



WORLD WIDE WEAVE

## **Breaking new ground in phosphogypsum dewatering**

**The phosphogypsum that the production of phosphate fertilizer, feed phosphates, and pure phosphoric acid generates is dewatered on horizontal vacuum belt filters. For the first time, the type 1003 mesh belt from GKD – Gebr. Kufferath AG is used.**

As a key component for the development of roots and stems, phosphate is irreplaceable in fertilizer production and is therefore extremely important for agricultural yield. The main raw material for fertilizer production is phosphoric acid. It is obtained from phosphate rock, which is washed, ground, and slurried, before it is processed further. There, the phosphate is dissolved from the rock flour by the addition of sulphuric acid and separated into phosphoric acid and calcium sulfate. The phosphoric acid produced in this manner is concentrated into different qualities including super phosphoric acid, or is processed into granulated fertilizer (MAP) with the addition of ammonia. In this way, different qualities of liquid or solid fertilizer and related products are made. The phosphogypsum generated in the production of phosphoric acid has been dewatered on vacuum belt filters. The stability and throughput of the filter belts used are major contributors to the productivity of these plants. The filter cake, which is around one centimeter thick, is washed with process water several times in reverse flow in order to remove the residual moisture from the gypsum by altering the capillary effect between the gypsum crystals. This lowers the moisture content of the gypsum suspension to 30 percent residual moisture. Unlike in flue gas desulphurization, the consistency of phosphogypsum differs in each system. Depending on the nature of the phosphate rock, the particle size of the gypsum crystals, their distribution in the gypsum suspension, and process temperatures vary.



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### **Two proven belt types**

For years, GKD VACUBELT 3356 mesh filter belts have proven their worth in various plants for dewatering phosphogypsum in Russia, Australia and the USA. They have a pore size of 220  $\mu\text{m}$  and air permeability of 290 cfm. However, a much more open belt with a pore size of approximately 350  $\mu\text{m}$  and air permeability of up to 400 cfm is required for its very coarse gypsum crystals. Throughput, temperature resistance, mechanical robustness and resistance to aggressive chemical loads are further specifications that every GKD belt used in phosphogypsum dewatering must meet. The type 1003 mesh belt made from polyester is well established worldwide on belt presses in the fruit juice industry and sewage sludge dewatering. As vacuum belt filter systems do not have any pulling forces, unlike belt presses, but work with far higher temperatures, significant shrinkage would have been unavoidable without corresponding treatment of the belt. That's why GKD fixed the mesh at a high temperature and without stretching. The type 1003 filter belt has a pore size of 340  $\mu\text{m}$  and air permeability of 360 cfm. Its production on ultra-modern looms guarantees high transverse stability and thereby robustness against creasing. With a maximum throughput of almost 48,000 liters per minute, the GKD belt exceeds even highest efficiency requirements.

*3.232 characters incl.spaces*

### **GKD – WORLD WIDE WEAVE**

As a privately owned technical weaver, GKD - Gebr. Kufferath AG is the world market leader in metal, synthetic and spiral mesh solutions. Four independent business divisions bundle their expertise under one roof: Industrial Mesh (woven metal mesh and filter solutions), Process Belts (belts made of mesh and spirals), Architectural meshes (façades, safety and interior design made of metal fabrics) and Mediamesh® (Transparent media façades). With its headquarter in Germany and five other facilities in the US,



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South Africa, China, India and Chile – as well as its branches in France, Spain, Dubai and worldwide representatives, GKD is close to markets anywhere in the world.

**For more information:**

GKD – GEBR. KUFFERATH AG  
Metallweberstraße 46  
D-52353 Düren  
Tel.: +49 (0) 2421 / 803-0  
Fax: +49 (0) 2421 / 803-227  
E-Mail: [processbelts@gkd.de](mailto:processbelts@gkd.de)  
[www.gkd.de](http://www.gkd.de)

**Please send a reprint to:**

impetus.PR  
Ursula Herrling-Tusch  
Charlottenburger Allee 27-29  
D-52068 Aachen  
Tel.: +49 (0) 241 / 189 25-10  
Fax: +49 (0) 241 / 189 25-29  
E-mail: [herrling-tusch@impetus-pr.de](mailto:herrling-tusch@impetus-pr.de)