

Like with a normal washing machine

Austrian engineer Heinz Leo Liebminger made a low-energy building from the 1960's house of his parents. Among other things, the Liebmingers can now save energy and ecologically wash their laundry with rain water. Their Miele Allwater washing machine has a warm and a cold water connection. The warm water comes from the solar facility and the cold water from the utilization of the rain water. The washing machine is fully automatic and merges two resources (sun and rain) depending upon the laundry program.

„The operation is completely simple, as with a normal washing machine“, tells Elizabeth Liebminger. Drinking water consumption in the house alone was thereby reduced considerably. Annual cost: 35 Euros. So the extra cost of approximately 150 Euros for the eco-washing machine pays off in few years (purchase price: approximately 1300 Euros). Washing powder consumption was cut in half.



Water is precious. If you do not want to waste any, it is only consistent to also use rainwater. We explain how it works.

Clean water is a valuable property. And in the future its worldwide value will rise still higher. Between 1992 and 2002 alone, price of water increased by 45 percent. According to expert data, consumers must also reckon with further price increases in the next few years.

Nevertheless, in Germany currently we still live in the abundance: a Federal citizen uses an average of 128 litres of drinking water per day. Other sources of information imply even 150 litres. Only half of drinking-quality water is really needed.

Thus, the thought of utilizing rainwater. For in this area it rains it an average of 170 days per year. Approximately 700 litres of precipitation patten on each square meter of ground - and often only disappear in the sewers.

We could save up to 53 percent of our daily drinking water demand. If we would use more rainwater. For example for flushing the toilet, washing the car, or watering the garden. Or also to wash the laundry, because rainwater is very soft water. It preserves the washing machine, because of fewer lime deposits. Besides that, less laundry detergent is used.



Rainwater-use facilities work according to the following principle: They catch the water, which flows over the roof areas of a building, in a container made of plastic, concrete or steel.

This container is set up either in the building or buried in a frost-free depth outside of the house. If the danger exists that the container can surface, appropriate safety devices and materials must be used.

A filter ensures that only clean water flows into the storage container. Through a calm inflow of the rainwater, pollutants can settle to the bottom of the storage container, which leads to further improvement of the water quality.



In order to avoid overflow when the storage container is full, a connection must be built to the sewer or septic tank. The water is brought to the locations of use with a pump and water lines.

The costs of a rainwater-use facility for a four-person household are with approximately 4000 Euros, according to the Union of Rainwater Operations and Use.

First, you should place the prospective rain yield and the amount your need side by side. You can determine the yield roughly, if you multiply the yearly precipitation at your residence. For example, multiply 774 millimetres (the equivalent of 774 litres per square meter) by the roof surface area (length times width at the height of the roof eaves). Approximately 75 percent of it is the actual yield. About a quarter is lost through evaporation and overflow of the storage. You can roughly determine your need: For flushing the toilet you estimate 24 litres per person, for the washing machine 12 litres per person. The total in each case times 365 days. For watering the garden you estimate an additional 60 litres per square meter of intensively used area per year.

Then the optimal storage capacity is determined.

If rain water yield and need are nearly alike (maximally 20 percent of deviation), the economically sensible size of the external storage container is approximately 8 percent of the annual requirement. With internal storages it is about five percent of the annual requirement. Experience shows that for a four-person household in a single family house, an external tank having 6 cubic meters of utilizable volume is sensible. The price performance ratio is also appropriate. With interior tanks 3.5 cubic meters are recommended in this case.



The installation of facilities for the rainwater use is supported directly or indirectly, and sometimes also financially by some municipalities. Information on the local promotional possibilities can be inquired about at construction and environmental offices of the corresponding municipality.

Make, an application before starting construction! It is legal obligation to inform the water supply companies and public health authorities. Also here the report must take place before start of construction work.

The potable water supply system may not be directly connected with the rainwater net under any circumstances. It is also a necessity to mark the taps and the rainwater lines, as long as they are not buried under ground. Addresses page 98 ■

I TOP INFORMATION I SERVICE I

■ A standard work is the book „Rainwater Use“ from Klaus W. King. It offers everything worth knowing about the topic on at total of 144 pages. It is easy to order by telephone: 0771/8005 170, fax: -100. Cost: 19 Euros, plus shipping and handling expenses.

- Would you like to obtain a survey of products, which were developed particularly for the rainwater use? One source of information is the 40-page brochure „Market Summary of Rain water utilization and Rainwater Septic Systems “. It can be ordered from the Professional Association for the management and utilization of Rainwater (fbr) for a purchase price of 5 Euros (Payment before delivery is requested) You will find the address below.
- You can get further information about rainwater utilization from the Professional Association for the management and utilization of Rainwater. The address is:
fbr, Havelstrasse 7A, 64295 Darmstadt,
Telephone 06151/339257,
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The model shows the structure of a rainwater-use facility. Approximately 50 percent of drinking water can be saved. Graf

11 2005 OLD BUILDING MODERNIZING 67