

Handling Entropy

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It is uncommon to look at entropy as a physical object, whose effects can be observed, whose properties can be studied and whose behaviour can be investigated – as one would do for instance with the electric charge. Both the classical definition and the statistical interpretation of the entropy S seem to exclude such a view.

However, it is just this approach which allows for a straight-away understanding of the quantity S , and which enables us to introduce it by means of a direct measuring procedure, in the same way as the basic quantities length, time or mass. The second law can be formulated without recourse to energy or temperature. On the contrary, the absolute temperature can be introduced via energy and entropy, and heat engines and heat pumps are analysed shortly after this introduction, without discussing working cycles, gas laws or energy conversion processes.

Entropy possesses not only mathematical or statistical features, but also phenomenologically seizable properties. It appears as a kind of stuff, which is distributed in space, can be enclosed or passed on, collected or distributed, soaked up or squeezed out, concentrated or dispersed. It is involved in all thermal effects and can be considered their actual cause. Without it, there would be no hot and no cold. Actually, it can be recognized by these effects. It can be easily generated, if the required energy is available, but it cannot be destroyed anymore. Thus, the production process is irreversible and the consumed energy seems to be lost.