

Sludge dewatering with GKD

Sophisticated process belt technology increases efficiency

As of 2003, spreading municipal sewage sludge on agriculturally used land has been banned. The reason: pollutants that might accumulate in the soil and transfer to the crops grown have become an uncalculated risk. The same ban is also gaining ground in the rest of Europe.

Increases in environmental restrictions and heightened environmental consciousness among the general public are making it necessary to provide alternative disposal options for municipal sewage sludge. The most sustainable and therefore increasingly attractive option is thermal recycling, meaning dewatering and incinerating of the sewage sludge, separately or together with other waste. Sludge is particularly attractive because of its fuel value: fully dried sludge (90% dry solids content) has a similar fuel value to brown coal (approx. 11,000 KJ/kg) and is highly suitable for use as a secondary or substitute fuel in coal-fired power stations, waste incineration plants or as a supplementary fuel in cement or brick factories.

The company Andritz 3SYS AG, headquartered in Switzerland, was one of the first to react to increasing demands regarding the recycling of sludge and to respond to these demands with innovative technologies for sludge dewatering. Once dried and treated, sludge is a valuable product that can be handled and recycled easily and without risk. Andritz 3SYS AG is the market leader in the field of sludge treatment and dewatering equipment.

From waste to recyclable material

To turn sludge into such a valuable product, it has to be given special treatment. Andritz 3SYS AG provides the technology for sludge dewatering, like drum and fluid bed drying systems as well as belt drying systems.

In the belt dryer, the wet sludge is first spread on the process belt in a homogenous layer 4-20 cm thick. The belt moves slowly forward under a constant hot air supply. The drying air at an inlet temperature of 100 - 150 degrees Celsius slowly heats the layer of sludge so that the water contained in it evaporates and is carried away with the outflowing air.

GKD belt as the core component

The core component of Andritz belt drying systems are process belts made by GKD – Gebr. Kufferath AG in Düren. In the qualified opinion of Messrs Vonplon Senior and Junior of Andritz AG, GKD's products optimally fulfil the special requirements on the mesh belts in a belt dryer. The mesh of the belts must be able to withstand continuous temperatures of 200 degrees Celsius without significant shrinkage and cover a pH range of 1 to 14. Another crucial property is the fastness of the belt and its resistance to abrasion, since the sludge may contain sharp particles. After successful tests at Andritz, the optimal solution was immediately clear: the GKD belt PPS 5099, which had been specially developed for this application.

The belt is woven from robust monofilaments and stabilised through a thermofixing process. It is used as a press belt and also as a dryer belt. The robust plastic woven mesh is 2.20 mm thick and weighs 1200 g/m². The smooth mesh surface, mesh opening of 510 µm and air permeability of 700 cfm ensure optimal dewatering of the sludge. Due to the stable mesh structure, the belt can withstand extremely high area loads. In addition, the twilled weave means that the product lies well on the belt and at the same time that the belt is very easy to clean.

The process belt functions not only as a transport medium but also as a filter medium. Since the Andritz 3SYS AG belt dryers are operated under

slight negative pressure, the dust generated by the drying process from above can be led off as filtered waste air under the belt. Odour from this waste air is also particularly low due to the low drying temperatures.

One-time custom product now established as a standard

Kurt Widdau, Head of the Business Unit WEAVEinMotion at GKD – Gebr. Kufferath AG explains: "The belt was specially developed for the highly demanding applications at Andritz 3SYS AG. But in the meantime, because of the constantly growing demands in the sludge dewatering sector, we have been able to establish what was once a custom product as a necessary standard."

Sludge recycling

Using municipal sewage sludge as an alternative fuel can help to save primary energy, an important argument with respect to the universal debate on reduction of CO₂ emissions. Furthermore, Andritz 3SYS has developed a system in which the dried sludge is recycled as fuel to produce the required warmth for the drying process.

4.849 Zeichen inkl. Leerzeichen

GKD – Gebr. Kufferath AG

The owner-run technical weaver GKD – Gebr. Kufferath AG is the global market leader for metal and plastic woven solutions. Under the umbrella of GKD – WORLD WIDE WEAVE the company combines four independent business units: SOLID WEAVE (industrial meshes), WEAVE IN MOTION (process belt meshes), CREATIVE WEAVE (architectural meshes) and CompactFiltration (compact filter systems). With its eight plants – including

the headquarters in Germany and other facilities in the US, Great Britain, France, South Africa, China, India and Chile – as well as its branches in Spain, Dubai, Qatar and worldwide representatives, GKD is never far from its customers.

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