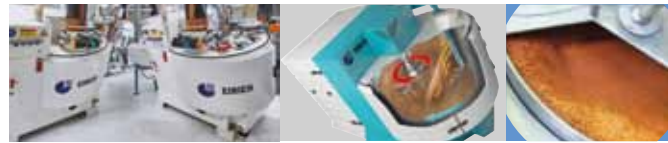


## Preparation technology for solid fertilizers / soil improvers

The right system concept  
for your economic success



# EIRICH system solutions for the production of fertilizers and soil improvers



*EIRICH patent 65 years ago for a method for granulating solid fertilizers*

Many product developments in the field of fertilizers were only ever possible because of innovative solutions from EIRICH.

The particular focus here revolves around the **basic operations of mixing, granulating and reacting**.

The EIRICH mixing principle enables a **wide range of consistencies such as** dusts, sludges and filter cakes to be processed. Thanks to the unique mixing technology it is possible to produce granules with the desired specification that are stable when stored.

**EIRICH regards itself as the partner of choice for the fertilizer industry.** Regardless of the size of the project, EIRICH can supply everything from stand-alone granulation systems to turn-key fertilizer systems.

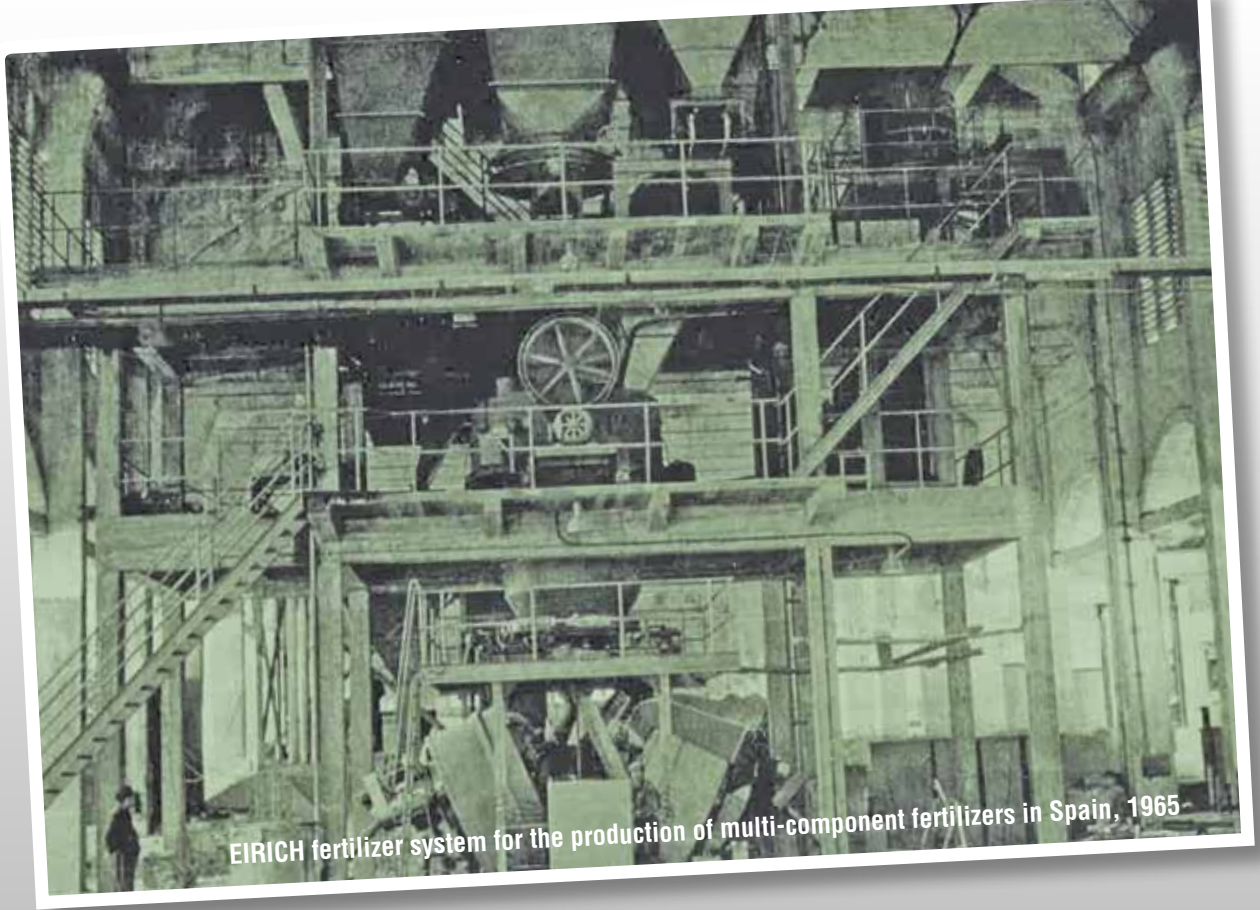
## **Innovative EIRICH preparation technology.**

No matter what raw materials you aim to use for the production of fertilizers or soil improvers, the key to your success is an economic preparation process.

