

# LESS SHEARING. LESS WASTE. MORE QUALITY.

DISCOVER THE PREMIXING STATION  
FOR EXPANDABLE GRAPHITE



**Krauss Maffei**  
*Pioneering Plastics*

## AREAS OF APPLICATION FOR THE PREMIXING STATION



*Train seats*



*Airplane seats*

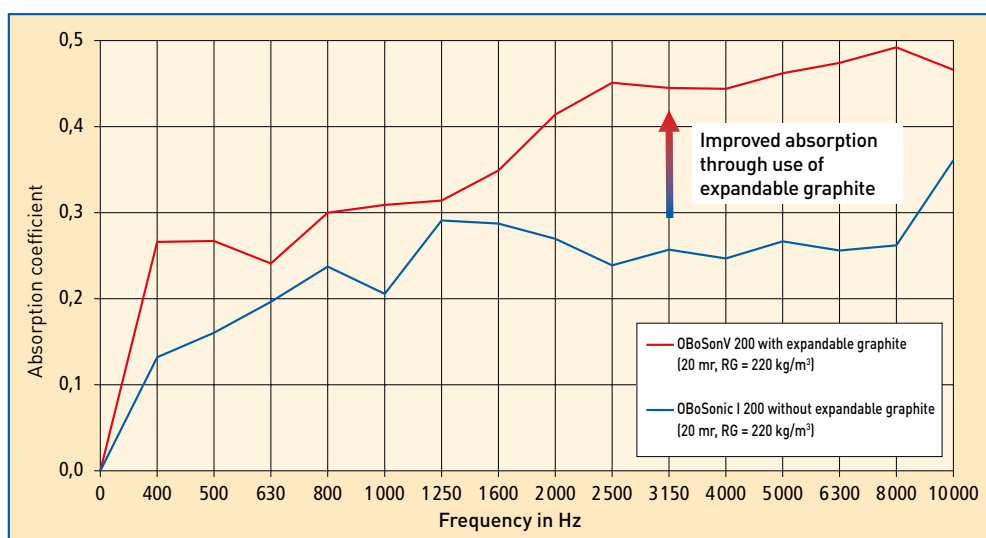


*Motor insulation*



*Electrical/electronics*

**Sustainable manufacturing of flameproof components due to less material waste and higher machine availability**



Source: PU Magazin, October 2019, page 233

*The addition of expandable graphite to polyurethane improves not only the flame retardant properties, but also the acoustic properties of a component (red curve = "with", blue curve = "without" expandable graphite). The "absorption coefficient" is a characteristic value for the sound absorption of a material or component.*

# LESS SHEARING. LESS WASTE. MORE QUALITY. **THE PREMIXING STATION FOR EXPANDABLE GRAPHITE.**

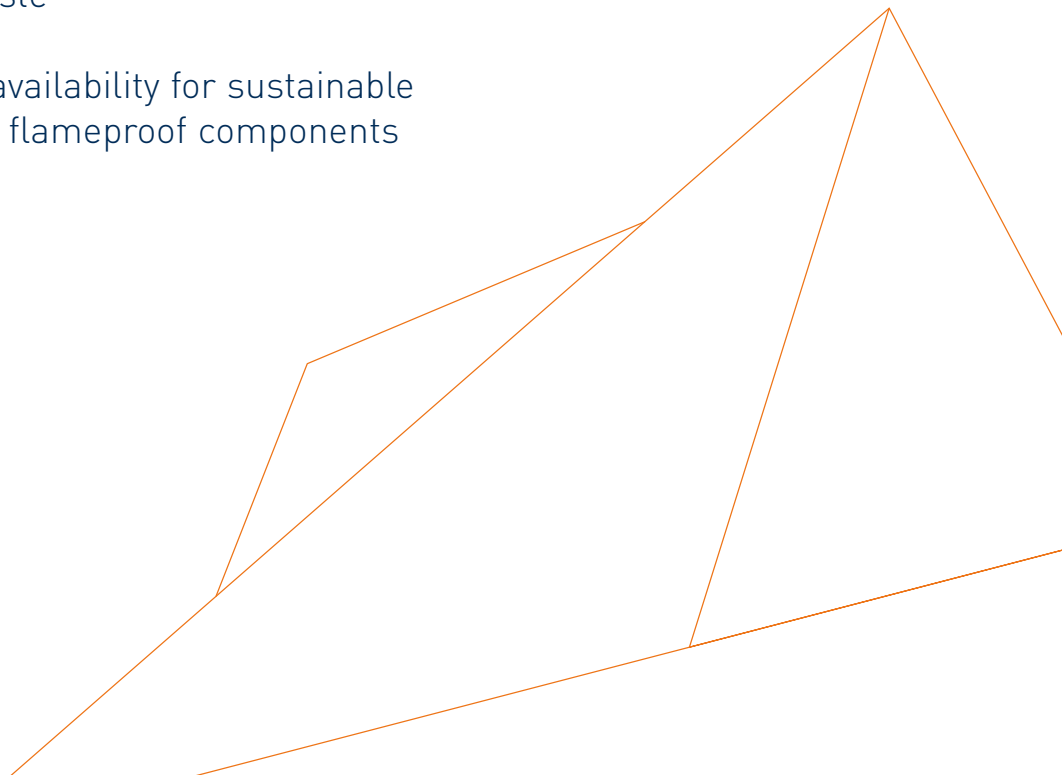
Flame protection requirements for polyurethane foam components are increasing worldwide, whether in the automotive sector, in industrial applications or due to regulatory requirements.

