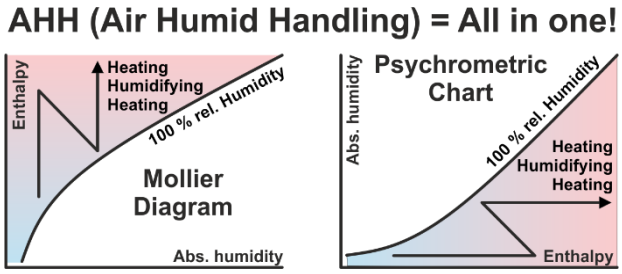
Accuracy of the data for air humid

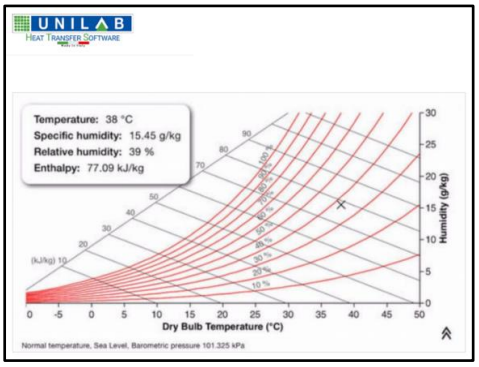
There is free software, but it is often found that if something costs nothing, it is not worth much. There is software that costs only half, although it has to be said that this maybe only offers half the possibilities. There is our software, which is used currently by more than 7'500 engineers. You can choose between single users and networks, with the price of network licenses depending on how many users want to use the software at any one workstation in the entire network at the same time.



We would like to provide a reference to **www.unilab.eu** , where it is written: "*Unilab is a 100% Italian owned independent software house, and for over 30 years has been providing its clients with high quality heat transfer software. Our solutions are the result of technical and scientific experience, plus extensive IT knowledge, always at the forefront of innovation!* ***We are the only software house with an in-house thermal engineering department****, allowing us to speak the same language as your technical department. Our solutions are used by over 400 customers in more than 65 countries!*"

At **Unilab**, they don't take it too seriously, ***since we have been operating as a neutral software house in exactly the same market since 1987 with currently 7'500 licenses*** and the owner has been exclusively concerned with thermodynamics for heat exchangers and the development of software since 1970.

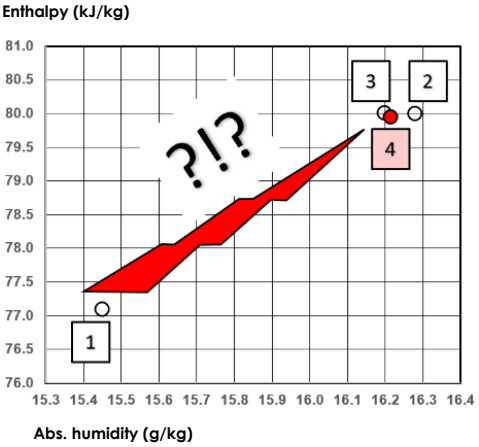
The calculation by **Unilab** regarding the absolute humidity and the enthalpy made us suspicious, which is why we looked up various online calculators for the Mollier HX diagram on the Internet.



Specifications

Air pressure	bar	1.013
Temperature	°C	38.000
Rel. humidity	%	39.000

Results	Abs. humidity g/kg	Enthalpy kJ/kg	Assessment ---
1. www.unilab.eu	15.450	77.090	**Bullshit!**
2. www.i-r-b.de	16.280	79.990	≈ ≈ OK
3. www.hassler-kaeltetechnik.de	16.200	79.998	≈ OK
4. www.zcs.ch	16.215	79.939	OK!



The problem for the differently generated values results from impermissibly simplified equations and different thermodynamic properties.

The specific temperature-related heat capacity can usually be found in specialist books. This value shows how much energy has to be used to heat the medium by 1°C at the corresponding temperature. If you want to know what energy is required to heat the medium from **t1 to t2** or from **0 to t**, the mean of the specific temperature-related heat capacity must be determined.

$$cp = \frac{\int_{t_1}^{t_2} cp_t dt}{t_2 - t_1} \quad \rightarrow \quad cp = \frac{\int_0^t cp_t dt}{t}$$

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