## **The highlights of EIRICH preparation technology:**

- Mixing, granulating and coating in a single machine
- Optimum distribution of trace elements and additives
- Use of secondary raw materials in the form of filter cakes, sludges and nutrient salt solutions
- Environmentally friendly granulating process, no escaping fine dust or aerosol
- Systematic production of long-term fertilizers

*References: K+S AG, Compo, Humintech, Hauert AG, SIPCAM, Terralift Australia, VKD, Omya, SCAM S.P.A., Karner Düngerproduktion GmbH, Nordkalk, ...*



EIRICH fertilizer system for the production of multi-component fertilizers in Spain, 1965

EIRICH has been supplying custom-tailored solutions to the fertilizer industry for decades - always state-of-the-art technology



Modern production of NPK fertilizer in Germany in 2015

# From raw material to sustainable fertilizer

Fertilizers can be produced from a wide range of raw materials.  
Save money and resources with the help of EIRICH know-how.

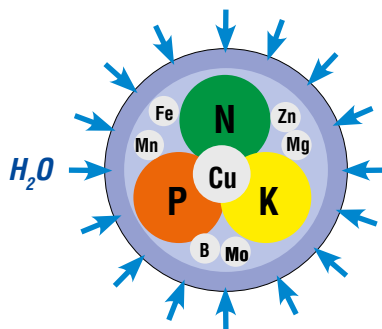
## Use of primary raw materials

**Fertilizers** are often comprised of **complex mixtures of minerals**.

They generally tend to be salts or synthetic nitrogen compounds (UREA or methylene urea).

The **raw materials** contain the **primary nutrients** (NPK) of classical solid fertilizer and, in many cases, other trace elements as well.

- To prevent demixing, the raw materials are ground and then granulated.
- Every individual granular fertilizer has a precisely defined nutrient composition.
- The fertilizer granules are covered with a partially permeable coating. This is to enable the nutrients to be released systematically.



Every granular fertilizer contains all the nutrients. The nutrients are dissolved by water.

+

## Use of secondary raw materials

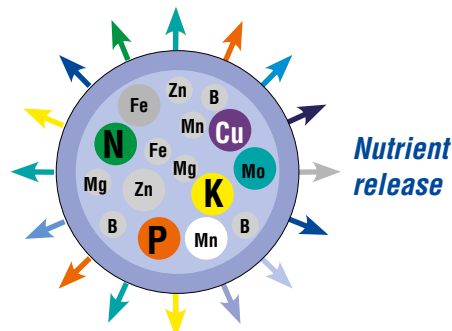
Many **organic** and **inorganic residual materials** are **ideally suitable** for use as **fertilizers**.

Although recycled raw materials may have good nutrient compositions, they can only seldom be used directly for fertilizer. They often take the form of sludges, filter cakes, residue from pressing or dusts that are difficult to wet.

**EIRICH can mix a wide range of consistencies** and adjust the **desired grain distribution** of your fertilizer in the process. In many cases this cuts out complex and time-consuming process steps.

**EIRICH technology does the following:**

- Mixing pasty sludges and dusts and granulating them in a single step.
- With the moisture that is introduced, salts, fibers and additives are optimally wetted, partly dissolved and integrated with no possibility of demixing.



A concentrated nutrient solution is created. The nutrients are released in a controlled manner.



Molasses



Plant fiber



Salt solution



$K_2SO_4$



Kieserite



$CuSO_4 \cdot 5 H_2O$



$(NH_4)_2SO_4$



DAP,  
filter cake



Methylene  
urea



Iron sulfate



Dolomite



Coloring  
agents

# Design your fertilizer and soil improver according to customer requirements



The size and shape have a vital influence on the properties of your fertilizer.

Plants need an optimum supply of nutrients. Over-provision is just as harmful as underprovision. A good fertilizer is also optimally tailored to the growth phases of the plant.

With the help of the EIRICH mixer, you can regulate the individual release of nutrients in the granulate.

#### You can influence the

- duration of effectiveness
- solubility
- stability of the granulates

by selective coating with hydrophobing agents and minerals.

Buyers and users have demand-based requirements. Whether it be agricultural, nursery or garden applications.