KraussMaffei offers a complete system for the high-pressure processing of expandable graphite for high material and process efficiency and clean production.

For industrial processing of expandable graphite as a filler, there is a complete system comprised of a premixing station, mixing and metering machine, and mixing head.

## **Your advantages at a glance:**

- The expandable graphite is mixed very gently into the polyol
- Extended usability time of the mixture
- Less material waste
- Clean production
- Higher machine availability for sustainable manufacturing of flameproof components



# FULLY AUTOMATED PREMIXING STATION EXPAND YOUR PROCESSING WINDOW

Using expandable graphite as a flame retardant requires precise process control during the entire production process. The new automatic premixing station from KraussMaffei is the solution. Benefit from a stable process even when the production parameters are complex. At the same time, the longer service life of the shear-sensitive premixture makes the technology particularly cost-effective.

## **Fire protection for the automotive, passenger transport and construction industry**

The premixing station was specially developed for blending in the shear-sensitive expandable graphite as a flame-retardant filler in polyol for manufacturing fire-proof polyurethane components. Typical applications include seats and interior paneling for airplanes and public transportation, car engine covers as well as fire-proof panels and other structural panels.

## **The challenge of expandable graphite**

Mixing expandable graphite into polyol is a demanding process due to the shear-sensitive flakes of the flame retardant. During the mixing operation, a forceful movement in the polyol is required. However, too abrupt of a mixing movement will cause the flakes to shatter and the acidic coating to dissolve in the polyol.

This has a negative effect on the physical properties, including the flame resistance parameters of the produced parts, and the mixture previously had a limited time window for processing. However, frequent cleaning of the system and new preparation of the premixture reduces productivity and adds costs.

## **Increased productivity – more efficient manufacturing**

In the new premixing station, we offer a cost-effective solution for this problem. A wall-mounted agitator specially designed for homogeneous mixing under a minimum shearing load distributes the fed graphite in the polyol.

Uniform agitation and other shear-preventing measures delay the aging of the polyol/graphite mixture. This makes it possible to produce more premium-quality parts from one batch. In addition, the longer service life of the premixture prevents additional costs for the material change with short production interruptions.

### **YOUR BENEFITS:**

- Fully automated process chain
- Short cycle times
- High overall equipment efficiency
- Resource-conserving



