

mauertroc®

A dehumidification system based on active electro-osmosis to combat the vertical and horizontal intrusion of moisture into masonry.

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Analysis, planning, marketing, installation, repair and expansion of electro-osmosis systems of any origin. Cellar renovation, etc.

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The Active Electro-osmosis

1. How mauertroc® Works

In nature, physical phenomena exist which are able to transport water against gravity up to the highest treetop. This is powered on the one hand by the movement of fine hairs in the pores on the underside of leaves that regulate the intake and expiration of water vapor.

On the other hand, cell diffusion must also be mentioned, which we do not have in masonry. But this process is an absolute necessity for life on our planet earth.

Without plant growth, no human life.

A particularly interesting factor is the Zeta (ζ) potential. This exists in plants as well as in all kinds of masonry and causes water to rise against gravity.

Conventional methods of drying masonry must be considered bearing this rarely known fact in mind. The Zeta-potential was discovered 200 years ago but only recently has it been studied intensively. This knowledge has only been successfully applied to the drying of ground-level and subterranean masonry for a few decades.

mauertroc® has developed a system, based on this knowledge, to reverse the Zeta-potential and then - in harmony with nature - to pull moisture back out of masonry. In this way, water that has accumulated over centuries within walls, often tons in weight, flows gently back underground without any impact on the structural integrity.

The duration of exposure to moisture, the age of a building or the composition and thickness of its masonry have no influence on the way **mauertroc®** works.

Under favorable conditions, water can creep up to the first floor and saturate a ceiling so strongly that parquet floors above may become warped. This moisture transports minerals with it from the ground water. Plaster changes color, salt crystals develop in white flakes on walls and the plaster disintegrates.

Frequently, damaged plaster is "repaired" simply by applying a plaster that allows the wall to breathe. But this only treats the symptom, not the cause.

mauertroc® has developed a reliable system based on many years of experience with which the cause can be eliminated thoroughly. Unsightly salt-stained facades, musty air, mould and dampness now belong to the past.

2. **Formation of the Zeta (ζ) Potential**

As mentioned before, all masonry will absorb water if it is present in sufficient quantities. As the moisture creeps through capillaries in the wall, negatively charged salt ions carried by the water stick to the capillary walls. This leads to a negative charge in the masonry, which draws more water into the wall. Water is attracted to negative charges and is pulled into the masonry.

3. **Conventional Methods**

The conventional and recognized methods for fighting moisture in walls do not utilize this knowledge. They usually rely on horizontal barriers or external insulation, for example filling a horizontal cut in the wall with all kinds of insulation materials or injecting different solutions into the masonry.

The natural and important capillaries in the masonry are destroyed, blocked, filled or severed in the process. The real cause of intruding water is not done away with at all.

Several severe disadvantages can arise from these procedures:

In the injection technique, water in the masonry is only displaced. The treatment will not reach each and every of the capillaries. Often this procedure must be repeated again and again until the desired effect has been achieved. Furthermore, additional capillaries are formed.

Both methods – cutting and injection – install horizontal barriers. Consequently the water above the blockade remains there for many years and the wall dries out only very slowly. Below the barrier cellar rooms and the foundation remain extremely wet.

Especially with the cutting method, structural manipulation can lead to sagging and cracks may form. In extreme situations even parts of the building can break away. After an earthquake in Friaul, Italy, whole buildings slid off their barriers of stainless steel.

The **mauertroc®** system avoids anything that would impact structural integrity negatively. The substance of the building is not affected. Therefore **mauertroc®** is outstandingly suited for the protection of historically important buildings and monuments, as well as for mixed stonework that is as old as the hills.

4. **What You Should Avoid**

- Plaster of Paris stores up water
- Any material which hinders the wall from breathing, for example sidings of any kind, concrete, plaster, tiles, wallpaper, tarring etc. - such materials increase the upward movement of water in the wall.
- Marble plates – they will eventually break.
- “Wall-lungs” (tubes in walls that are supposed to let water vapor escape from the wall). They have the opposite effect. Moisture condenses in them making the masonry even wetter than before.
- Clay trenches around a foundation. They often turn into downright water reservoirs after heavy rainfall. They act like an irrigation system for your house such that the steel reinforcement in the concrete foundation will rust away. Water cannot be effectively diverted and has to be pumped away.
- Drainage pipes – these are often defect or installed incorrectly.

5. **The Ideal Masonry**

Masonry naturally breathes. It absorbs water vapor from the air and releases it depending on weather conditions. The ideal water content of “dry” masonry depends on its composition and lies between 5% and 8% of its weight. Within this range, the room climate experienced is comfortable.

6. **Gentle Dehumidification**

The **mauertroc**® system works in harmony with nature. Through a reversal of electrical charges, the Zeta-potential changes the direction of flow. Water can no longer hold itself in the masonry. It flows through the natural capillaries back into the ground where it came from. The negative address which the water is attracted to is either outside the house or at its deepest point - exactly positioned where the water cannot do any damage.

Particularly interesting is the fact that the **mauertroc**® system not only supports the retreat of the water downwards through the natural capillaries, but also draws the water out sideways (for example out of cellar walls). It is also possible for water that lies osmotically adjacent to a wall to be pulled away up a hill. In a word, we can adapt to inaccessible building situations and attain success.

In the same way, water that lies osmotically adjacent can be pulled out under a building, thereby also dehumidifying the ground underneath a house.

Situations in which our competitors would throw in the towel, are ones where we just get started. It is because of the high sensitivity and quality of our equipment, that we can run our system on very low voltage to dehumidify masonry with utmost gentleness. This is possible because we use the best electronic equipment worldwide, which at the same time excludes electro-smog.

