

Reference Description Hereke

Belt Drying Plant for Sewage Sludge
Hereke, Turkey



In many cases, a large part of the energy released as waste gas from the rotary kiln in cement production goes to waste. The NUH Cimento works in Hereke, Turkey, is one of the most outstanding examples of innovative ANDRITZ technology, where the sewage sludge is dried using waste heat from cement production and the dried granulate then used as auxiliary fuel to generate heat for cement production.

No extra cost, no additional CO₂ emissions

NUH Cimento has supply contracts with several neighbouring local authorities for disposal of dewatered sludge (up to 10,400 kg/h, dryness approximately 18 – 30%). The heat requirement for the sludge dryer is covered entirely by the energy recovery process using residual heat from cement production. As a result, there is no need to supply any primary energy, and there are no additional costs for thermal energy used in drying, nor any additional CO₂-emissions.

With the energy recovered, 2,264 kg of granulate are produced per hour as the residual product of sewage sludge drying and this can be used as fuel (10,000 – 12,000 kJ/kg) for cement production. The entire heating system for the dryer operates autonomously and thus in no way influences rotary kiln operations. As a result, it can be controlled or shut down as needed without any difficulty. The thermal oil pipework is lined with heat-insulating material so that greater distances between heat source (clinker cooler heat exchanger) and energy consumer (dryer), as is the case in the NUH Cimento works, can be overcome with very little heat loss.

Approximately 643,000 m³/hr waste gas at a temperature of around 300°C escapes from the rotary kiln in Line #3 at NUH Cimento. This gas is fed to an electro-filter via a clinker cooler and de-dusted there. Assisted by a fan, approximately 450,000 m³/h of waste gas pass through a bypass duct into an air/thermal oil heat exchanger. In the gas-tight heat exchanger, the thermal oil is heated to approximately 190°C for circulating heat transport to the dryer. Two pumps convey the thermal oil to the dryer plant, where the recirculation air from the dryer is heated to 110 – 150°C by several thermal oil/air heat exchangers.

In this way, the belt dryer achieves a water evaporation rate of more than 8 t/hr.

General Plant Data

Sludge type:	digested municipal sewage sludge at 15-25% DS (20% in average)
Exhaust gas treatment:	Condenser and chemical scrubber
Water evaporation:	8'150 kg/hr
Sludge rate:	appr.10 t/hr dewatered sludge cake at 20 % corresponding to appr. 240 t/d
Final product rate kg/h:	1875 kg/hr at 92 % DS
Energy:	The heat requirement for the sludge dryer is covered entirely by the energy recovery process using residual heat from cement production