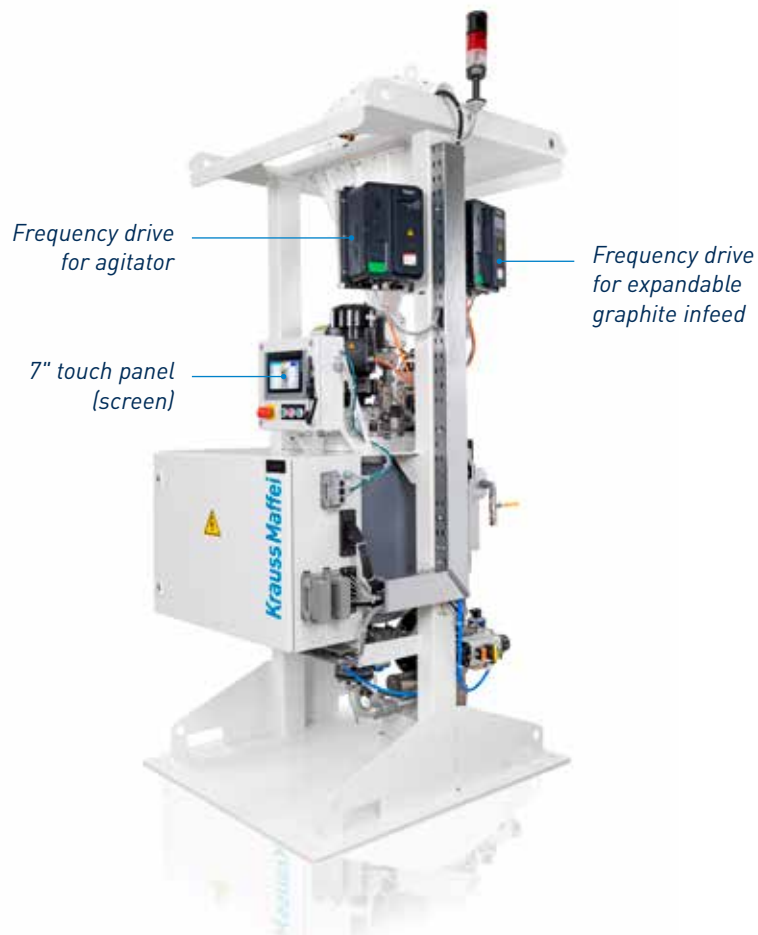
# EXPANDABLE GRAPHITE IN POLYURETHANE THE SMART ADDITIVE FOR LIQUID FLAME RETARDANTS

Flame protection requirements for polyurethane foam components are increasing worldwide, whether in the automotive sector, in industrial applications or due to regulatory requirements. KraussMaffei is your partner for a complete system for the high-pressure processing of expandable graphite with high material and process efficiency and clean production.

## Coherent concept

The software and hardware of the premixing station are optimally tuned to each other. When the heated mixing tank is being filled, a volumetric flowmeter monitors and controls the quantity of added polyol and stops the (optional) filling pump according to the default setting. A bucket wheel airlock meters the filler from a hopper into the polyol, following the recipe precisely.

Each mixed batch is logged for traceability. The speeds and direction of motion of the agitator can be programmed precisely depending on the mixing recipe, e.g. higher agitation speed during the filling time and slower speeds for homogenizing or a fast counterrotation for cleaning the tank.

