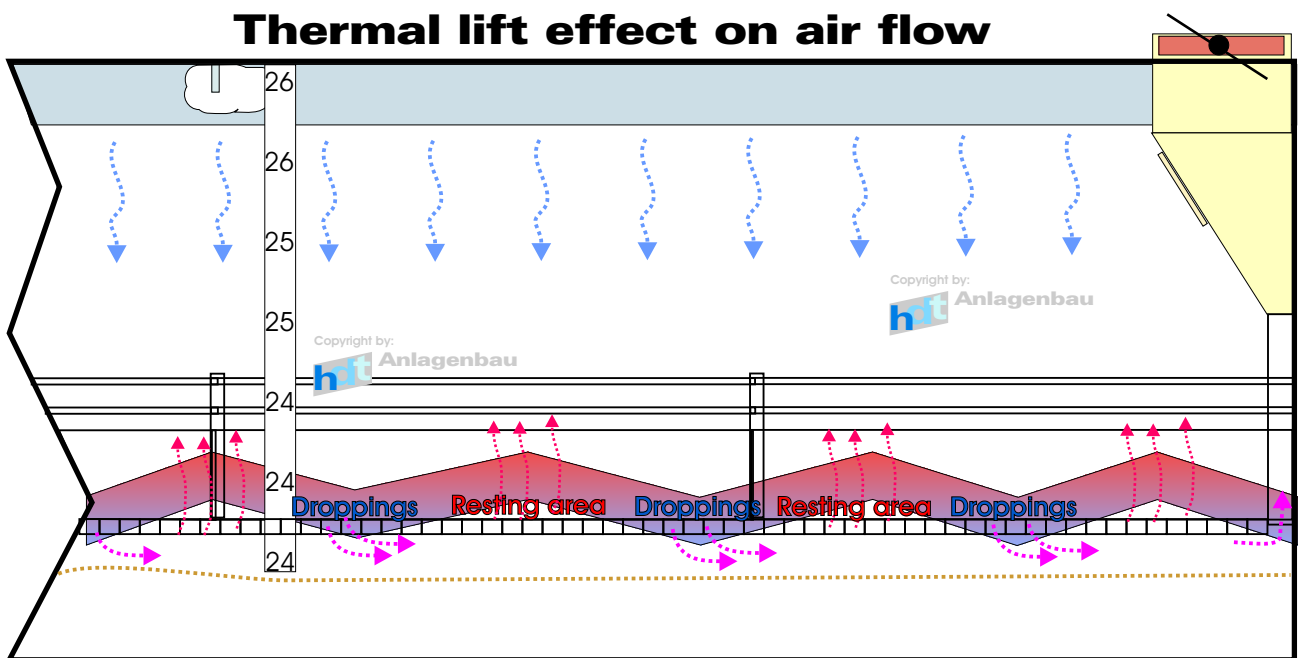
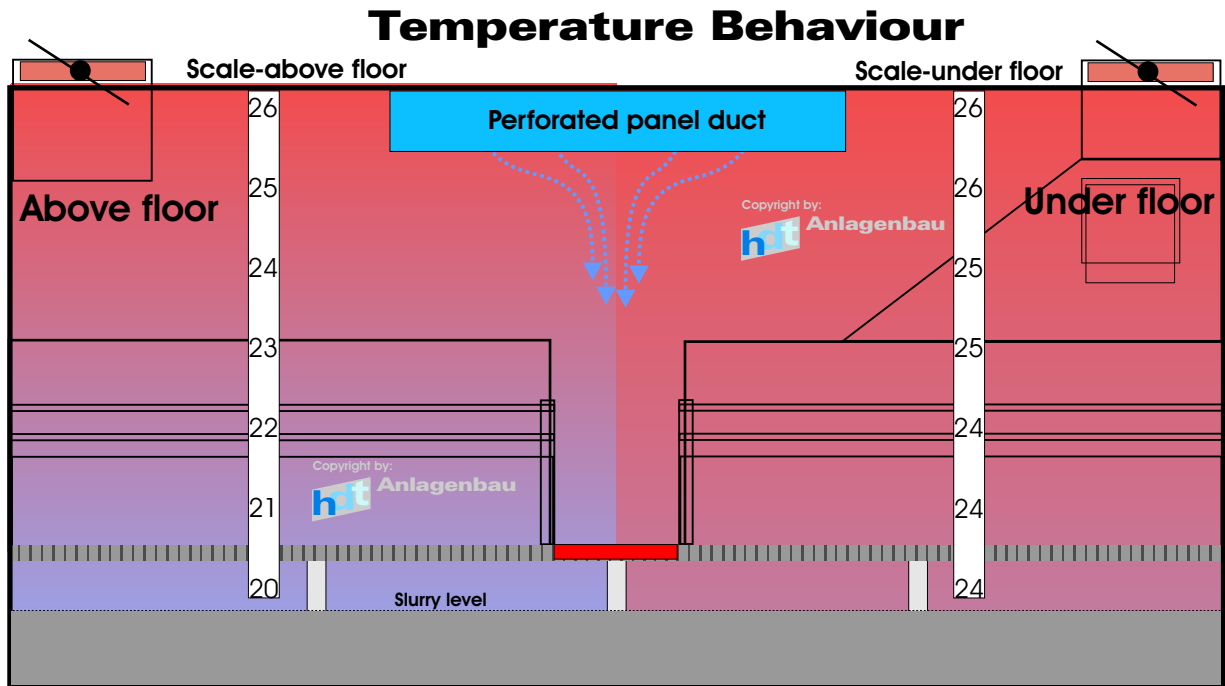


