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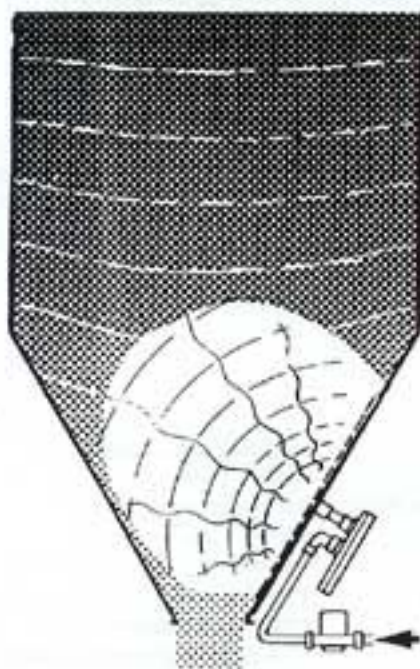
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# It's the material, not the silo, that has to vibrate

## PULSATING SILO DISCHARGE SYSTEM

### The SONOFORCE System

PATENTED



The panel activator spreads air vibrations deep into the material.

### Fluidising with low frequencies

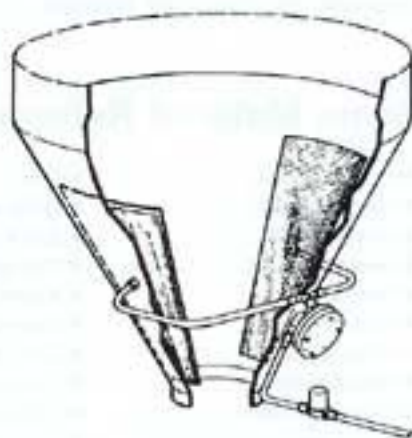
This DISCHARGE SYSTEM has been developed for efficient loosening of material in silos. In this case, the activator operates by means of rapid compressed air impulses from a wholly pneumatic pulsator. A panel activator is used both to inject the pulsating air into the powdered material and to distribute it with optimal effect.

The air that is blown in is thus finely distributed so that it forms a slip surface over the activator cloth, and the vibrations in the air ensure that the particles are easily displaced. This combination results in especially efficient emptying: the mass of material is set in uniform movement, and it shows a minimal tendency to segregate.

The system is also highly flexible, as the size, shape and location of the panels can be adapted to

both the design of the silo and to the type of material. As a result, an optimal solution can be planned for any given situation.

Another advantage of this system is that it is easy to install. And the system works equally well in concrete and in metal silos —with straight or curved sides.



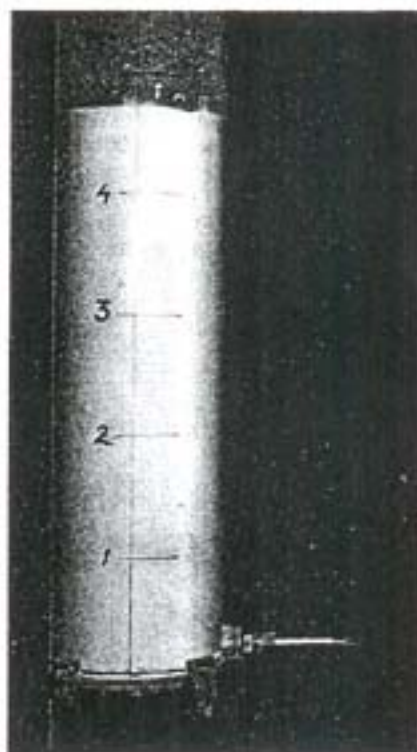
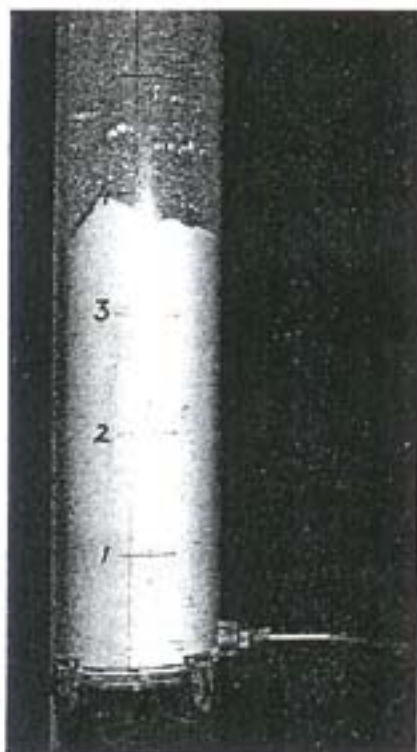
Simple, flexible installation is one of the advantages of this equipment.

