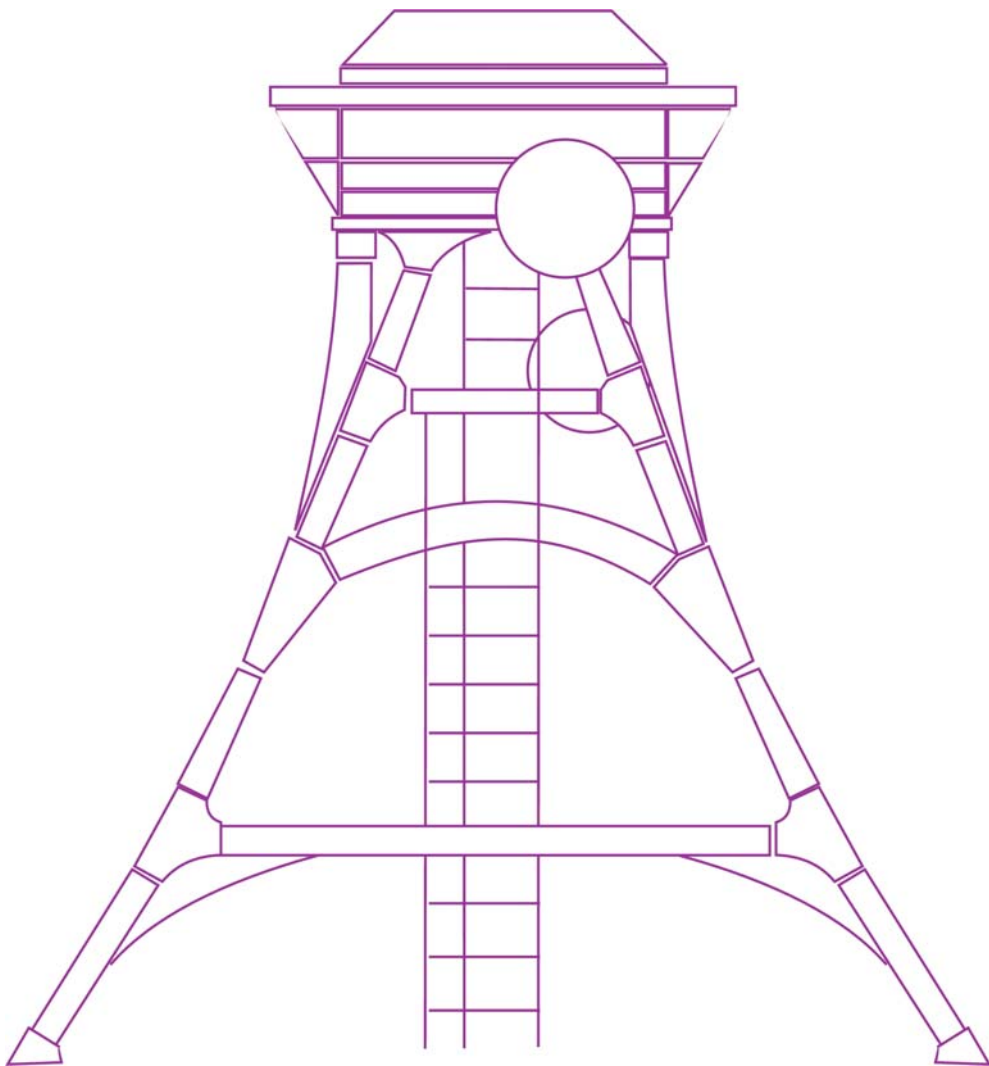


K-UTE

SONDERSHAUSEN



[Posttreatment of Potash Fertilizer Granulates](#)