Fertilizers need to be easily pourable, have a pleasant smell and meet the user's aesthetic expectations as far as possible.

#### Design your product according to the wishes of your customers:

- Individual definition of grain size distribution
- Small grain size range (e.g. 0.2 - 2.0 mm) and high yield
- Optimization of granule shape and surface structure
- Coating with coloring agents, chalk and pigment blends
- Wetting with anti-caking agents and hydrophobing agents
- Use of odor-neutralizing minerals such as zeolites and adsorbents
- Influence over look and feel by rolling-in plant fibers
- Reduction of dust content to a minimum



# The right system concept is the key ...



**Experts can see whether an investment will deliver cost-efficient production for many years to come right at the commissioning stage.**

Do not leave anything to chance. Whether it be a mixing granulator or a complete system, with EIRICH products you start off at full speed from day one.

In most cases it starts with the analysis of the raw materials. Our experienced engineers are familiar with all the details of material processing.

We design a tailored system concept for you and take on board all the requirements to be met for your range of fertilizers in the process. EIRICH systems are highly efficient and reliable.

Any possible challenges relating to corrosion, caking and wear are taken into account at the outset in the planning phase. Our system concept starts with the incoming delivery of the raw materials and covers every detail of the production chain.

Simplify your system concept and maximize your options at the same time. We supply you with custom-tailored solutions. Mix and granulate directly in the EIRICH mixer or in combination with an EIRICH disk pelletizer.

**Make the most of our experience!  
With EIRICH you are making a safe investment in the future.**



... to the economic success of your company.



*EIRICH Technology:*  
1. Intensive mixer  
2. Table feeder  
3. Disk pelletizer

### Granule production in mixer

The simplest process is often the best.

#### Key advantages at-a-glance:

- Highly economical process
- Simple system concept
- Closed system keeps emissions to a minimum
- Short batch times, mostly between 5 to max. 10 min
- Granule size can be adjusted to individual requirements
- Extensive formula management possible

### Granule production with mixer and disk pelletizer

Highest possible flexibility thanks to combination of a mixer and disk pelletizer

#### Key advantages at-a-glance:

- Granules with the maximum possible sphericity
- Use of poorly preconditioned secondary raw materials is possible
- Granulation of coarse and fibrous raw materials

The combination of the EIRICH mixer and an EIRICH disk pelletizer allows your fertilizer system to be used for an extremely wide range of applications.

***EIRICH mixer for batch and continuous mode operation***

***Throughput rates of 0.5 t/h to 30 t/h***

# Great things come from small things. The EIRICH Test Center – platform for fascinating possibilities.

Tests are required in many cases, for example to find the right process technology solution for a particular preparation task or to optimize an existing system.

EIRICH therefore has process technology centers at seven locations around the world. At these centers, experienced engineers and process technicians work together with you to carry out tests with the relevant material for each of your specific tasks.

The EIRICH Test Center provides you with support throughout, right up to the successful start of production.

State-of-the-art technology for machines and systems from laboratory size up to production scale allows, combined with comprehensive process data acquisition and analyzing methods, flexible and versatile testing.

## You have the idea, we have the right process and system concept for your success.

We often need no more than just a few hours to develop a complex solution. We know the raw materials usually used in the market and can judge which process parameters are required for the production of your fertilizer. EIRICH customers appreciate our knowledge of the fertilizer industry.

Many fertilizer systems in operation started out at the EIRICH Test Center. We can advise you on the use of the raw materials and find the best process parameters for the mixer and disk pelletizer.

The result is that we provide you with a recommendation for an optimum system design. Strict confidence is maintained during every phase of the project and we take individual particularities into account.



You can count on a highly motivated team of chemists and engineers for dedicated product and process development support.



## Industrial Mixing and Fine Grinding Technology

### Tradition and innovation since 1863

EIRICH stands worldwide for a comprehensive range of products and services in the field of preparation technology. Its particular focus is on mixing and fine grinding technology, with know-how developed over 150 years of close cooperation with industrial users, universities and research institutions.

Pursuing a corporate philosophy of operating internationally and thereby ensuring close proximity to every customer, the EIRICH Group has secured its place in all the key economic regions of the world.

The focus is on innovative technology for machinery and systems engineering designed to offer solutions for high-standard preparation tasks from a single source.

Applications and process technology with own test centers, a high vertical range of production and comprehensive after-sales service provide the ideal basis for the development of modern and economical processes for a multitude of industries.

**Building materials – Ceramics – Glass – Carbon paste – Battery paste  
Friction linings – Metallurgy – Foundries – Environmental protection**

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