THE PROFESSIONALS IN POWDER HANDLING

A number of different vibration systems for emptying silos are available on today's market. The trouble with most of them is that they generate vibration mainly in the walls of the containing structure - or in some cases in a special oscillating unit within the silo.

This means that both the foundation

and the structure are exposed to stress which can ultimately result in fatigue. What's more, there is a relatively large risk of packing and bridging. This applies especially to certain difficult materials such as fine-grain powders, damp or doughy substances and lighter material in the form of flakes or with a fibrous structure.



## Fluidisation

The ideal technique involves loosening the material effectively so that it runs - this is called fluidisation. Fluidised material runs easily out of the container, while it also facilitates subsequent transport through piping systems.

A commonly used method of fluidising the contents of silos is to introduce fine streams of air into the material in order to separate the individual particles. But this method is not always completely successful; the air often has the effect of simply forming a central hole, so that emptying is interrupted.

## Pulsating fluidisation

is a further development of this process. We enrich the air introduced into the silo with vibrations in the form of fluctuations in pressure. This enables us to achieve effective loosening of the material, and at the same time to make sure that it is mainly the material - and not the silo - that vibrates. The result: **fast effective emptying.**

Laboratory tests clearly demonstrate the difference between fluidisation with air alone (left) and with vibration-enriched air according to this unique technique (right). Equal quantities of air were supplied into the two containers, which held equal quantities of powdered china clay.

## Economy and reliability

The list of difficult materials that have been successfully handled by this system is both long and comprehensive. The simple mechanical design of this equipment - based on years and years of experience and development in the field of advanced materials handling - allows for minimal wear and long operating lifetime.

A number of different standard sizes of panel activators have been designed for the system, giving possibilities for installation in almost every possible size and shape of silos, bins and hoppers for powders or granulates.

## Some Material References

- Chalk (natural)
- Chalk (synthetic)
- Lime (slaked)
- Lime (unslaked)
- Talcum powder
- Carbon Black
- Gypsum powder
- Plastic pellets
- Plastic granulate
- Plastic powder (miscellaneous)
- PVC-granulate
- PVC-powder
- Fly ash
- Soot
- Filter dust
- Wood powder
- Wood flour
- Sand
- Glass sand
- Silica powder
- Clay powder
- Kaolin (China clay)
- Titaniumdioxide
- Zinc white
- Zinc oxide
- Colour pigments
- Aluminium, powder
- Aluminium oxide
- Magnesium oxide
- Wolfram oxide
- Mangan oxide
- Iron sulphate
- Mangansulphate
- Magnesiumsulphate
- Cupric sulphate
- Sodium sulphate
- Carboxymethylcellulose (CMC)
- Dicalciumphosphate
- Tripolyphosphate
- Potassium carbonate
- Sodiumcalcinate
- Chlorine chloride
- Bicarbonate
- Soda
- Resin powders
- Rubber granulate
- Silanogran
- Rhenogran
- Neoprene
- Paraffin
- Stearine
- Polyethylene powder
- Salt
- Granulated sugar
- Icing sugar
- Starch
- Milkpowder
- Skim-milk powder
- Vitamines (different powders)
- Soya flour
- Oil plant flour
- Wheat feed flour
- Beet feed powder
- Bran
- Wheat flour
- Rye flour
- Coffee
- Chopped almond