Posttreatment of Potash Fertilizer Granulates

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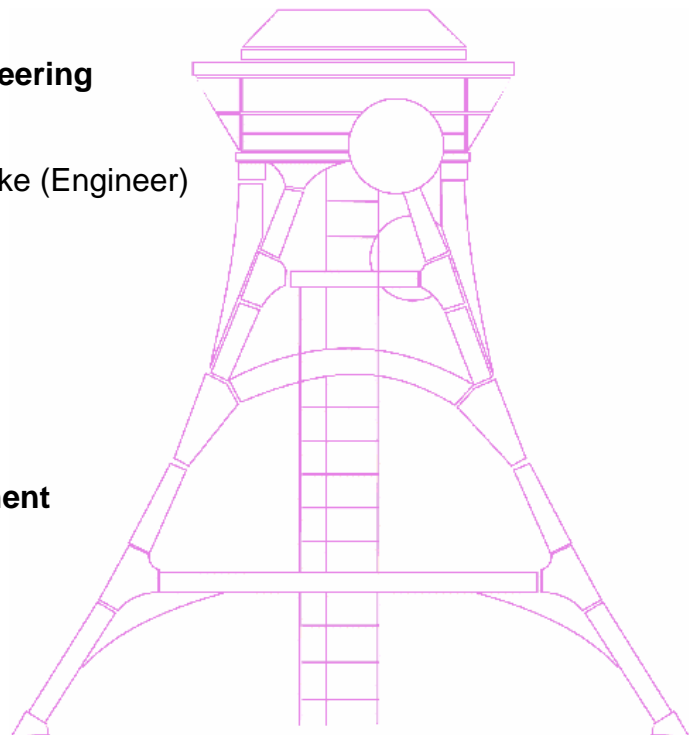
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Specialist in the field of **Posttreatment
of Potash Fertilizers:**

Dr Barbara Heuchel



Posttreatment of Fertilizer Granulate

Hydro-thermal method

(conventional)

Performed by water

Mechanical surface deformation by mixing

During drying the formed solution crystallises on the surface and fills gaps and fractures

Drying in a fluid bed apparatus

Coating with a plant or mineral oil

The K-UTEC Method

Patented by DP 102 52 848

Performed by a liquid solution

Reaction of the reagent with impurities like $MgCl_2$, $CaCl_2$ etc. Inertisation of the Mg- and Ca- ions to reduce hygroscopic reactions

Mechanical surface treatment by mixing and by reaction with the reagent

During drying the formed compound crystallises on the surface and fills gaps and fractures

Drying in a vibrating fluid bed apparatus

Additional mechanical stress and polishing

Optimal process controlling by measuring the round ratio and grain size distribution

Coating by an organic and biological agent to make the granulate supplementary hydrophobic

Improvement of Quality Parameters by using the K-UTEC Method

- Reduction of the abrasion down to 30% of the abrasion index of the original raw granulate
- Significantly improved surface structures of the grains and a cubic grain shape with rounded edges. This has a smoothing and strengthening effect.
- Increasing of the round ratio
- Improvement of the tendency of the granulate to flow
- Reduction of the moisture absorption down to about 50 to 80% of the original value by neutralising of the hygroscopic effects of the alkaline earth chlorides. Increased quality during storage and handling even under tropical climate conditions.
- Less dust formation of the treated granulate
- Biological degradation of the used organic coating substances