What influence does thermal lift have?



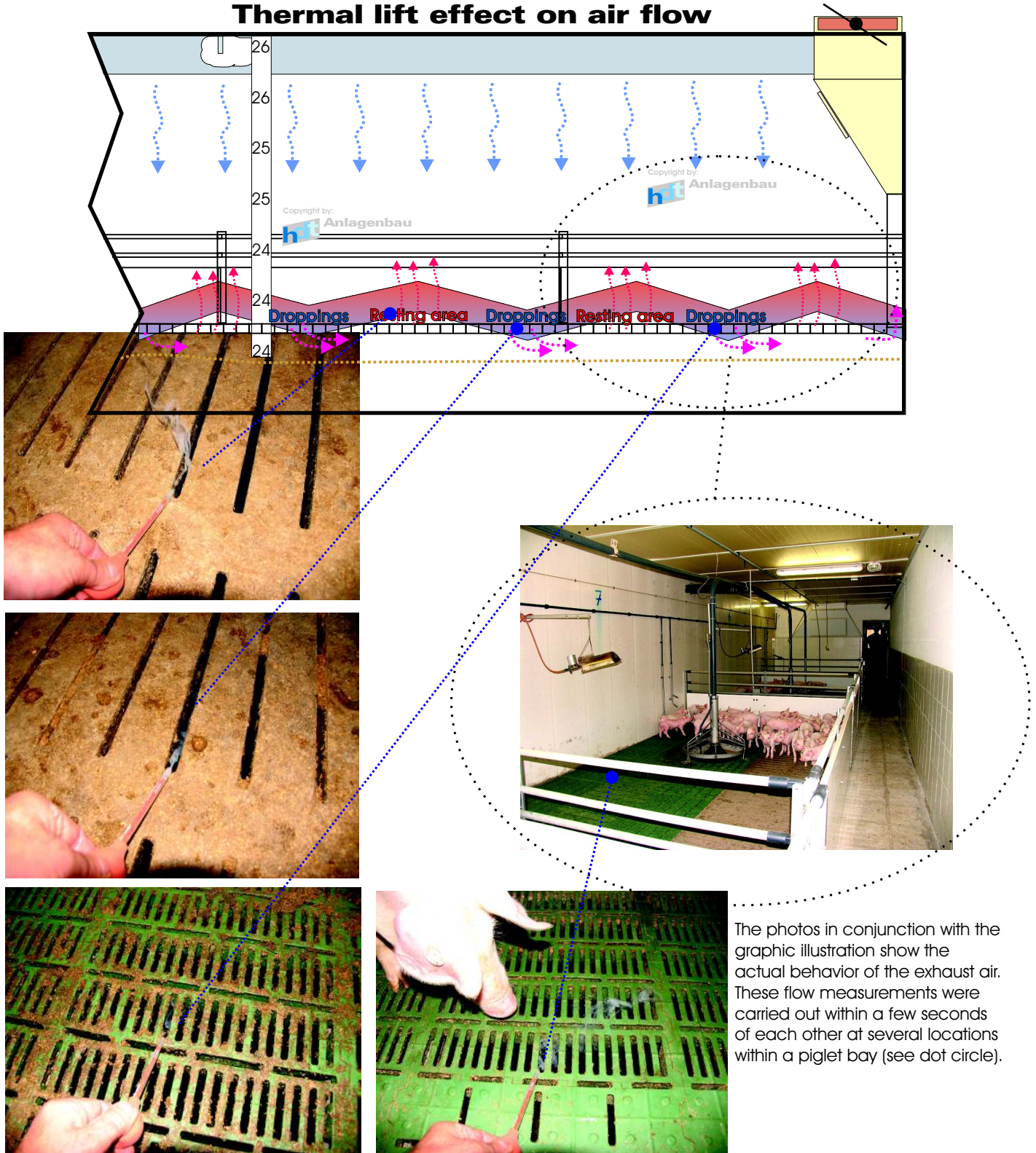
The benefits of under floor exhaust extraction are obvious: Dry floors, clean animals, and low pollution levels for the animals. All group management areas should be equipped with under floor exhaust extraction. Sow stables where crates are used as well. There are other advantages in sow stables, such as less urinary tract infections and less problems with the hooves.

