

# SmartGyp Homogenizer

## Cost cutting plaster production



- Suitable for virtually any calcining system
- Homogenizing product quality
- Stabilizing the product
- Optimizing board production
- Improving the water demand
- Reducing production cost
- Improves plaster production
- Efficient production of high strength plaster

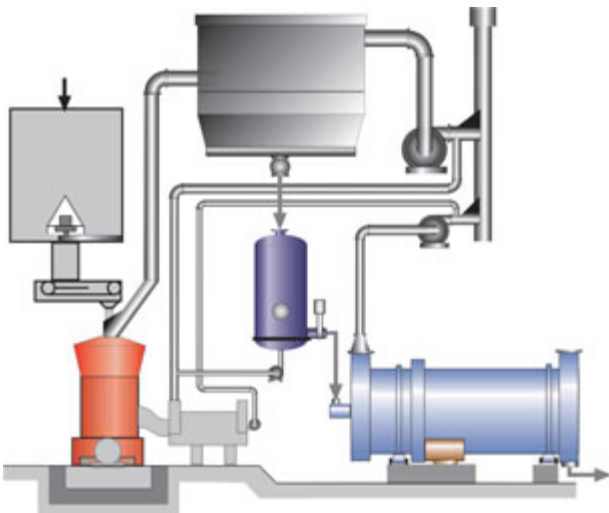


Figure 1: Claudius Peters mill calcining system with integrated homogenizer.

### The SmartGyp Process

For improvement and stabilization of fresh calcined gypsum Claudius Peters has developed processes to improve various parameters in a gypsum production facility.

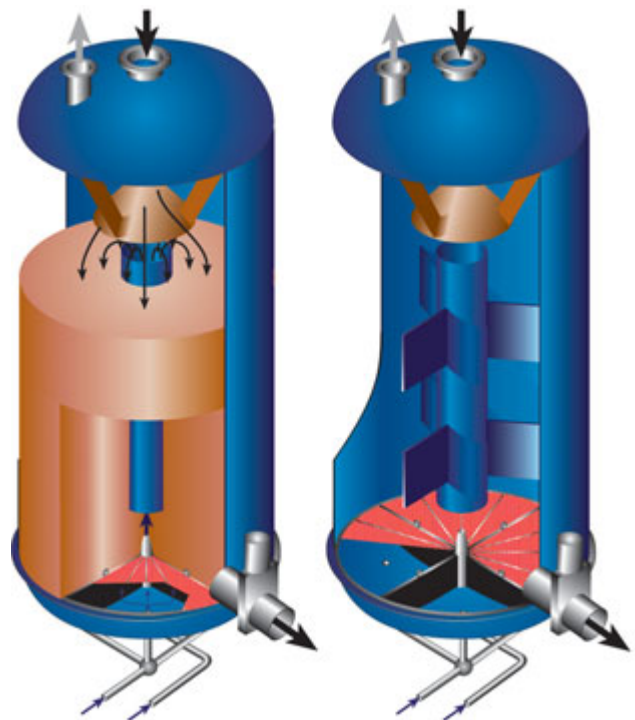
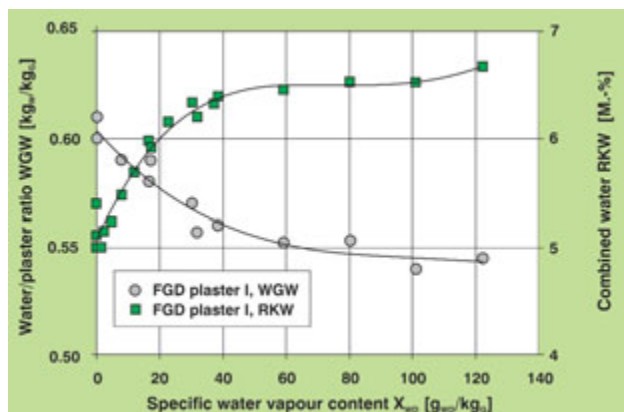


Figure 2: Claudius Peters pressure homogenizer

# SmartGyp Homogenizer

The key component in this process is the Claudius Peters Homogenizer. The homogenizer can be operated in the standard version under ambient pressure, or in the extended version, the pressure homogenizer, under pressurized conditions. Fresh calcined gypsum is taken directly and continuously from the calciner filter at full calcining temperature and introduced into the homogenizer. At the same rate the treated gypsum is discharged from the homogenizer, in this case to a downstream cooling process. The level in the homogenizer allows the treatment of the gypsum at the required temperature for a constant defined retention time. Moisture is supplied depending on the modification of the homogenizer as humidity carried in the process gases from the calcining unit is separate steam and/or water which is sprayed directly into the homogenizer. In the standard homogenizer introduced gases will be vented into the process dust collector, whereas for the pressure homogenizer a pressure control valve will control the required pressure and vent the excess amounts again into the dust collector.



WGW value and combined water content as a function of the added specific quantity of water vapour.

The homogenizer consists of a vertical reactor, where the reactor floor is covered by a fabric allowing even fluidization gas distribution (see figure 2). The gypsum bed can float freely in the reactor making contact with the carried moisture. In addition a central nozzle receives additional amounts of fluidized air, allowing gypsum to be transported from the floor to the upper section of the homogenizer, intensifying the product mix and homogenization.

As described above, the processing pressure is one of the conditions that can have a significant influence on the product characteristics. The SmartGyp process which utilizes the pressurized homogenizer maximizes the effect of product improvement and provides continuously operated process and where, under controlled conditions the aging process can take place.

- The material level in the pressurized homogenizer defines the processing time
- A pressure control valve is adjusting the pressure setting
- Adjusting the mix of steam, process gas and water allows control of the processing temperature
- Adjusting the mix of steam, process gas and water allows control of the moisture amounts and conditions

Figure 1, overleaf, shows the SmartGyp process integrated into a Claudius Peters mill calcining system. However, the integration can be made on most types of calcining systems, either as a new green field installation or as an upgrade for existing plants.

Property (example)		Before homogenizer	After standard homogenizer	After pressurized homogenizer
Specific surface according to BET	[m <sup>2</sup> /g]	approx. 9-12	approx. 7	approx. 4
Water/plaster ratio acc to strewing method	[kg / kg]	0,65 – 0,75	approx. 0,6	approx. 0,54
Compressive strength	[N/mm <sup>2</sup> ]	approx. 11	approx. 16	approx. 32
Combined water content	%	5,5 to 6,2	approx. 6,2	approx. 6,4
Soluble anhydrite content	%	5 to 10	approx. 1	below detection

Achieved characteristics at CP test facility with the SmartGyp process utilizing the Claudius Peters Homogenizer in standard and in pressurized mode.

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