Improved yield with green roofs

Saves money

Frankfurt study - 1990

Green roof on Possman Cider Factory and Storage Facility paid for itself **within 3 years** in electricity costs

- ***Case Study H: Gruendack fuer Kuehlwasser - 1990***
- (Roofmeadow for water cooling)
- *Classification:* Industrial

Overview: The green roof is located on a German apple cider factory.

The installation has two layers of roofing paper with a layer of copper and warm water from the building's cooling system for the purpose of heat exchange (rain water is gathered on the roof, drained into an underground 200,000 cistern, pumped throughout the system to collect heat and is dumped onto the roof through a perforated pipe and the water cools from 31 to 28 degrees Celsius).

Vegetation is comprised of swamp and marsh plants with shallow root balls (plants clean the water and feed from it).

- *Location:* Frankfurt, Germany
- *Owner:* Possman Cider Factory and Storage Facility
- *Construction:* Both the building and green roofs were built in 1990.
- *Partners:* Unknown.
- *Drivers:* Water and plants were intended to keep roof insulated, protect roofing and provide a cheaper and more effective means of water cooling.
- *Barriers:* Installers could not use a deep soil layer because of the structural capacity of the roof and the high cost of structural upgrades (estimated at 150,000 to 170,000 DM).
- *Cost:* The plants cost less than 40,000 DM. Ongoing maintenance costs are unknown.
- *Benefits:* In 2-3 years, the savings in cooling towers and electricity costs (estimated to be 12,000 DM per year) paid for the plants.

Saves money

City of Toronto study 2004

- (2.8 million people) Citywide savings from reduced energy for cooling is $21 million, equivalent to 4.15KWh/m2 per year
- Cost avoided due to reduced demand at peak times is $68 million

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