The graphic illustrations above show the effect of under floor exhaust extraction (USA). The function has little to do with negative pressure under the floor slots. It is more the air flow to the exhaust point. Here, of course, the thermal lift from heat sources and animals plays a very important role. The air supply system must also be clearly tailored to USA conditions. Where there is no thermal lift the air flows in a downward direction. In areas where there is thermal lift the air can even rise to the slotted floor. If this essential knowledge is clear to the system designer, an optimal design is not a problem for a professional who has more than "sound half-knowledge".

Quality that's worth it – every day!

Confirmation through measurements

Thermal lift effect on air flow



The photos in conjunction with the graphic illustration show the actual behavior of the exhaust air. These flow measurements were carried out within a few seconds of each other at several locations within a piglet bay (see dot circle).

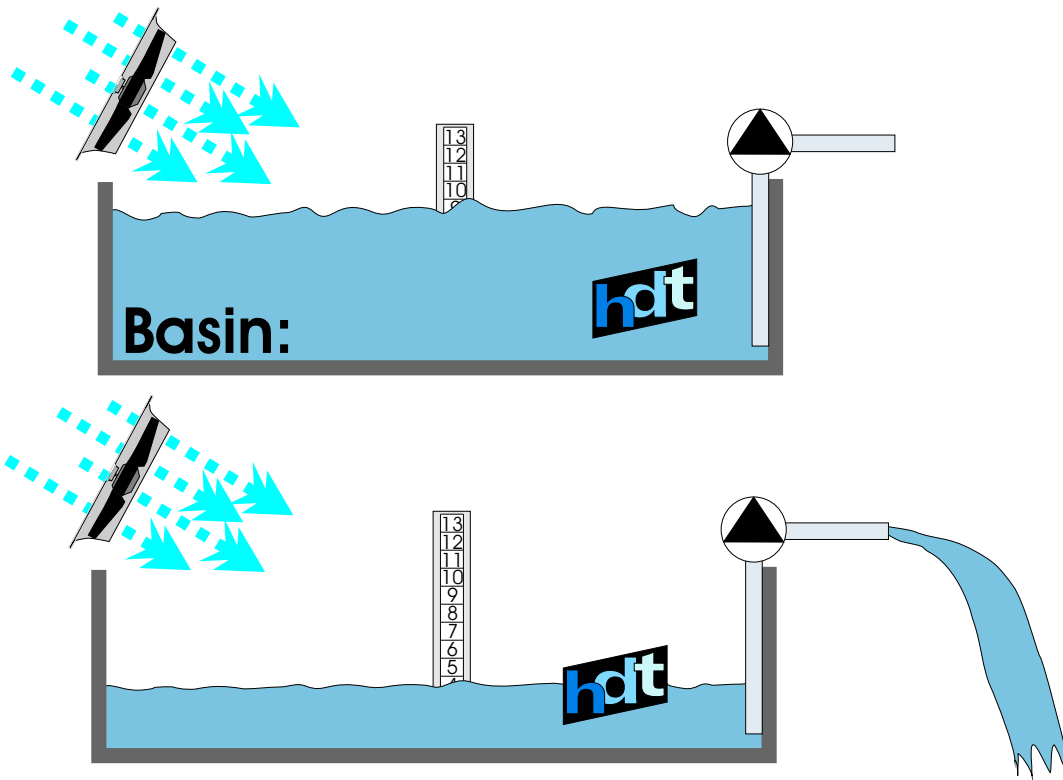
However, several exhaust duct criteria must be considered during the planning phase.