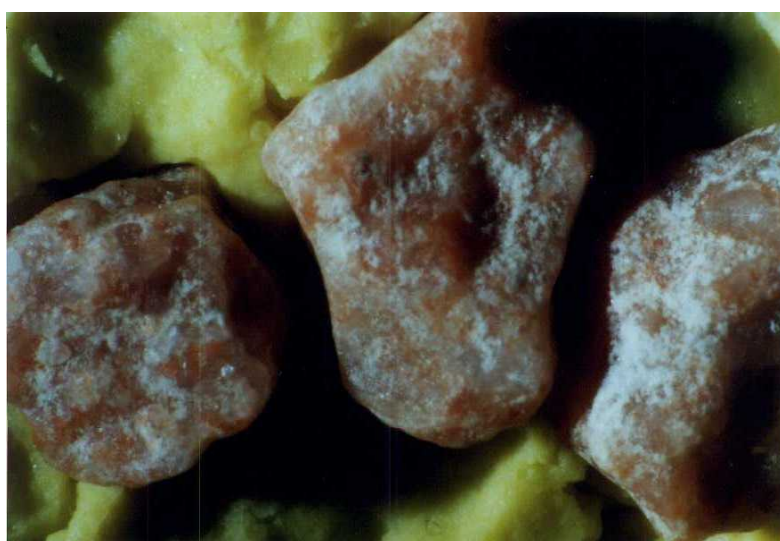
Pict.1

Granulated grains
without Posttreatment



Pict. 2

Granulated grains after
conventional
Posttreatment



Pict.3

Granulated grains after
Posttreatment by the
K-UTEC method

K - UTEC Services for the Posttreatment of Granulates

➤ Test lab for physical parameters of bulk and granulated materials

Investigation of

- Grain size distribution and round ratio
- Tendency of granulates to flow
- Density parameters of bulk material and granulates
- Strength parameters of granulates (abrasion, strength of single grains)
- Long-term performance under different climatic conditions

➤ Performance of Posttreatment tests in lab or semi technical scale

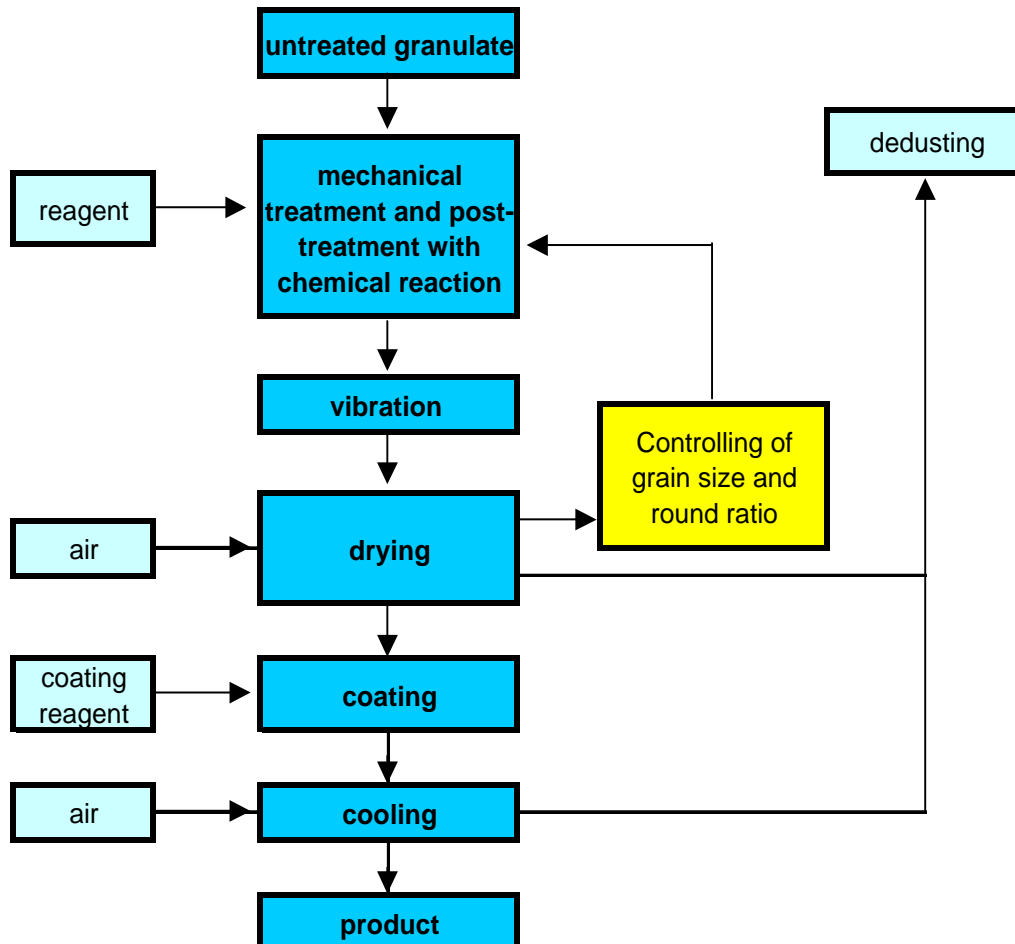


➤ Engineering

including project planning for Posttreatment projects up to turnkey projects

- Feasibility study
- Supplies & construction
- Process design
- Basic Engineering
- Detail engineering
- Put into operation

