



MASSMART GROUP UPDATE

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MASSMART'S WATER-HARVESTING STRATEGIES

{ help preserve one of Africa's most precious resources }

South Africa is among the 30 driest nations in the world. With a growing population of citizens and burgeoning demand for food and living facilities, water has become a precious resource. Approximately 98% of South Africa's water has already been allocated and based on statistics from the last water accounts survey: agriculture, commercial consumption and urban domestic water use accounts for approximately 90% of South Africa's surface water consumption (Water Accounts for South Africa, 2000).

Massmart's water-harvesting strategies HELP PRESERVE one of Africa's most PRECIOUS RESOURCES

Given our absolute dependence on access to fresh water, the pressure is on to find creative ways to cut down on consumption and minimise wastage. Although Massmart uses modest volumes of water in its operations, the group is nevertheless taking proactive steps to reduce its water footprint. These initiatives take the form of rainwater harvesting in Massmart's Massbuild division and capturing condensate water from the group's refrigeration plants in Makro stores

Massbuild: Saving water one raindrop at a time

Massbuild's Builders Warehouse and Builders Express stores have cut down on their operational water usage by using rainwater-harvesting tanks at stores.

The concept of rainwater harvesting is a simple one. The primary aim being to capture as much of the rainwater that flows through each store's gutter system during the rainy season as possible. Instead of flowing down gutters and into storm water pipes or onto the ground, this water is captured, safely stored and is made available for use in the stores' nurseries. To this end, Massbuild's rainwater harvesting systems make use of readily available equipment, including: two 10000 lt storage tanks; a pump; piping; and a protective palisade cage. As a result, the system takes just two weeks to install.

Because Massbuild is in the building and home improvement goods retailing industry, having access to the right components has not been a problem. Each store's rainwater harvesting facility uses a slightly larger version of the tanks and pumps than those that it sells

to its customers. Harvested water is stored in durable outdoor JoJo water storage tanks and pumped to the gardening centre to irrigate the plants on sale. Initial estimates from July 2011 to March 2012 indicate a saving of approximately 2000 kilolitres of water which is equal to roughly 7400 bathtubs. Whilst this solution doesn't meet all the stores irrigation needs it does make a small contribution to alleviating the pressure on water resources.

Whilst initially this project was piloted at select Builders Warehouse stores, it has proven so successful that rainwater harvesting systems can now be found in all Builders Warehouse stores country wide. In addition, rainwater harvesting systems are currently being installed in smaller Builders Express stores across South Africa.

Massbuild case-study: Builders Warehouse Glen Eagles

The Builders Warehouse store in Glen Eagles, Johannesburg was one of the first stores to trial the rainwater harvesting project. Piping linked to a portion that's less than a third the size of the site's 10 000ft² roof is enough to fill the stores two 10 000lt tanks. The motor on the pump provides the pressure to pump water from the tanks to the main pipe in the nursery.

The municipal water supply tap has been permanently closed since the rainwater tap was installed. The store's nursery, which is a 1 008m², houses up to 300 plants species, including herbs, ferns, flowering shrubs and

small trees. Irrigating these plants is done first thing in the morning, when temperatures are low. This allows the water to sink in before it is burnt off under the African summer heat. Early watering also gives the water a chance to drain off the nursery floor so that the sales area is ready for customers when they arrive to shop.

Since March 2010, the rainwater tank at Builder Warehouse Glen Eagles has never been empty, even throughout the dry winter months.

Makro: Reclaiming condensate water

Makro's new generation stores (i.e. those built after 2009) incorporate advanced technologies to improve the stores overall resource efficiency including, some of the most energy efficient refrigeration and climate control systems currently in use in retail. The refrigeration plants installed in new stores, such as, Makro Vaal, Makro Polokwane and Makro Montague Gardens are 18% more energy efficient than those running in legacy Makro stores and 35% more efficient than the systems traditionally found in the market.

Fundamental to the energy efficiency of the refrigeration systems in new Makro stores is the use of harvested condensate to improve the refrigeration plants Coefficient of Performance (COP). When ambient temperatures exceed 27 C the efficacy with which the refrigeration plant cools the air entering the building drops significantly. However, by using harvested condensate to increase the humidity of the air entering the refrigeration plant on hot days, Makro can improve the refrigeration plants COP by approximately 60%, significantly reducing the stores overall energy consumption.

Condensate harvesting serves the dual purpose of improving refrigeration and air-conditioning energy

efficiency and, in cases where excess condensate is harvested, reducing the volume of municipal water used in the landscaping of stores.

Although not yet chain-wide, condensate water is being reclaimed from the refrigeration plants at Makro stores in Nelspruit, Polokwane, Montague Gardens, Cape Gate, Bloemfontein, Strubens Valley and Crown Mines.

Here's how it works: as a Makro store's refrigeration plant and air-conditioning unit runs, water condenses on the store's refrigeration and cooling coils. Over time, this condensate freezes and forms a layer of ice, which reduces the overall efficiency of the cooling plant. Regular defrosting is required to remove the ice that accumulates during refrigeration and ordinarily, if there were no collection process in place, this pure, fresh water would trickle down the drain. In new Makro stores, however, special trays have been installed to trap this condensate water and pipe it into holding tanks. Here it is mixed with potable water from the municipal supply and used to improve refrigeration efficiency and supplement the stores landscaping water requirements.

Because a typical Makro cold-room is very large, defrosting is required between four and six times a day. This means there are several opportunities to capture and store clean condensate water on a daily basis.

One drop at a time
Rainwater harvesting and condensate water harvesting are just two of the innovative water-saving techniques used by Massmart.

Because every drop counts, Massmart will continue to look for smart ways to reduce reliance on municipal water, helping preserve one of the world's most vital natural resources. ■

References

WATER ACCOUNTS FOR SOUTH AFRICA. 2000. Discussion document: D0405.1. Statistics South Africa 2009. Available online at www.statssa.gov.za

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