7. **The Limits of Electro-osmosis**

Our **mauertroc**® system is the only effective method which fights and controls the cause of vertical and horizontal osmotic intrusion of water. It works in precisely the right manner because it does not just fight the symptom, but the real cause.

In certain cases, your house may be threatened by water being pressed into the masonry, for example in marshland or boggy districts. Flooding, rising groundwater levels, spring water flowing past the house and defective drainpipes and sewer systems place your house at risk, also cause water logging in the masonry. Water presses into insufficiently insulated cellars when they are not constructed with waterproof concrete or cracks develop.

After such damage and conditions have been remedied, we recommend the installation of the **mauertroc**® system. Experts from **mauertroc**® can perform an on-site analysis, free of obligation, to ascertain if your premises threatened by pressing water.

8. **Positive Side Effects of mauertroc**®

Through dehumidification with the **mauertroc**® system, walls become stronger and masonry insulates up to 80 % better. You will definitely notice savings in your heating costs.

An additional side effect is a considerable increase in your property's value. Through dehumidification, more floor space can be utilized. And, as already described, the earth below a building can also be dried up with the **mauertroc**® system, so that uninhabitable spaces may be used again.

9. **The Most Modern Technology**

The active osmotic dehumidification of your house is a science in itself. Between the electro-osmosis as offered by some of our competitors and our electro-osmosis there is a world of difference. The cost of the different systems cannot be compared. It is a matter of competence, experience and trust.

We would rather install fewer systems but with fully developed technology and quality. In our development, innovation is an important word. Our equipment is

monitored and the dehumidification process is recorded and secured by a control unit that we ourselves developed. This unit is the heart of every **mauertroc®** system. Our systems are designed for careful monitoring and confirmation.

The duration of the dehumidification process is dependent on the quantity of water contained in your walls, their thickness and the salt concentration. Rapidly decreasing water content with high a voltage can lead to problems.

Perspiration, of the moisture that exits the wall, can temporarily lead to an accumulation of water in the deeper areas of your house. You have to be patient until it is cleared and has disappeared. The **mauertroc®** control unit was developed to dehumidify your masonry individually. After all, your home has its own peculiar characteristics that we take into consideration.

The semiconductor electrodes we use are made of a non-corroding material and this guarantees excellent quality and decades of reliable functioning as long as no new moisture encroaches or damage occurs.

A well documented low power consumption lies at about 0,10 € per meter/year. This cost drops as humidity in the masonry decreases. As water retreats resistance in the masonry increases and in turn power used decreases.

Only a very low voltage remains with a hardly measurable current that is limited only to the masonry and what is necessary to keep the system running. This means there are no radio or magnetic waves radiating uncontrolled through the house, it does not tell the water where to go, nothing attracts or pulls the unwanted water to where it could cause damage.

Lastly we have to discuss the lie which promises a dehumidification without renovation measures. If plaster is rotten and it looks ugly you cannot make it new by painting over. It must be replaced. And if renovation must be done, why not do the whole job and do it right and with a quality method?

10. **Our Extended Service**

We guarantee that through the **mauertroc®** system, under consideration of the „accompanying measures for the customer,“ your masonry will dry out within the time frame of five years and the water will be drawn out in a reverse capillary direction down into the groundwater level. This is valid for all masonry and stonework encompassed by the **mauertroc®** system.

Pressing moisture, defective drainpipes and sewers, downhill moisture flow, flooding, new moisture encroachment, corrosion caused by masonry strongly saturated with salts and acids, cracks in pipes caused by settling of the building, damage through construction work, manipulation of the control unit like the removal of the seal invalidates the warranty.

If, because of construction activities the **mauertroc®** system is damaged, you

must report it immediately so a service engineer can quickly solve the problem. To enable a faster check of the system, test units are installed which make a quick and uncomplicated error detection and remedy possible.

A Summary of the Advantages

- Dehumidification down to the foundation level – up to 60% increase in improvement compared with cutting and injection methods, which both only install horizontal barriers and cannot dry up your cellar or grounds,
- Strengthening of masonry,
- No impact on the structural integrity, no cracks,
- No movement of masonry,
- No sag of steel beams or building superstructure,
- No breaking away or sliding of walls in the case of an earthquake,
- 80% higher insulation effect,
- Lower expenses for heating,
- Fungus micelles are killed without chemical means,
- Fungi die within 24 hours,
- White, green and black fungi are destroyed, because their water supply is suddenly and relentlessly removed,
- Typical musty cellar air disappears and is replaced with living-room quality,
- Our five-year warranty protects our clients two years longer than regulations require. Satisfied clients are our trademark and the best advertisement. That is why our main source of business comes through personal recommendation,
- We offer free advice, without any obligation from our specialists,
- We offer free an on-site inspection,
- Our production procedure and the installation is subject to very strict quality checks,
- Out of experience, we rely exclusively on trained experts. That is why we seldom receive complaints. Satisfied clients are our best recommendation.

mauertroc® is a natural system copied from nature

mauertroc® is ecologically friendly

mauertroc® is protection for your property and prevents the need of next renewing of your facade

mauertroc® increases the value of your real estate

mauertroc® is excellently suited for historical buildings

mauertroc® can be deducted from income tax as extraordinary or business expenses

mauertroc® helps you to increase your income from leasing and makes more rooms usable

mauertroc® has been on the market for 20 years

mauertroc® helps when there seems to be no way out. It is a very intelligent system which is successful where all other systems fail. So why not go straight to the specialist!

Our goal is to make your home cosy and comfortable again, to increase your leasing income, to lower your heating costs and to promote and support your health through dry walls.

We look forward to meeting you again in your „new“ and dry home!

Your mauertroc® Team