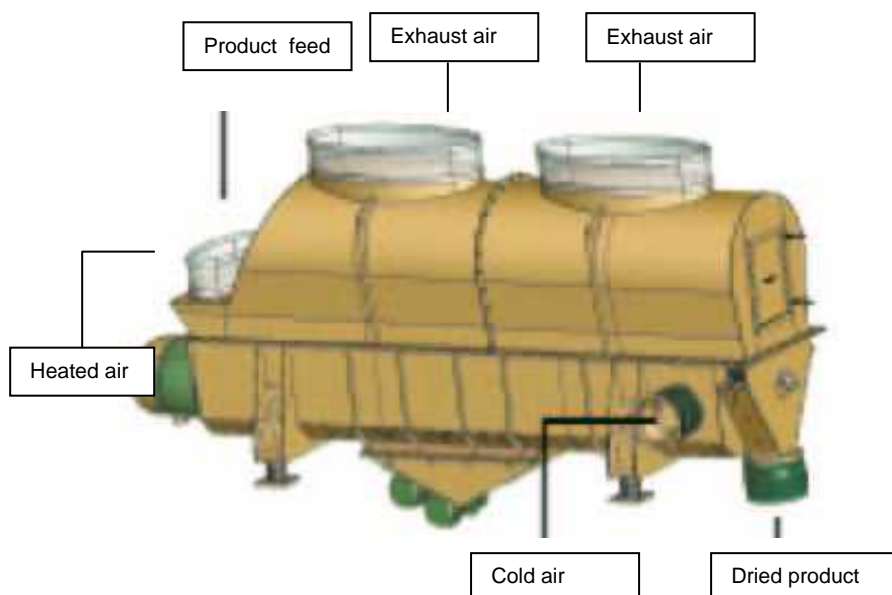
Posttreatment of potash fertilizer granulates applying the K-UTEC method



Enhancement of the economic and technological parameters

- Some process steps can be **combined in one device**
- **Investment costs and running costs** can be considerably reduced by **20 to 30%** compared to the conventional process design
- **Technological simplification** by a more feasible process
- Process control by measuring the round ratio as well as the grain size distribution online

Vibrating fluid bed dryer / - cooler



Performance data of vibrating fluid bed dryers (for a mass flow rate of about 100 t/h)

- Area of inflow up to 30 m² per aggregate
- Length up to 14 m
- Width up to 2 m
- Heated gas temperature up to 400°C
- Air requirement of the dried material up to 100 000 m³/h

K – UTEC – References for the Posttreatment of Potash Fertilizer Granulates

Reference plants after the conventional processing

(Patent DE 136 956 and DE 210 650)

- Potash Plant Unterbreizbach
Mitteldeutsche Kali AG
- Potash Plant Zielitz
Mitteldeutsche Kali AG
- Association of Production Sylvinit Plant II
Solikamsk, Russia
- Association of Production Beloruskali Plant II
Soligorsk, Belorussia

Reference plants after K – UTEC's new processing

(Patent DP Nr. 102 52 848.9)

Realized in 2004/05

- Uralkali Inc. Comp. Plant III
Berezniki, Russia
- Uralkali Inc. Comp. Plant II
Berezniki, Russia

In the investigation or negotiating phase

- Companhia Vale do Rio Doce (CVRD)
Plant Taquari Vassouras, Brazil
- Arab Potash Company Ltd. (APC)
Jordan
- Dead Sea Works
Israel
- Cleveland Potash
United Kingdom
- IMC Canada
- PCS Canada