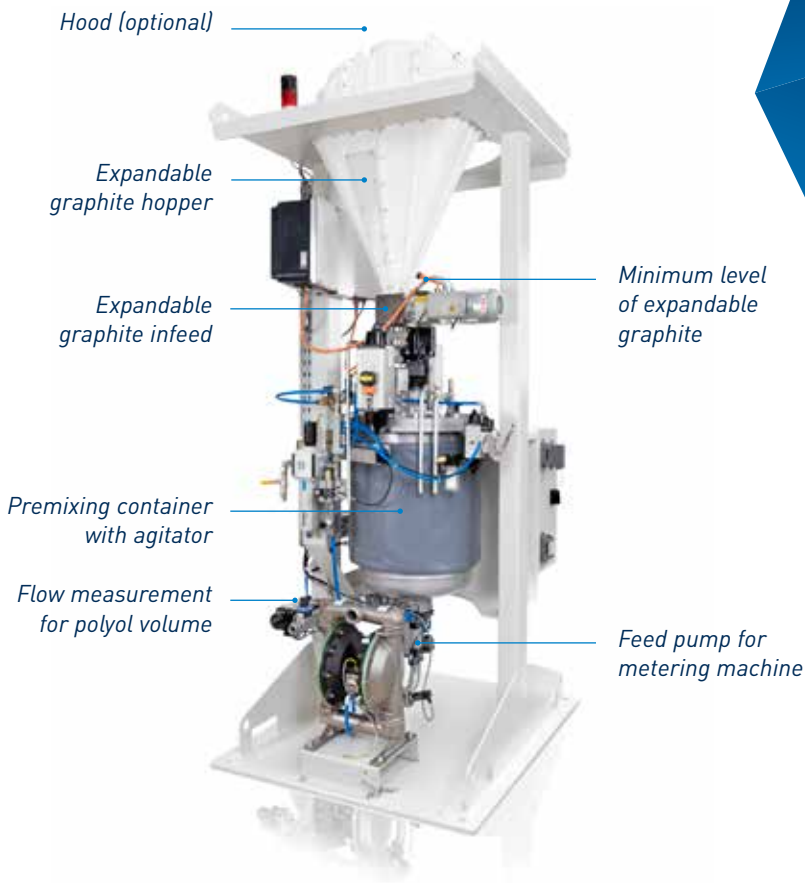


### Requirements-based options for your process requirements

Even in the basic version, the premixing station reliably blends the expandable graphite with the polyol. Options offer additional functions and more complex interfaces to peripheral devices and thus enable optimum adaptation of the system to your requirements.

- Frequency drive for the agitator for fine-tuning of the mixing operation
- Various options for pumps as well as barrel and container stations for feeding the polyol

- Interfaces for pouring the expandable graphite into the hopper, such as a vacuum conveyor or flexible intermediate bulk container station
- Various heating device versions for easy heating or better temperature control
- If you are already using premixed polyol with an additional solid filler in combination with expandable graphite, there is a particularly robust flowmeter that is capable of measuring filled liquids.



### YOUR BENEFITS:

- Precise programming of the recipes via a touch panel
- Existing mixing profiles are optionally available
- Frequency drives for fine tuning
- Dust-free filling



# OUR WORLDWIDE EXPERTISE IS YOUR ADVANTAGE **DIGITAL & SERVICE SOLUTIONS**

With your KraussMaffei machine, you have chosen a product that delivers the highest levels of productivity and reliability. In addition to our range of machinery, KraussMaffei focuses on comprehensive and future-oriented solutions, innovative business models and an innovative portfolio of digital products.

## **Customer service at the touch of a button**

The process of digital transformation is becoming faster and easier than ever for the customer. Our Digital & Service Solutions unit makes your production chain even more flexible and efficient with future-oriented solutions. KraussMaffei thus globally provides an all-inclusive customer service package and networks machines and processes with each other. Our global support offers a sound basis for your local long-term success.

## **Individual challenges in mechanical engineering call for intelligent solutions**

With our services portfolio, we support you throughout your machine's lifecycle with a strong focus on your specific needs. In order to satisfy your wishes, we offer you a wide range of solutions in order to ensure maximum availability and optimum productivity of your machines.

## **Technology<sup>2</sup> as a unique selling proposition**

KraussMaffei is the only supplier in the world with a product range comprising the most important machine technologies for plastic and rubber processing: injection molding machinery, automation, reaction process machinery and extrusion technology. KraussMaffei is represented worldwide with more than 30 subsidiaries and over 10 production plants as well as about 570 commercial and service partners. This is what makes us your highly skilled and integrated partner. We are thus in a position to offer vast and unique expertise in the industry.

**You can find further information at:**  
[www.kraussmaffei.com](http://www.kraussmaffei.com)

# KRAUSSMAFFEI – PIONEERING PLASTICS



## Extensive expertise from a single supplier

KraussMaffei is one of the world's leading manufacturers of machinery and systems for producing and processing plastics and rubber. Our brand has been synonymous with cutting-edge technology for over 180 years. Our product range includes all technologies in injection molding, extrusion and reaction process machinery. KraussMaffei has a unique selling proposition in the industry as a result. By drawing on our proven innovative capacity, we can guarantee our customers sustained additional value over their entire value-adding chain through our standardized and individual product, process, digital and service solutions. The range of our products and services allows us to

serve customers in many sectors including the automotive, packaging, medical and construction industries. We also supply manufacturers of electrical and electronic products and household appliances.

## At your service all over the world

KraussMaffei is represented all over the world. Subsidiaries provide you with support in the countries shown in light blue. Our sales and service partners take care of you in the regions shown in white.

You can find all contact information at  
[www.kraussmaffei.com](http://www.kraussmaffei.com)

# LESS SHEARING. LESS WASTE. MORE QUALITY.

DISCOVER THE PREMIXING STATION  
FOR EXPANDABLE GRAPHITE



***[kraussmaffe.com](http://kraussmaffe.com)***