International Circular Economy Week

Fact sheets for technology site visits

Institute of applied Material Flow Management- IfaS

www.stoffstrom.org

Europe's First Zero Emission Campus

BIRKENFELD

A UNIQUE PLACE ON EARTH

Inaugurated in 1996, the Environmental Campus Birkenfeld [ECB] is part of the Trier University of Applied Sciences that offers interdisciplinary higher education in the fields of; a.) Environmental Planning & Technology, and b.) Environmental Business Management & Law. Home for more than 2700 students specializing in environmental education, ECB is designed as an incubator and a demonstration site for environmental technologies and innovations. ECB's eco-compatible building stock complemented by its sustainable utilities has helped achieve 'Zero Emission Campus' and 'Germany's 1th Green Campus' status.

KEY FEATURES

- ► 100% renewable heat supply based on waste wood, biogas, and solar thermal
- ► 100% renewable electricity supply based on biomass and PV [includes; 492 kWp roof- and façade mounted PV covering up to 40% of the electricity demand]
- ► 100% renewable cooling based on geothermal, solar adsorption and biomass
- ► Highest standards of energy efficiency achieved by; passive and plus-energy buildings, energy efficient in- and out-door lighting, building automation installations
- ► Sustainable water resource management implementations: including rainwater harvesting and reuse, rainwater infiltration, waterless urinals, etc.

MORE INFORMATION

www.umwelt-campus.de

Greenery Waste Treatment and Energy Production

KIRCHBERG/SIMMERN

HEATING WITHOUT GLOBAL WARMING

Environmentally benign district heating is a priority of Rhein-Hunsrück Entsorgung [RHE] thus actively invested in biomass-based heating in the Kirchberg, Simmern, and Emmelshausen communities since 2010. Focusing strongly on the Regional Added Value of its actions, RHE utilises regionally available woody biomass residue (trees and shrubs) to produce biomass fuel (fuel processing involves: cutting, sorting, drying, shredding, etc.) that is subsequently used in biomass burners to produce climate neutral heat energy for district heating. Produced heat energy is supplied to a school building in Simmern, a swimming pool and the town hall in Kirchberg, a library in Emmelshausen, and also to a home for the elders in the neighbourhood. Added to the portfolio of green energy production RHE has also invested in a sizable PV plant through which completely fulfils its own energy requirement in administrative buildings and supply the balance to the regional grid

KEY FEATURES

- Gross thermal energy production in the two counties amount to 8.4 million kWh/a (equivalent avoidance of heating oil is 610 kL/a) through 2.25 MW capacity biomass burners
- Total GHG offset (through biomass heat use) amounts to 1,045 t $CO_{2\text{-eq}}$/a
- Maintains three district heating networks of 2.75 km length
- Installed capacity of PV plant amounts to 1.7 MWp, which produces ca. 1.36 MWh of electrical energy per annum

MORE INFORMATION

www.energielandschaft.de

Treatment facility for municipal organic waste

KIRCHBERG/SIMMERN

Management Service Ideen

RheinHunsrück Entsorgung

INNOVATION WASTE RECYCLING PROCESS

Employing modern technology in its waste management the city of Kirchberg has managed to drastically reduce the amount of recyclable waste generated and disposed of in landfills. The intelligent technology is capable of recycling the wastes produced by more than 103,000 inhabitants from 137 communities

KEY FEATURES

- 40% of residual waste is converted into a fuel substitute
- 20% of waste in the process of rotting is turned into water and CO_2
- Rest 40% is taken to the landfill and disposed of in environmentally friendly measures

WASTE FACTS

Waste type	Amount
Residual waste	10,000 tons
Biowaste	14,000 tons
Green waste	24,000 tons
Paper	9,000 tons
Light packaging	4,000 tons
Bulky waste	2,000 tons
Wood waste	3,000 tons

MORE INFORMATION

www.rh-entsorgung.de

Energy Efficient Wastewater Treatment

SAARBURG-KELL

ENERGY EFFICIENCY AS A DRIVING FORCE

The Saarburg-Kell wastewater treatment plant in Aly, serving a population equivalent (PE) of 34,000, is strategically focused on advancing both energy and resource efficiency. The plant achieves this through continuous process optimisation, the adoption of energy-efficient technologies, and advanced process management practices, which collectively help to reduce energy consumption and lower operational costs. By implementing these measures, the plant not only improves its environmental performance but also supports the long-term sustainability of wastewater treatment operations in the region.

The Verbandsgemeinde Saarburg-Kell operates an extensive infrastructure network, including 465,000 meters of sewer lines for wastewater collection and 348,000 meters of water pipelines for potable water supply. Overall, the Saarburg-Kell wastewater treatment system represents a model of sustainable urban water management, balancing operational efficiency with environmental responsibility.

KEY FEATURES

▶ Approximately 50 % of the plant's energy demand is met by biogas generated on-site from sludge digestion.

▶ An energy-optimized sludge heating system ensures efficient in-house temperature control for anaerobic digestion.

▶ Implementation of comprehensive energy-saving measures achieves roughly 30 % lower energy consumption compared with conventional wastewater treatment plants, effectively increasing the plant's treatment capacity without additional energy input.

MORE INFORMATION

https://www.saarburg-kell.de

Drinking Water Treatment Plant

TRIER-IRSCH

A UNIQUE ENERGY-EFFICIENT SOURCE OF CLEAN WATER

In line with its commitment to energy efficiency and environmental responsibility, Stadtwerke Trier (SWT) has taken remarkable steps to enhance the sustainability of its Irsch Drinking Water Treatment Plant. Recognizing the significance of energy consumption in water treatment, SWT has not only reduced costs but also significantly improved the environmental compatibility of its operations. SWT's focus on resource efficiency at the Irsch Drinking Water Treatment Plant centers on process optimization, energy-efficient technologies, onsite renewable energy, and integrated process management technology.

The Irsch Drinking Water Treatment Plant was constructed in 1958 and boasts two turbines. These turbines take advantage of a fall height of approximately 90 meters and have an installed power capacity of 320 kW. Impressively, the plant produces an annual energy output of 1,000,000 kWh, which is equivalent to powering 286 households, each consuming an average of 3,500 kWh per year.

KEY FEATURES

- Source: 4.5 million cubic meters Riveristalsperre reservoir
- Total capacity: 600 kW, producing 1.5 million kWh yearly
- Green energy production reduces carbon footprint by 310 tons CO_2 equivalent annually

MORE INFORMATION

www.swt.de