- The distance to the top surface of the slurry
- The speed of air movement
- The suitable supply air system

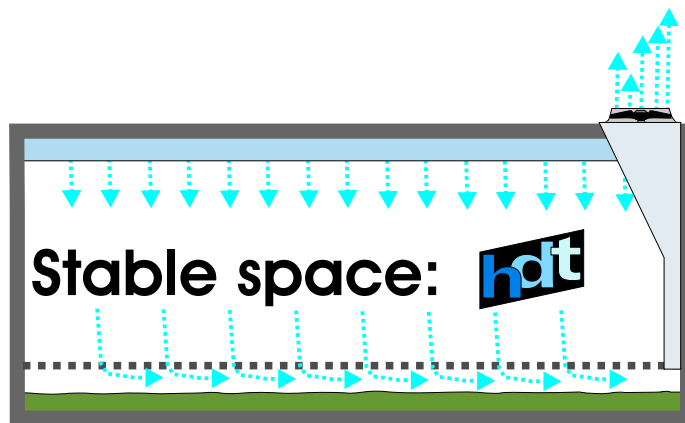
Observing these criteria will reduce the burden on the animals in the stable and will not increase emission to the outside.

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“Flow” of the Exhaust



The water level in a basin with waves (e.g. from wind) drops as soon as a pump removes water from the bottom, but the waves remain unchanged. The weight of the water (gravity) causes the water level to drop uniformly.



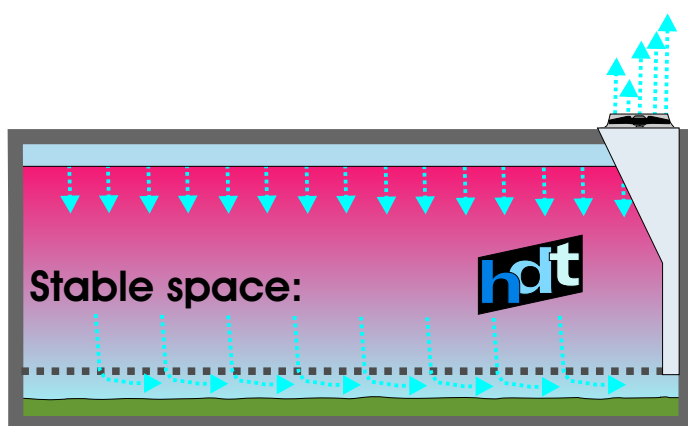
The air in a stable (with different temperatures, due to thermal lift) also flows to the exhaust point. These two materials behave relatively the same. The requirements are the appropriate sized exhaust ducts and also a constant air supply. Negative pressure at the exhaust point is not relevant to this function. Negative pressure cannot reach over the entire floor area even if the whole floor is slotted. In this case physics help to attain the desired under floor extraction function (USA).

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Thermal Lift in Water and Air



A significant amount of hot water can be taken from a tank before it gets cold (depending on the volume of the tank). Although the inflow of cold water is 10 °C, hot water still comes out at the top. In this case we want to remove the heat with the water. Imagine you had to stand under a shower where the tank functioned the other way around.



But in a stable things look very different. We want to remove as little heat as possible from the stable. Animals should be as warm as possible and feel comfortable. So what do we do now? Remove the air from the top. Of course not! We are going to use an under floor exhaust extraction system to create the optimum stable climate. We don't have storage here and we don't want to blow the exhaust air back on ourselves. A number of measurements and tests have shown us that the difference in the stable temperature between floor and ceiling inside of a stable in a well-planned system with under-floor exhaust extraction and well optimized supply air can be up to 70% less than with standard over floor extraction.

Quality that pays for itself – every day!