



Heat Pipes in the air conditioning technology

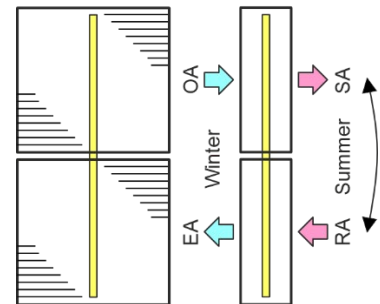
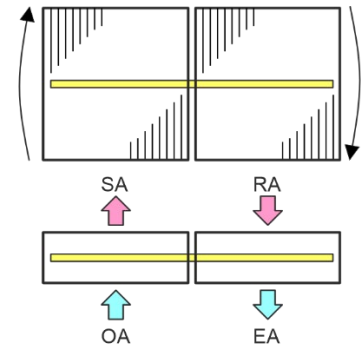
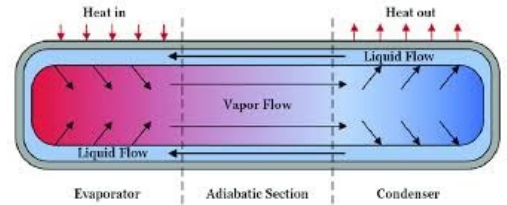
The functioning of a heat pipe has been known for 100 years. A refrigerant flows back and forth in the capillary tubes. Fins are arranged around the tubes. Today, these heat pipes are successfully used, for example, to cool computer components such as motherboards.

In the air conditioning technology, these heat pipes were installed in two finned connected heat exchangers, whereby two different versions were required depending on the arrangement of the air conditioning units.

When arranged next to each other, it was **theoretically** possible to regulate the capacity by tilting it slightly, but this has never proven itself in practice. In addition, only temperature efficiencies of a **maximum of 50%** were achieved. Today, a **minimum of 70%** is prescribed in standards, which is absolutely impossible with heat pipes.

When arranging on top of each other, there is no possibility of regulating the capacity, on the contrary, in summer and winter the **supply and exhaust air units have to be replaced**, which is really not to be expected of anyone.

A German manufacturer of finned heat exchangers, who has no idea about energy recovery, told me with great conviction in December 2024, that they had included these heat pipes in their portfolio, because they were increasingly being used again in the air conditioning industry. With my 80 years, I can look back on 55 years in the air conditioning industry and know, that this is completely out of touch with reality. **A survey of 4 major manufacturers of air conditioning units, therefore revealed a completely different picture, which I do not want to reserve for you.**



As far as I know, we used heat pipes in the air handling units over 40 years ago. At that time with efficiencies of about 50% as a predecessor to RWT. We have also converted old systems, i.e. replaced them with an rotor or a HR-System via a so-called "retrofit project". From today's perspective, I would say, that we have no use in the field of air handling units.

This topic actually means very little to me, never heard of it. If I type this into Google, then I can roughly understand it, but again, I have never been confronted or approached by this. With our air volumes and performance, I don't see it as appropriate. From my point of view, very small percentage, but I can also be wrong.

The last time, I had contact with this system was perhaps 7-8 years ago. We have never offered this ourselves, we have offered tenders with this system with a conventional heat recovery system. The heat recovery efficiency was a modest 50-55% in each case. In this area, yes, in CH, it does not comply with the law for outdoor air systems (>= 70%).

Due to the refrigerant issue, I see, at least in Germany, black for the heat pipe. In the European air conditioning industry, the heat pipe was more or less discontinued many years ago. In Asia, however, it is still used regularly in some cases, as there are no legal restrictions on the one hand and different outdoor air conditions on the other. There you can still buy R22 in the supermarket, so to speak. In the air conditioning industry in particular, the fact that the arrangement of the air flows for the function of the heat pipe is so limited is also a problem. In addition, the airflow arrangement must be mechanically changed between winter and summer (supply air at the top in winter, exhaust air at the bottom and in summer at the top, supply air at the bottom). Nobody in Europe wants to realize that. In Thailand, for example, summer falls all year round, so to speak. Nothing needs to be diverted here. At least that's my assessment.