

## / Press Release

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Kassel, October 28, 2019

### **100 years of potash research More than the art of potash hot leaching**

**On October 28, 1919, the systematic research into the extraction and processing of potash salts - at that time a very "young" raw material - began with the founding of a potash research institute in Staßfurt. With the Analytics and Research Center (AFZ) in Unterbreizbach, Thuringia, K+S has a well-established competence center where the history of potash continues.**

"Over the past century, our expertise in potash research has continuously evolved giving us the confidence to develop new solutions for future challenges," said Dr. Burkhard Lohr, Chairman of the Board of Executive Directors of K+S, at the ceremony in Kassel. "With this strong foundation," continued Lohr, "we at K+S want to be the most customer-oriented supplier of mineral products. Through new product ideas and by developing innovative applications, our potash research makes important contributions in helping our customers increase their yields and efficiency by using K+S products."

### **Milestones in potash research**

Whereas the first decades of potash research were mainly characterized by work on the fundamentals, from the 1950s onwards, the focus has been on developing more efficient processing technologies: The new flotation process complemented the previously exclusively applied hot leaching process, which requires a high energy consumption. Soon the third treatment process followed: the electrostatic separation (in short: ESTA process), which is still exclusively used by K+S today. The particular advantage of this process is the

dry treatment of the salts without production wastewater. ESTA facilities in various designs are an integral part of the treatment processes and make an important contribution to reducing saline wastewater, especially at the Werra site.

A major research task at present is to provide process engineering support for the development of potash production at the new K+S Bethune plant in Canada.

### **Modern analytical methods**

All relevant methods from standard to complex special analysis are performed in the central laboratory of the AFZ. The stricter requirements in terms of accuracy and significantly increased number of samples can only be met by modern instrumental analysis and laboratory automation. Every year, more than 30,000 samples are processed, and more than 400,000 analyses are performed.

### **Potash research for the benefit of the environment**

The various subareas of potash research are closely linked and work together to make important contributions to environmentally friendly and sustainable production. Analytics plays an important role here. Before the large-scale use of new process engineering approaches, however, development work on a laboratory and technical scale is necessary, which is carried out in both the modern facilities of the AFZ and in production testing.

The development of the KCF process (kainite crystallization with flotation) in close cooperation between research and production operations, for example, has led to significant progress in reducing the environmental impact and more intensive use of resources. Scientists, technicians and experts from the AFZ closely collaborate with production experts. This process, which was commissioned on a large scale at the Hattorf site in 2018, succeeded in reducing the wastewater volume of the Werra site by 20 percent.

## **Innovation and digitalization: future challenges require creative solutions**

We have fundamentally expanded the classical approach of experiment, experience, and empiricism in potash research. These days, researchers employ a series of instruments to capture analysis results in the production process and use them in an automated manner to optimize the process.

The development of new methods is increasingly based on simulations with special software. This not only involves the optimization of classical processing technology, but also other process steps, such as underground mine ventilation technology, or the mechanical optimization of equipment that is important for future-oriented potash production.

The competence of K+S employees in research and development is supported by close cooperation with external experts, universities, and research institutes in Germany and abroad.

### **About K+S**

K+S is a customer-focused, independent minerals company for the Agriculture, Industry, Consumers, and Communities segments and wants to grow the EBITDA to € 3 billion by 2030. Our approximately 15,000 employees enable farmers to provide nutrition for the world, solutions that keep industries going, improve daily life for consumers and provide safety in winter. We continually meet the growing demand for mineral products from production sites in Europe, North and South America as well as a worldwide sales network. We strive for sustainability because we are deeply committed to our responsibilities to people, environment, communities, and economy in the regions in which we operate. Learn more about K+S at [www.k-plus-s.com](http://www.k-plus-s.com).

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