



Specialist article: Sewage sludge drying

From waste product to valuable resource

Whereas it used to be disposed of virtually unfiltered in large quantities as fertilizer in agriculture, the sustainable use of sewage sludge is attracting growing attention. This is because it can be used not only to produce high-quality fertilizer components, but also energy. GKD mesh plays an important role in the processing of sewage sludge.

Lots of aspects are coinciding right now: the planned decarbonization of industry, the government's almost total switch to renewable energies by 2030 as set out in the coalition agreement, an urgently needed economic upturn following the pandemic, and now the war in Ukraine and a potential halt to gas supplies from Russia. The result is rising prices – particularly for energy – but also supply shortages for items such as agricultural products and fertilizers.

With this in mind, it is worth turning attention to a resource that is both sustainable and regionally available: sewage sludge. Around 1.7 million tons of this dry material are produced each year in Germany's municipal waste water treatment plants. For a long time, large quantities of sewage sludge were recycled via the soil – that is to say it was used directly as fertilizer in agriculture. However, the sewage sludge often contained a high level of pollutants, which triggered a rethink. With the German Sewage Sludge Ordinance of 2017 and its revision in 2019, soil-based sewage sludge recycling underwent an overhaul. Since then, the focus has been on reusing sewage sludge – as a source of energy as well as for recovering phosphorous, which is indispensable in the production of high-grade fertilizers and helps to secure agricultural food production. Sewage plants with population equivalents (PE) of 100,000 or more have until 2029 to implement these specifications while sewage plants with a PE between 50,000 and 100,000 have until 2032. From 2023, however, all plants are obliged to report what happens with the sewage sludge.

GKD: Years of expertise

"This pressure from the legislature has meant that municipalities in particular are looking more closely at sewage sludge as a resource," says Volker Meuser, Senior Sales &



Application Manager for process belts at GKD. According to the expert, there was also a noticeable increase in demand at this year's IFAT specialist trade fair. "GKD embodies outstanding expertise in screen and dryer belts, which are used in sludge dewatering and drying," says Meuser. For instance, the Düren-based company developed the first dryer belt made of PPS synthetic, and even before then was considered a pioneer and trailblazer when it comes to dryer belts for highly efficient sewage sludge drying, which forms the basis for reuse as an energy source or for phosphorus recovery.

"One of the challenges faced in the drying process are the mechanical forces that impact the belts. Plus, the belt material needs to withstand high temperatures without shrinkage or hydrolysis occurring," explains Meuser. That's why mesh innovations for process belts always undergo intensive laboratory testing and improvement at GKD to ensure that they perform perfectly under real conditions. Meuser: "All parameters are simulated, such as belt tension and temperatures, and we closely analyze whether and how much the mesh shrinks." Process belts like the 5099 PPS and CONDUCTO® 5099 PPS from GKD have successfully passed these lab tests and become established as the solution for municipal and industrial sewage sludge drying applications. What is more, they exhibit great resistance to chemical influences and are also extremely durable and usually run perfectly for several years.

Tailor-made mesh

Along with such process-related requirements, the size of a system can also be a decisive factor in selecting the right process belt. This is not a problem for the mesh specialists at GKD: "We can even equip large systems that require particularly wide and long belts," reports Meuser, who has already produced belts up to 70 meters long and six meters wide for an industrial customer. An in-depth consultation with GKD is worthwhile for municipalities and companies that require individual solutions.

The expert Meuser certainly sees a clear trend in high-temperature drying of sewage sludge: "Regardless of whether sewage sludge is used as an energy source and/or as a source of phosphorous, what's important is as little moisture as possible after the drying process – and that's where our PPS process belts excel."



GKD Group

As a privately owned technical weaving mill, GKD – Gebr. Kufferath AG is the global market and technology leader for metal and synthetic mesh solutions and spiral mesh. Three independent business divisions bundle their expertise under one roof: Industrial Mesh (technical weave and filter solutions), Process Belts (belts made of mesh and spirals), Metal Fabrics (façades, interior design, safety systems, and transparent media façades / Mediamesh® made of metallic mesh). With headquarters in Germany, six other production sites in the USA, South Africa, China, India, and Chile, as well as branches in France, Spain, and representatives all over the world, GKD is never far from its customers.

You can find further information at: gkd-group.com

GKD contact:

GKD - Gebr. Kufferath AG
Daniela Emmerich
Metallweberstraße 46
52353 Düren
T +49 2421 803-420
Daniela.emmerich@gkd-group.com

Press contact (reprinting is free, please send a copy of all materials (PDF/link) to):

Zimmermann Editorial GmbH
Roya Piontek
Grüner Weg 30
50825 Cologne
Telefon: +49 221 570 889-15
piontek@zimmermanneditorial.de


Visuals



Belt dryer for sewage sludge

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